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COMMISSION STAFF WORKING DOCUMENT

EVALUATION

of the

**Regulation (EU) No 1307/2013 of the European Parliament and of the Council
of 17 December 2013
establishing rules for direct payments to farmers under support schemes within the
framework of the common agricultural policy and repealing Council Regulation (EC)
No 637/2008 and Council Regulation (EC) No 73/2009**

concerning the greening in direct payments

{SWD(2018) 479 final}

Contents

GLOSSARY.....	2
1. INTRODUCTION	2
Purpose and scope	2
2. BACKGROUND TO THE INTERVENTION	5
Description of the intervention and its objectives	5
Baseline and points of comparison.....	13
3. IMPLEMENTATION / STATE OF PLAY	14
4. METHOD.....	20
Short description of the methodology	20
Data sources and issues arising	22
Establishing the counterfactual.....	24
Limitations and robustness of findings.....	25
5. ANALYSIS AND ANSWERS TO THE EVALUATION QUESTIONS	26
5.1. CONTEXTUALISING GREENING CHOICES AND PRACTICES	27
5.2. EFFECTIVENESS.....	35
5.3. EFFICIENCY.....	43
5.4. COHERENCE.....	45
5.5. RELEVANCE.....	51
5.6. EU ADDED VALUE.....	52
5.7. STAKEHOLDERS' VIEWS.....	54
6. CONCLUSIONS	55
ANNEX 1: PROCEDURAL INFORMATION	63
ANNEX 2: STAKEHOLDER CONSULTATION.....	75
ANNEX 3: METHODS AND ANALYTICAL MODELS	77
A3.1 Intervention Logic	77
A3.2 Analytical tools used	77
A3.3 Establishing the counterfactual.....	78
ANNEX 4: EVALUATION STUDY QUESTIONS	82

Glossary

<i>Term or acronym</i>	<i>Meaning or definition</i>
AECM	Agri-Environment-Climate Measure
CAP	Common Agricultural Policy
CMEF	Common Monitoring and Evaluation Framework
DA	Delegated Act
ECA	European Court of Auditors
EFA	Ecological Focus Area
ESQ	Evaluation Study Question
ESPG	Environmentally Sensitive Permanent Grassland
EU	European Union
FADN	Farm Accountancy Data Network
GAEC	Good Agricultural and Environmental Condition
GHG	Greenhouse Gas
IA	Implementing Act
IACS	Integrated Administration and Control System
ISG	Inter-service Steering Group
JRC	Joint Research Centre
LPIS	Land Parcel Information System
MFF	Multiannual Financial Framework
MS	Member State
NGO	Non-Governmental Organisations
NUTS	Nomenclature of Territorial Units for Statistics
RDP	Rural Development Programme
REFIT	Regulatory Fitness and Performance programme
SFS	Small Farmers Scheme
SRC	Short Rotation Coppice
UAA	Utilised Agricultural Area
VCS	Voluntary Coupled Support
WFD	Water Framework Directive

1. INTRODUCTION

Purpose and scope

A new and important policy instrument of the reformed common agricultural policy (CAP), which started to be fully implemented in 2015, are so-called green direct

payments¹, intended to improve the environmental performance of EU agriculture. This scheme makes 30 % of the direct payments received by farmers conditional upon the respect of three practices to benefit the environment and climate action.

Although greening is in its infancy, the scheme has attracted significant interest and scrutiny, not only from farmers and administrations, but also from policymakers. In 2016, the Council asked the Commission for an implementation report after 1 year of greening, which was published in early 2017. A more extensive evaluation was inserted in the Commission department's work programme for 2016/17 to provide timely results for the performance report on the CAP² due by 31 December 2018, and also to feed into preparation of a proposal on the post-2020 CAP. The roadmap for the evaluation was published in September 2016 and the evaluation study report, drafted by an external contractor³, was published in November 2017.

This document evaluates the impacts of the green direct payment scheme as implemented by Member States. It provides an overview of how the new policy instrument is performing against its objectives, answers to issues raised in the public domain, and offers a solid evidence base for considering possible policy changes. In 2015/2016, the Commission reviewed the delegated and implementing acts (DA/IA) for the green direct payment obligations (Commission Delegated Regulation (EU) No 639/2014⁴ and Implementing Regulation (EU) No 641/2014⁵). The review was carried out as part of the process of simplifying the CAP. In particular, it was launched in response to the Commission's declaration of April 2014 addressing three aspects of green direct payments: the administrative burden arising from the new instrument; their impact, as implemented by Member States, on the level playing field for farmers; and the impact on production potential. The Commission consulted widely (including stakeholders and the public) on the first year of implementation. An online public stakeholder consultation ran from 15 December 2015 to 8 March 2016. The survey questions covered key points for

1 Articles 43 to 47 of Regulation (EU) No 1307/2013

2 In accordance with Article 110 of Regulation 1306/2013 on the common monitoring and evaluation framework of the CAP

3 Evaluation study of the payment for agricultural practices beneficial for the climate and the environment ("greening" of direct payments) – report of the evaluator
https://ec.europa.eu/agriculture/evaluation/market-and-income-reports/greening-of-direct-payments_en.

4 Commission Delegated Regulation (EU) No 639/2014 of 11 March 2014 supplementing Regulation (EU) No 1307/2013 of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy and amending Annex X to that Regulation; OJ L 181 of 20.6.2014, p. 1.

5 Commission Implementing Regulation (EU) No 641/2014 of 16 June 2014 laying down rules for the application of Regulation (EU) No 1307/2013 of the European Parliament and of the Council establishing rules for direct payments to farmers under support schemes within the framework of the common agricultural policy; OJ L 181 of 20.6.2014, p. 74.

this evaluation, such as concordance with the environmental objectives, the impact of green direct payments as regards environmental benefits and farm management, effect on production potential, and the administrative burden on farmers. In total 3 303 responses were received from a wide range of stakeholders. For this reason it was considered unnecessary to launch another open public consultation for this evaluation.

The evaluation was timed to be able to use all the information collected for the review after 1 year of implementation. However, it could not fully take into account the situation resulting from the changes to the delegated and implementing acts following the 2016 review of the legislation, since these entered into force only from claim year 2017.

In March 2017, the Commission presented a report on the implementation of the ecological focus area obligation under the green direct payment scheme⁶, as provided for in Article 46(1) of Regulation (EU) No 1307/2013. The information from that report has also fed into this evaluation.

This evaluation covers the entire Chapter 3 of Title III of Regulation (EU) 1307/2013 (the ‘Direct Payments Regulation’) covering payment for agricultural practices beneficial for the climate and the environment (‘green direct payment’). That chapter outlines the three ‘greening practices’. It also sets out a system of equivalence: ‘equivalent practices’ are an alternative means of meeting the greening obligation. The relevant delegated and implementing rules are taken into account, as are the technical guidance documents for Member States drafted by Commission staff to explain the greening obligations and put them into context. All 28 EU Member States were covered; the main period examined — following the implementation of the 2013 CAP reform — was claim years 2015 and 2016. According to available data, on average at EU level, 73 % and 77 % of the agricultural area was subject to at least one greening obligation in 2015 and 2016, respectively. An overview of the state of the implementation per Member State is further detailed in Chapter 3.

The evaluation covered the five evaluation criteria — effectiveness, efficiency, coherence, relevance and EU added value — starting from a causal analysis examining changes arising from the implementation of the greening measures, as far as can be assessed given the short reference period and the constraints of the analysis. The evaluation had to bridge information gaps due to the short implementation period. Therefore, it also had to rely on qualitative analysis to assess the environmental performance of the greening measures. For the future, relevant data should be collected and processed and IACS/LPIS data should be aggregated and made available in a suitable format. However, the exact type of data needed will depend on the design of the future policy instruments.

6 SWD(2017) 121 final.

Moreover, in assessing the environmental effects, and as part of the coherence review, complementary measures, in particular cross-compliance, the definition of permanent grassland, and agri-environment-climate measures, and any other relevant measures (including regulatory measures under environmental legislation), whether national or regional, were taken into account, with the main point of reference still being the green direct payment.

2. BACKGROUND TO THE INTERVENTION

Description of the intervention and its objectives

General description

The introduction of payments for carrying out a compulsory set of ‘greening measures’ was a major innovation in direct payments to farmers under the CAP. Member States are now required to allocate 30 % of the direct payments budget to an annual payment for compulsory ‘agricultural practices beneficial for the climate and the environment’, otherwise known as ‘green direct payments’ or ‘greening measures’. According to the recitals of the direct payments basic act, the introduction of compulsory greening practices is intended to enhance environmental performance and:

- address as a priority both climatic and environmental policy goals;
- be simple, general, annual and non-contractual;
- go beyond cross-compliance; and
- be linked to agriculture.

Three practices were identified to meet this requirement:

- crop diversification — cultivation of a minimum of two or three crops on arable land above a certain size (in particular to improve soil quality);
- maintenance of permanent grassland — with two components: (i) maintaining the level of permanent grassland at 95 % of its area as a proportion of total agricultural area; and (ii) protecting the most environmentally sensitive permanent grasslands (ESPG) from ploughing-up (to support carbon sequestration, support species and habitats of biodiversity value, protect against soil erosion and protect soil quality);
- management of ecological focus areas (EFAs) — managing at least 5 % of the arable land of farms with more than 15 hectares of arable land as an EFA, comprising a combination of management practices or landscape features as set out in the Regulation and applied by Member States (primarily to safeguard and improve biodiversity on farms).

In addition to these three standard practices, equivalent practices delivered by agri-environment-climate measures or certification schemes that are similar to greening and that yield an equivalent or higher level of benefit for the climate and the environment can also be used to meet the requirements. This allows the diversity of agricultural systems and different environmental situations across the EU to be accommodated.

Context and rationale

The 2011 Commission Communication on the future of the CAP post-2013⁷ highlighted the need to make environmental management and the delivery of public goods a more integral part of the CAP in order to address the environmental challenges facing the EU and thus to underpin the longer-term legitimacy of the CAP.

Responding to this need, the Commission proposed a change to the direct payments system, with the introduction of a compulsory set of three ‘greening’ measures. The rationale for doing so was to reinforce environmentally sustainable and climate beneficial agricultural practices that go beyond those required in law or under cross-compliance over as much of the farmed countryside as possible. The underlying concern was that current trends in agriculture towards more intensive practices, including limited rotation and more systematic exploitation of land resources, led to insufficient provision of public goods, with a continuing decline in the environmental performance of agriculture and increasing environmental pressures on agricultural land in the EU. By introducing actions to be taken by the majority of farms over the majority of the land, greening is intended to raise the environmental performance of EU agriculture and thus render it more sustainable.

This led to the inclusion of a new hybrid instrument within direct payments, where a substantial part of income support was linked to environmental requirements. The aim of putting the measures within the direct support system was to keep the approach as simple as possible, using both a standardised payment and standardised prescriptions. The figure of 30 % was determined as a sufficiently persuasive level of payment to ensure that nearly all farmers adopted the greening measures rather than choosing to forgo direct payments altogether, or simply not to apply the measures and accept the reduction in payments that would ensue (and from 2017 onwards a penalty too). As the size of the direct support budget differs among and within Member States, the level of payment for the greening component also differs from one Member State/region to another. To keep the system as simple as possible, it was decided to set payment levels for the greening component as a whole (not per measure) and at a percentage level that is the same for all farmers in a given region.

7 COMMUNICATION FROM THE COMMISSION TO THE EUROPEAN PARLIAMENT, THE COUNCIL, THE EUROPEAN ECONOMIC AND SOCIAL COMMITTEE AND THE COMMITTEE OF THE REGIONS: The CAP towards 2020: Meeting the food, natural resources and territorial challenges of the future; COM/2010/0672 final.

Greening direct payments, rather than using rural development aid, meant that the measure would apply to the great majority of commercial farms supported by the CAP and most agricultural land. Given the nature of the direct payments, the greening requirements were necessarily designed to be generalised, non-contractual, annual environmental measures. The wide reach of these measures was intended to give them considerable impact and, importantly, provide a basis on which more targeted rural development measures could be designed (in particular with regard to the EFA measure). Indeed, the justification for using direct payments for greening measures, as stated in the 2011 Impact Assessment⁸ was as follows: ‘The greening component of direct payments makes the greening of the CAP more visible and has the merits of broad territorial coverage and uniform application; however, it does not allow for targeting the measures to specific situations (and would thus need to be complemented by better targeted rural development measures)’.

Their introduction was also partly a matter of political feasibility. Some of the factors at play included:

- strengthening the general rationale and legitimacy for intervention via direct payments;
- expectations that discussions on the Multiannual Financial Framework (MFF) for 2014-2020 would not lead to any increases in the CAP rural development budget, in particular because of Member States’ reluctance or inability to increase national co-financing;
- concerns that cross-compliance was seen by farmers as mainly a sanction system and as such not encouraging farmers to take ownership of the need for basic environmental practices;
- concerns that agri-environment schemes could not by themselves deliver the results required, particularly given the budget constraints for agri-environment-climate measures (AECM).

So requiring a baseline of environmental management (in addition to cross-compliance) across the farmed countryside using direct payments could free up rural development resources to increase the ambition of agri-environment schemes. This, alongside the need to avoid double funding between greening measures and the AECM, would allow more targeted AECMs.

‘Greening’ in direct payments was not only a response to the growing expectations of EU citizens regarding the CAP and the provision of public goods, but also a signal to farmers that environmental considerations should be factored into their production decisions

8 SEC(2011) 1153 final/2.

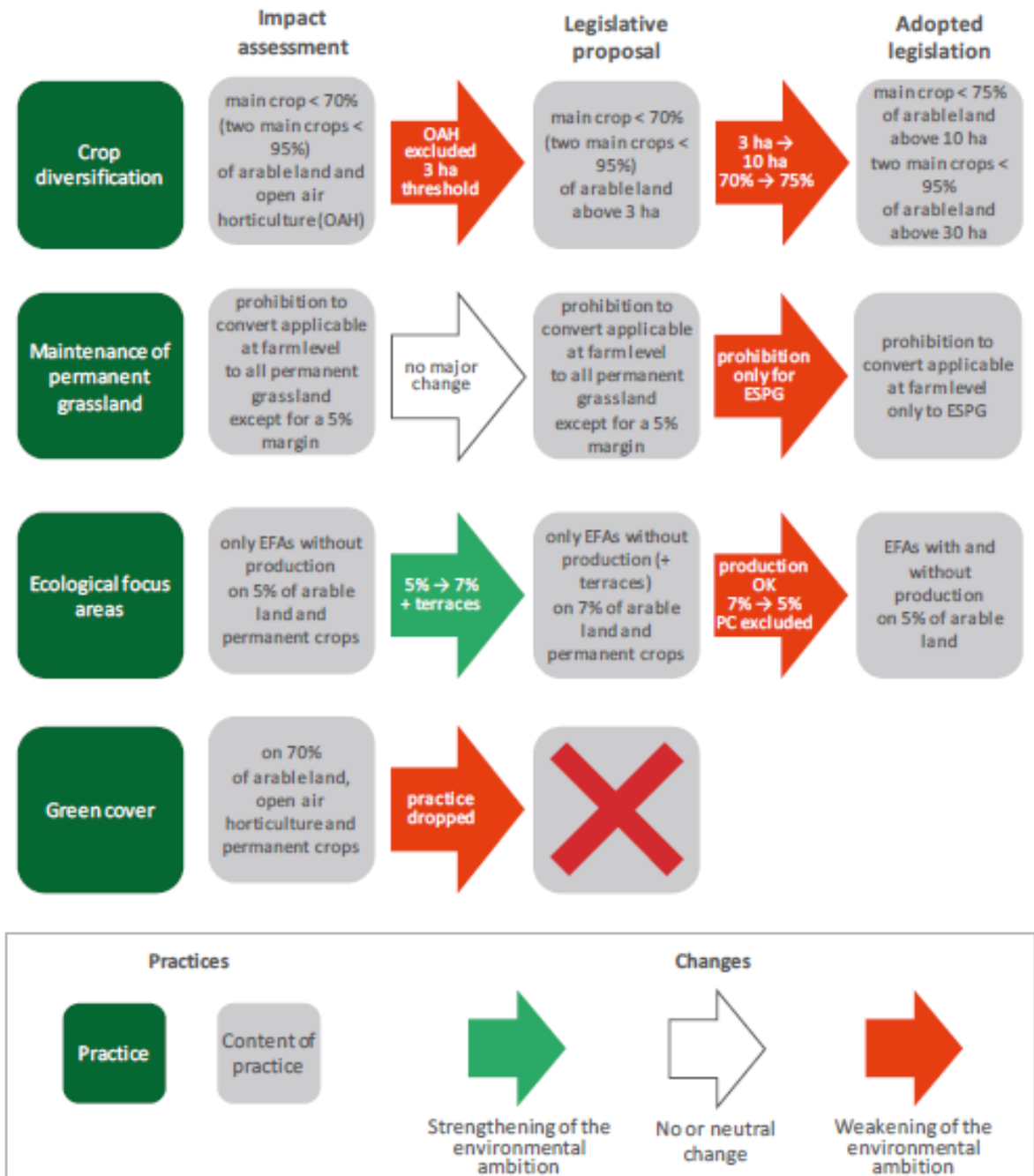
more explicitly and mainstreamed into their business decisions (as opposed to a farmers' voluntary decision under AECM). At the same time, the requirements were set at a level that would not put the viability of farms at risk and with the intention of not unduly complicating the management of the system. Furthermore, the greening measures were designed to favour farmers already making positive efforts to mainstream environmental management into their farming practices by recognising these efforts and thus turning 30 % of their income support into a reward for delivering these public goods, whereas farmers who needed to make adjustments to comply with the greening requirements would face a certain level of cost. An important feature of the greening scheme is that it should not require all farmers to change their practices but only those not already implementing the required environmental practices.

'Greening' had to be consistent with, and add value to, existing environmental legislation. The ban on ploughing environmentally sensitive permanent grassland (ESPG) reinforces the protection of permanent grasslands in Natura 2000 sites, as granted by the Natura 2000 Directives⁹. It also complements the obligation that the EU Environmental Impact Assessment Directive¹⁰ puts on Member States to minimise environmental damage from agricultural developments and other 'projects' in rural areas, including the restructuring of agricultural land and conversion of uncultivated or semi-natural habitats to intensive agricultural management.

9 Directive 2009/147/EC of the European Parliament and of the Council of 30 November 2009 on the conservation of wild birds; Council Directive 92/43/EEC of 21 May 1992 on the conservation of natural habitats and of wild fauna and flora.

10 Council Directive 85/337/EEC of 27 June 1985 on the assessment of the effects of certain public and private projects on the environment.

Figure 1: Greening ambitions for environment and climate during the legislative process



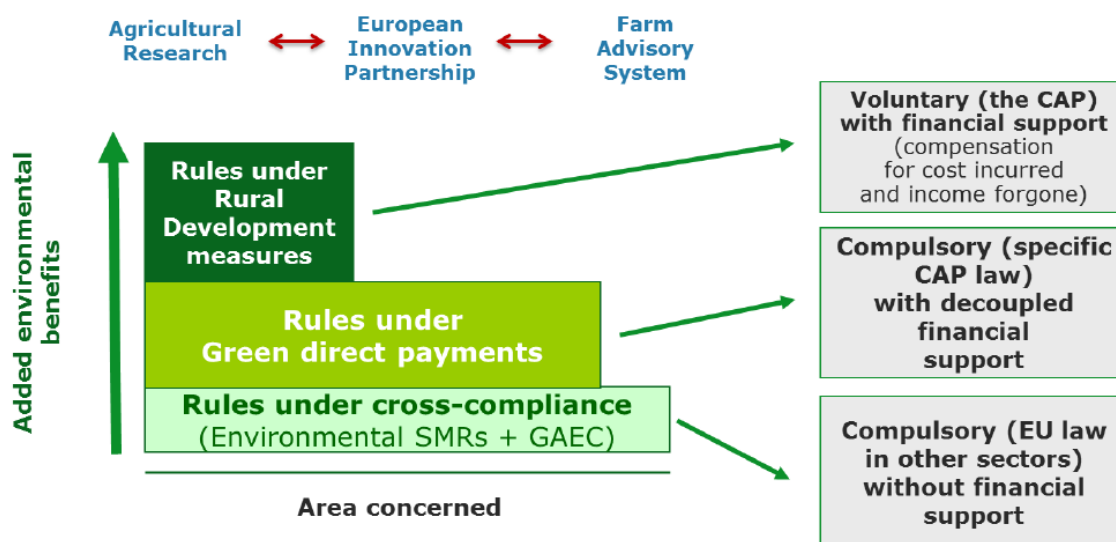
Source: European Court of Auditors (ECA) 2017 special report on greening¹¹

11 <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=44179>.

The ‘CAP towards 2020’ Impact Assessment clearly presented the need to ensure a strong impact on the environment and climate change. The Commission favoured an approach to greening with a few measures that would yield significant environmental benefits and would be verifiable. As Figure 1 shows, greening as finally adopted has not fully matched the ambitions for the environment and climate of the initial Commission's proposal (e.g. no more requirement for EFA in permanent crops) and is administratively complex.

Greening architecture

Figure 2: The new greening architecture of the CAP



Source: DG AGRI

As Figure 2 shows, the green direct payment scheme does not operate in isolation. It is rather intended to work alongside other CAP instruments and measures with the aim of improving the environmental delivery of the CAP. Each of these instruments has a different function:

- Cross-compliance links full payment of CAP support to compliance with certain rules. This is not a support scheme, rather it is a system which allows CAP support to be reduced where infringements with these rules take place.
- Environmental rural development measures (primarily AECM, but also the organic farming measure) enable incentives to implement practices beneficial for the environment under multiannual contracts. Here, support is calculated on the basis of the income forgone and additional costs incurred of carrying out the environmental management compared to a baseline or reference level which comprises rules set out in legislation, including those covered by cross-compliance.
- Green direct payments are aimed at allocating a proportion of the farmer's direct payments towards the provision of public goods. The 30 % figure is either a flat rate per hectare calculated nationally or a proportion of the direct payments received by the individual farmer. This payment therefore does not equate to the income forgone and the additional costs of carrying out greening practices (that must also go beyond

legal requirements and cross-compliance GAEC standards). Rather, the payment is determined at a standard level estimated during the CAP negotiations to be sufficient to incentivise overall compliance with the measures (by maintaining or changing existing practices), while also stabilising farmers' incomes.

Intervention logic

The European Commission's staff working document on the review of greening after one year¹² summarises the intended objectives of the green direct payment scheme together with the existing environment-focused CAP instruments as follows:

- A greater effectiveness of the CAP in delivering on its environmental and climate objectives (notably for soil, water, biodiversity and climate) by:
 - explicitly acknowledging and supporting farmers for their joint provision of private and public goods;
 - introducing a basic layer of environmental and climate measures on a very large scale, additional to existing rules under cross-compliance; and
 - raising the level of ambition for environmental and climate measures in rural development and/or making funds available for these more targeted measures;
- A more balanced economic and environmental performance of EU agriculture in order to ensure its long-term sustainability;
- The maintenance of the long-term production potential of EU agriculture by safeguarding the natural resources on which agriculture depends.

The greening payment covers the whole eligible area of the holding (including permanent crops) while the obligations apply only on arable land and permanent grassland areas. There are, however, several exemptions, including a blanket one for those participating in the Small Farmers Scheme (in countries where this is offered). Land under organic farming is entitled *ipso facto* to the greening payment as, given the recognised environmental benefits of the organic farming systems [recital 38], it is considered green by definition. Land managers farming land within Natura 2000 sites or river basins covered by the Water Framework Directive (WFD) are only required to comply with the greening measures insofar as these are compatible with the requirements set under the Birds, Habitats or Water Framework Directives. Each measure has requirements and rules determining:

- (1) the land on the holding to which the obligations apply;

12 SWD(2016) 218final.

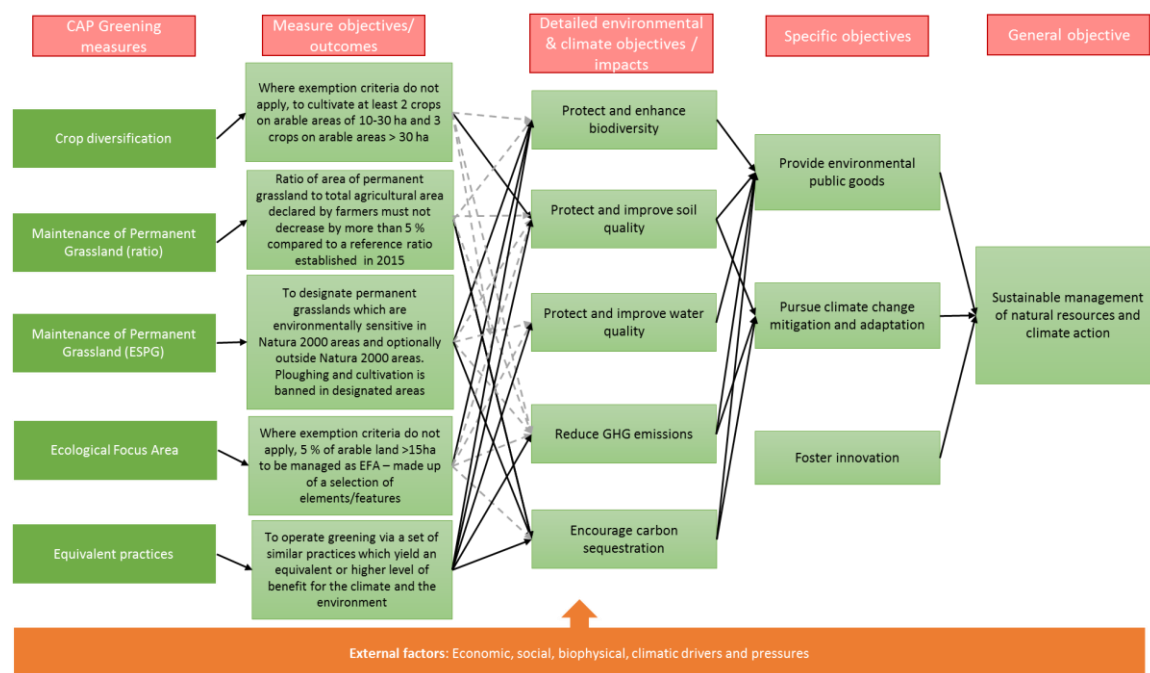
- (2) the exemptions in place relating to size of holding, geographical conditions and composition of crop types on the holding (e.g. permanent grass, arable crops under water); and
- (3) the detailed rules pertaining to the implementation of each measure — these are set out in the Direct Payments Regulation, supplemented by more detailed rules in Delegated Regulation (EU) 639/2014.

A series of potential variants for the operation of the green measures is available to Member States, including:

- (1) the ability to choose which EFA management practices/features are available to farmers in the Member State to meet the EFA requirement, as well as the associated rules, weighting factors and coefficients;
- (2) the choice whether to implement the EFA measure regionally, and/or collectively by groups of farmers;
- (3) the option of designating areas of environmentally sensitive permanent grassland (ESPG) outside Natura 2000 areas;
- (4) the potential to apply ‘equivalent practices’ using the list set out in Annex IX of Regulation (EU) 1307/2013.

Based on the objectives for the greening measures set out in the Direct Payments Regulation and associated delegated act, the intervention logic for these measures is presented in Figure 3. It maps how the greening measures contribute to achieving environmental and climate objectives of biodiversity, soil quality and erosion, water and climate, through supporting farmers to carry out particular management practices. Arrows in solid lines indicate direct intended effects of the measure, an arrow in bold represents the main environmental objective of each greening measure, and a dotted arrow indicates secondary objectives of the measure.

Figure 3: Intervention logic for the greening measures with respect to the sustainable management of natural resources and climate action — without reference to other CAP instruments and measures



Source: Alliance Environnement¹³

Baseline and points of comparison

The identification of the counterfactual situation was important to allow an analysis of the difference (and its extent) between the activities and outcomes achieved as a result of the greening measures and those that would have taken place without them being in place.

With respect to the greening measures, since greening is designed to apply to all farms eligible for CAP payments, only those farms within the EU which do not claim CAP funding or are exempt from greening are available as an immediate counterfactual. However, since farms are exempt from greening because they differ in their characteristics to those which are not, this is not a suitable counterfactual against which to assess the effects of the measures.

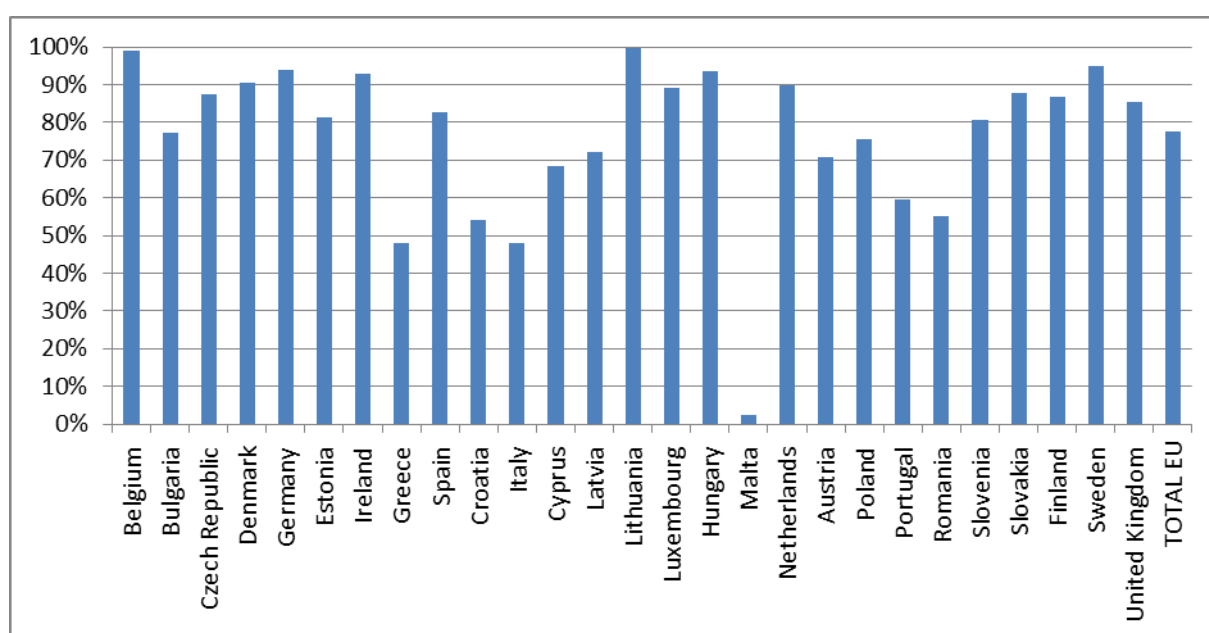
13 Final report, p. 20: https://ec.europa.eu/agriculture/evaluation/market-and-income-reports/greening-of-direct-payments_en.

The approach ultimately taken was to determine the counterfactual as the situation in 2014, given that the greening measures are a wholly new instrument, implemented for the first time in 2015. However, in practice this is not completely straightforward as not all the greening measures are new. Annex 3 contains more information on how the counterfactual was constructed.

3. IMPLEMENTATION / STATE OF PLAY

Based on Member State declarations for 2015, the figures (excluding data from France) show that on average, 73 % of the agricultural area of the EU is subject to at least one greening obligation. This has increased to 77 % for 2016.

Figure 4: Percentage of total agricultural area subject at least to one greening obligation in 2016 (France missing)



Source: Member State notifications, December 2016

In 2016, 84 % of arable land was subject to the arable measures (crop diversification and EFA) and 70 % of the permanent grassland area was subject to the grassland measure. Some countries have a large area that is exempt from the greening measures (i.e. more than 40 % of the total agriculture area). These are: Greece, Croatia, Italy, Malta, Portugal and Romania. In Greece, Italy and Malta, the area exempt is greater than the area subject to the greening measures. The reason for the low coverage in these countries is mainly that a large area is covered by the Small Farmers Scheme, or under permanent crops, or registered as organic, or is arable in farms that have fewer than 10 ha of arable land on their holdings or that benefit entirely from the greening exemptions.

Across the EU, land used for permanent crops receives the greening payment but is not subject to the greening measures. This represents 6 % of the total agricultural area. Only six Member States have a percentage of agricultural land used for permanent crops

higher than this average (Cyprus 25 %, Greece and Portugal 19 %, Italy and Spain 17 %, and Malta 12 %).

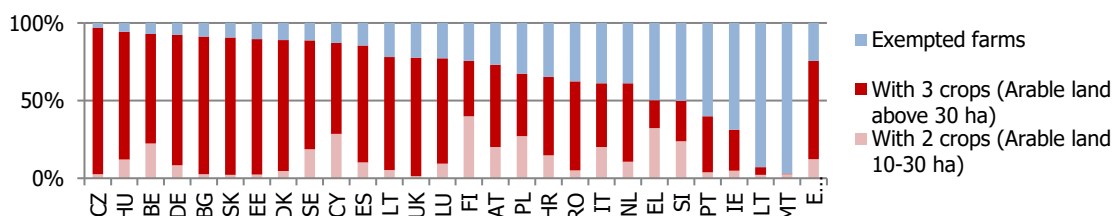
Farms which have opted for the Small Farmers Scheme, in the 15 Member States that implemented the scheme in 2016, account for 5.71 % of total agricultural area in those countries or 3.44 % of total agricultural land in all Member States apart from France.

The next sections present the implementation of the greening measures in more detail.

3.1 Crop diversification

Arable land under the crop diversification obligation stood at 72 % total EU arable land in 2015, ranging from less than 10 % in Lithuania and Malta to more than 90 % in Belgium, Bulgaria, Czech Republic, Germany, Hungary and Slovakia. This figure increased to 75.6 % in 2016, covering 64.7 million hectares. The lower percentages are in Member States with a greater proportion of arable land exempt from the greening measures.

Figure 5: Share of arable land subject to the crop diversification measure



Source: Member State monitoring data for 2016 (*No data for France)

3.2 Ecological Focus Areas (EFA)

The choice of EFA elements varies between Member States. For 2017 the choices can be summarised as follows:

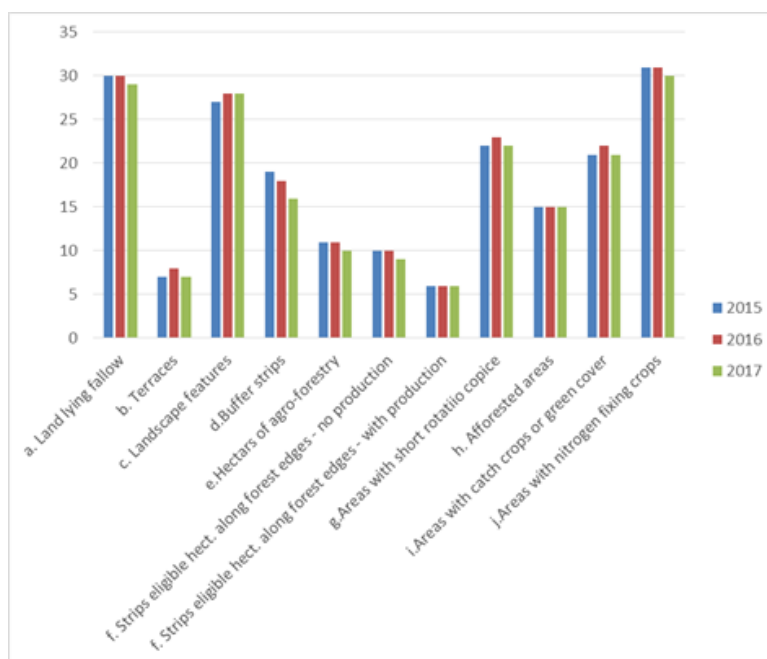
- Finland, Malta, Slovenia and Spain proposed a small number of EFA elements (2 to 4);
- 12 Member States, including all 4 UK regions, chose between 5 and 9 elements (BG, CY, DK, EE, EL, LV, LT, NL, AT, PT, SE and UK), and
- The remaining 12 Member States opted for 10 or more EFA elements.

The numbers of Member States offering each EFA element for the implementation years 2015-2017 are summarised in Figure 6. The most widely chosen EFA element is N-fixing crops (all Member States except DK), followed by fallow land (all except NL and RO), landscape features (all except MT, ES, SI), short rotation coppice (SRC) and catch/cover crops.

The most widely chosen landscape feature was trees in a group (18), followed by trees in a line and field margins (both 17).

Only the Netherlands and Poland permit collective implementation of EFA obligations and no Member State used the option of regional implementation of EFA. Four of the 5 Member States which met the criteria to apply the forest exemption for EFA did so (EE, FI, LV, SE). Slovenia is the country that did not do so, because few farmers would benefit from the exemption.

Figure 6: EFA elements notified for the 2015-2017 implementation years (n=32 as UK and BE implement greening at the regional level)



Source: Member State notifications in 2014, 2015 and 2016

EFA declared by farmers in 2015 and 2016

In 2015 and 2016, the EFA measure requirements applied to 68 % of arable land in the EU (excluding France) or 59.7 million hectares. Although the requirements are that 5 % of this arable land must be under one or more of the EFA elements, in practice in 2016 8.5 million hectares (14 %) was covered by EFA elements (before weighting factors) and 5.6 million hectares (9 %) once weighting factors were applied, very similar to the situation in 2015.

Of the area exempted from EFA requirements, 69 % was as a result of farms having an arable area under 15 ha (10.86 million ha), 16 % was a result of the forest exemption (2.5 million ha in Estonia, Latvia, Finland and Sweden) and 15 % (2.3 million ha) was due to other EFA exemptions (e.g. farms with more than 75 % grass, organic farms and those under the SFS). These ‘other’ exemptions played a significant role (more than half of all exemptions) in Ireland, Luxembourg, Portugal and the UK.

In 2015, more than 73 % of the total EFA area declared by farmers (before weighting factors are applied) was linked to agricultural production, in the form of N-fixing crops (45.4 %) and catch crops (27.7 %). This stayed fairly stable in 2016, albeit with a

reduction in the area of N-fixing crops and an increase in catch/cover crops. Land lying fallow increased very slightly between 2015 and 2016. Landscape features (including, but not necessarily limited to, those already protected under GAEC) accounted for 4.3 % of the area in 2015, falling to 1.4 % in 2016.

Greater variation in the choice of different EFA elements by farmers between 2015 and 2016 can be seen at Member State level. Changes have taken place in many Member States:

- increases in catch/cover crops and/or N-fixing crops at the expense of fallow land — BG, EE, HR, LV, LT, HU, SI;
- in Italy, a significant increase in the proportion of landscape features and buffer strips as EFA in 2016, at the expense of N-fixing crops and fallow land recorded in 2015;
- in Malta, no landscape features in the 2016 EFA area, with N-fixing crops and fallow land appearing in their place.

3.3 *Permanent grassland*

3.3.1 *Permanent grassland ratio*

Member States are free to set the scale at which the ratio is applied (national, regional or sub-regional). Almost all Member States decided to manage the ratio at national level; just 4 (BE, DE, FR and the UK) opted for regional level. To safeguard permanent grassland, Member States must monitor changes in the ratio and can choose to do this by requiring individual farmers to apply for prior authorisation if they wish to convert permanent grassland. In 2015, only 3 Member States (DE, LU and PT) implemented a prior authorisation system.

Each year, Member States must report on the change in the ratio of hectares of permanent grassland to the total agricultural area. The ratio should not decline by more than 5 %. Member States may ask to adapt their reference ratio under certain circumstances, where they see trends in the ratio changing significantly. A total of 13 Member States (DK, EE, DE, GR, IE, ES, FR, LV, NL, AT, PL, PT, SV) have made such a request, but these are still in the process of being assessed by the European Commission (as at 31 July 2018).

Figures for 2015 show declines of more than 1 % in 16 Member States, with Cyprus and the Haut-de-France region of France showing declines of more than the permitted 5 %. In 2016, the situation was somewhat different, with declines of more than 1 % seen in 13 Member States (not always the same Member States), and with another 3 countries showing declines of more than the permitted 5 % (ES, GR RO, in addition to CY and Haut-de-France).

3.3.2 *Permanent grassland designated and declared as environmentally sensitive permanent grassland (ESPG)*

Farmers subject to direct payment greening obligations declare their environmentally sensitive permanent grassland when applying for direct payments. However, in most Member States there are ESPG areas exempt from greening obligations (for example, under the SFS) or located on farms not within the CAP direct payments system.

In the EU as a whole, 6.99 million ha (48 %) of permanent grassland in Natura 2000 areas was designated ESPG (total permanent grassland in Natura 2000 is estimated at 14.7 million ha) in 2015, of which 53 % was declared by farmers, in submitting their direct payment applications (3.69 million ha). This rose to 7.71 million ha (51 %) in 2016 (total permanent grassland in Natura 2000 had increased to an estimated 15.01 million ha), of which 61 % was declared by farmers (4.74 million ha), an increase of over 1 million hectares. The difference between the figures in 2015 and 2016 is largely due to refinements to correct inconsistencies identified in the data provided by Member States, many of which are still ongoing. The area declared by farmers fell in 7 Member States (BG, DK, HR, LU, HU, NL and SI), but not by a large amount, except in Bulgaria, where the fall was 83 % (over 100 000 ha). The Bulgarian figures are currently under investigation.

The approach taken to the designation of EPSG differs between Member States, with some designating all permanent grasslands within Natura 2000 as ESPG and others designating only a proportion. The lowest proportions of permanent grassland designated in 2016 were in Portugal (1 %) Estonia (2 %) and Ireland (4 %).

Figure 7: Proportion of permanent grassland designated as ESPG in Natura 2000 areas (2015-2016)

% permanent grassland in Natura 2000 areas designated as ESPG	2015	2016
100 %	7 MSs: BG, CZ, EL, IT, NL, FI, SE	8 MSs: BG, CZ, EL, HU, IT, NL, FI, SK
75-99 %	4 MSs: HR, HU, RO, SK	3 MSs: HR, LT, SE,
50-74 %	4 MSs: CY, DE, FR, UK	5 MSs: CY, DE, FR, RO, UK
25-49 %	4 MSs: ES, LT, PL, SI	3 MSs: ES, PL, SI
0-24 %	8 MSs: AT, BE, DK, EE, IE, LU, LV, PT	8 MSs: AT, BE, DK, EE, IE, LU, LV, PT

NB: Malta reports no permanent grassland.

Source: data from Member State notifications

For 2015 only 4 Member States/regions (CZ, LV, LT, and UK-Wales) designated ESPG outside Natura 2000 areas, with the addition of Belgium (Flanders) for the 2016 implementation year.

3.4 *Equivalent practices*

Five Member States notified the European Commission of their intention to allow their farmers to opt for equivalent practices in 2014 (for implementation in 2015), a further 3 in 2015 (for 2016 implementation) and in 2016 all Member States confirmed the continuation of these equivalent practices for implementation in 2017 apart from Portugal, which proposed a small revision. These are summarised by greening measure in the boxes below.

Box 1: Overview of equivalent schemes offered from 2015-2017

Schemes equivalent to crop diversification

- **Ireland** decided to provide for equivalence under an agri-environment-climate measure (AECM): sowing catch crops. These are to be planted in accordance with the requirements of an agri-environment-climate scheme (green, low-carbon, agri-environment scheme — GLAS), under which all arable land on the holding is planted with catch crops. This was approved in 2014 for implementation from 2015 onwards.
- **Poland** also proposed more demanding crop diversification under an AECM: a minimum four-crop requirement, a 65 % maximum for the main crop and all cereals, and a 10 % minimum for all crops. This was approved in 2014 for implementation from 2015 onwards.
- **Austria** also opted for an AECM, in the form of more demanding crop diversification, as compared with standard practice. This consisted of a minimum three-crop requirement, a maximum of 75 % for cereals and maize, a maximum of 66 % for the main crop and excluding EFA ecological set-aside as a crop for the purposes of this requirement. This was approved in 2014 for implementation from 2015 onwards, but was withdrawn in 2015, so has not operated from 2016 onwards.
- **France** proposed a certification scheme for single-crop maize farming to replace the crop diversification requirement with a winter soil cover for these farming systems. This equivalent practice is aimed at establishing green cover from a sown crop on all arable land of the holdings in question. It was approved in 2014 for implementation from 2015 and revised in 2015 for implementation from 2016 onwards.
- **Portugal** has introduced a certification scheme for tomato and maize growers by replacing the crop diversification requirement with winter soil cover, as in France. This was approved in 2015 for implementation from 2016 and was revised in 2016 for implementation from 2017 onwards.

Schemes equivalent to the management of permanent grassland

- So far only the **Netherlands and UK (Scotland)** have proposed an equivalence scheme for the management of permanent grassland. Only Scotland went ahead, with a scheme which requires additional measures in the form of a plan for the management of fertiliser and lime, implemented from 2016 onwards.

Schemes equivalent to EFA

- **Austria** provides equivalence of EFA under an AECM for ecological set-aside, whereby at least 5 % of the beneficiary's arable land is dedicated to area beneficial for biodiversity, e.g. with specific mixtures of seeds, a minimum period of flower cover and a ban on using fertiliser and plant protection products. This was approved in 2014 for implementation from 2015 onwards.
- **The Netherlands** introduced three certification schemes that are considered equivalent to the EFA measure: the Akkerbouw-strokenpakket, incl. Vogelakker, the Skylark Foundation scheme and the Vezelhennep (hemp) scheme. All but the hemp

scheme were approved in 2014 for implementation from 2015 and revised for 2016 onwards. The hemp scheme was approved in 2015 for implementation from 2016 onwards.

- **Italy — Marche region** — included the management of uncultivated buffer strips and field margins as an equivalent practice via the AECM. This was approved in 2015 for implementation from 2016 onwards.

Source: Data from Member State notifications and case studies

Data available for four countries using equivalent measures shows that for 2016 only 16 740 farmers took advantage of this option (up from 14 637 in 2015). The majority (12 290 — up from 11 831 in 2015) were in Austria where equivalent practices were offered under their agri-environment-climate measure. A further 4 085 farmers opted for equivalent practices as an alternative to crop diversification in Poland (up from 2 486 in 2015), although this accounted for only 2.36 % of the arable area (up from less than 1 % in 2015).

Figure 8: The number of farmers and area of arable land where equivalent practices were used in 2016, in absolute terms and as a percentage of all farms under at least one greening obligation.

Member State	No of farmers	of Arable land (ha)	% farmers	% arable land
Ireland	43	1 391	0.03	0.31
France	No data	No data	No data	No data
Netherlands	322	29 076	0.8	3.11
Austria	12 290	620 998	17.3	55.85
Poland	4 085	209 843	0.78	2.36
Total	16 740	861 308	2.19	7.56

Source: Member State 2016 reporting data, DG AGRI

Overall, the conclusion is that **the majority of utilised agricultural area** (UAA, see Figure 4 above) **is covered by at least one greening measure**. Some 5.6 % of UAA is farmed organically and so treated as ‘green by definition’. The whole area on which permanent crops are grown and the area under the Small Farmers Scheme (in countries where it is applied) is not subject to the greening obligations, although it still receives the payment. These average figures also mask **significant differences between Member States** and all exclude France, for which no data were available.

4. METHOD

Short description of methodology, data, analytical tools, counterfactual, limitations

The evaluation was supported by an external evaluation study covering the period from 1 January 2015, when the greening measures were introduced in the Member States, until

2017¹⁴. The period from the 2003 CAP reform onwards was taken into account where necessary to provide a point of reference for the analysis.

Apart from the work of the external contractor, other sources fed into the evaluation:

- Public consultation - results: From 15 December 2015 to 8 March 2016, the European Commission carried out an open public consultation on ‘Experience with the first year of application of the greening obligations under the direct payment scheme (CAP)’¹⁵. This received 3 304 replies. These responses have been used as a data source, particularly in relation to information about the drivers for implementation choices, as well as on the perceived administrative burden of the greening measures.
- A review carried out in 2016 by the Directorate-General for Agriculture and Rural Development of the European Commission which covered the year 2015, fed into the results of this evaluation¹⁶.
- The results of the 2017 Court of Auditors Special Report (No 21) entitled ‘Greening: a more complex income support scheme, not yet environmentally effective’¹⁷. The audit covered the design of greening and its first two years of implementation (claim years 2015 and 2016). The main objective was to assess whether greening was capable of enhancing the CAP’s environmental and climate performance.

The starting point for devising an evaluation framework was the intervention logic for the greening measures (see section 2) and a theoretical assessment of the potential environmental, climate and production effects of the greening measures.

Since the implementation period for the greening measures was too short to directly observe the impact of the measures on the environment, the contractor studied the changes that occurred in farming practices and, from this, tried to calculate the impact using impact parameters found in the literature, where these existed.

The methodological approach combines theoretical and empirical approaches and includes a variety of methods, both quantitative and qualitative, to address the different types of analysis required to answer the ESQs. Where judgements rely on professional judgement, this is carried out by checking for consistency among multiple sources, and comparing the validity and reliability of evidence based on the criteria such as those set out in Box 2.

14 https://ec.europa.eu/agriculture/evaluation/market-and-income-reports/greening-of-direct-payments_en.

15 https://ec.europa.eu/agriculture/consultations/greening/2015_en.

16 Review of greening after one year (SWD(2016) 218 final)
https://ec.europa.eu/agriculture/direct-support/greening_en.

17 <https://www.eca.europa.eu/en/Pages/DocItem.aspx?did=44179>.

Box 2: Criteria considered in comparing the validity and reliability of evidence

- Internal validity of the evidence, i.e. how precise and reliable it is. For example, little weight will be given to written opinions (but more if they are from informed persons with expertise or experience of the issues in question) compared to carefully designed peer-reviewed studies using appropriate metrics, measurement techniques and controls that are likely to provide a precise and unbiased estimate.
- **Representativeness:** how likely is it that the evidence is representative of the entire area being considered? If the evidence is based on samples, care will be taken to look for any possible bias.
- **Sample size:** is the evidence based on a single or small numbers of data points or a larger sample size (i.e. in relation to the variation in the factor being estimated)? How much confidence can be attached to the findings as a result? Particular care will be taken with the interpretation of case examples to ensure they do not reflect unusual situations and thus provide a biased perspective, especially if they are provided by the same or a few consultees.
- **Temporal relevance:** Is the evidence up to date? Have changes in circumstances occurred that might now invalidate its results (e.g. changes in the way a crop is now managed or its relative abundance in the landscape)?
- **Geographical relevance:** is it relevant to the area being considered? For example, studies from outside the EU will not generally be taken into account if reliable information on the same subject is available from within the EU, unless it is justified by other data quality criteria listed here.
- **Independence:** is the evidence from a source that is unaffected by its implications?

Data sources and issues arising

The availability of data on implementation was inevitably rather limited, given that the policy has only been in place since 2015 and time was needed for the administrations to get familiar with the new rules. The methodological approach designed for each ESQ had to take these limitations into account.

Answers to the ESQs are based on the analysis of data derived from:

- notifications submitted to the European Commission by Member States on how they applied the greening measures and data on farmers' uptake in 2015 and 2016;
- crop statistics from Eurostat, data from the Farm Accountancy Data Network (FADN) and a sample of Integrated Administration and Control System (IACS) data, where it could be sourced;
- literature reviews on the effects of farming practices associated with the CAP greening measures on biodiversity, water, soils, climate mitigation and adaptation, and ammonia emissions;

- a survey of national authorities and interviews with farmers providing information on the additional public and private costs associated with greening; 10 case studies carried out in Austria, Czech Republic, France, Germany, Latvia, the Netherlands, Poland, Romania, Spain and the United Kingdom, involving statistical data collection;
- documentary research and interviews at national and regional level with key stakeholders including farmers, farm advisers and government officials.

The data collected were analysed using a variety of tools and assessed against the counterfactual situation without the greening measures in place, which is taken to be the situation in 2014.

Both quantitative and qualitative analytical tools were used for the evaluation study (Figure 9).

Figure 9: Analytical tools used for the evaluation study

Analytical tool	Type of tool	Purpose for which tool has been used	Relevant ESQ
Descriptive statistics	Quantitative	To describe different aspects of the statistical distribution of relevant variables, including frequencies, percentages, mean values etc. enabling basic comparisons between data. Where spatial data are available, these can be presented in maps.	ESQs 2-13, ESQ16
Stakeholder analysis	Qualitative	To analyse stakeholders' (including farmers') attitudes and responses to the greening measures.	ESQ1 ESQs2-6 ESQs7-11
Cost-effectiveness analysis	Quantitative and qualitative	Used to assess the efficiency of policy measures by comparing the costs associated with one policy with those of others with similar objectives.	ESQ13
Coherence and relevance matrices and scoring	Qualitative	Used to describe the coherence between policy measures and their objectives as set out in the intervention logic as well as the relevance of policy measures with identified objectives, priorities and needs. The scoring involves qualitative judgements of the interactions to be carried out and requires triangulation with other data sources to ensure the analysis is robust.	ESQs 14, 15, 16
Legislative analysis	Qualitative	To ensure that all analysis is accurate and robust and to inform the assessments of coherence, relevance and EU added value.	All, esp. ESQs14-17

Source: Alliance Environnement

Establishing the counterfactual

The counterfactual situation is generally understood as the situation that would prevail without the policy intervention under consideration. Here, the counterfactual would allow to analyse the difference (and quantify the difference) between the activities and outcomes achieved as a result of the greening measures and those in their absence.

The approach taken was to determine the counterfactual as the situation in 2014 (last year before first implementation of greening). However, in practice this is not a completely straightforward counterfactual since not all the greening measures are new:

- some elements were previously included under cross-compliance GAEC standards;
- some elements may previously have been supported under the AECM;
- some new elements.

Using 2014 as the counterfactual entails that there is no clear baseline available for the full suite of farming practices taking place at farm level prior to the introduction of the greening measures, and that information on the state of the environment is also variable.

The static counterfactual comprises information on:

- the state of farming in the EU-28 and specific Member States in 2014, covering production statistics for the most important crop and livestock products and farm size and type;
- information on farm management practices, insofar as this was available;
- the state of the environment at EU-28 level and in Member States;
- a list of the relevant EU legislation (and national legislation in the case study countries) and the requirements they placed on farmers in 2017;
- information on the contents of the cross-compliance GAEC standards and the AECM measure in the EU-28 in 2014 and in 2017.

In addition to this ‘static’ counterfactual situation, a ‘dynamic’ counterfactual scenario was set out, primarily to determine what the likely future market dynamics might be to 2020 for the different production types affected by the greening measures and the likely changes in farming and practices and the state of the environment that might have occurred anyway over the time period to 2020 without the greening measures in place. It was set out at the EU-28 level, with details of likely differences between Member States identified where feasible, and identifies in broad terms:

- the likely trends to 2020 in a range of macroeconomic factors exogenous to the CAP, including world market prices for beef, dairy, pigmeat, poultry meat and lamb, plus livestock feed and the 10 arable crops most commonly grown in the EU in 2014; agricultural labour prices; land prices; fuel prices;
- any anticipated major changes (>5 % impact) in the aggregate production of livestock or arable crops expected as a result of wider economic or technological developments, climatic changes or other factors;
- likely significant changes in land use and land cover, without greening in place;

- any anticipated changes in the state of the farmed environment, given these trends, if existing environmental policies were to remain in place, but the CAP greening measures were not operating.

Using a single year (2014) for the static counterfactual was not always feasible given that various data sources are not updated at the same frequency. For the state of farming counterfactual, the year chosen is 2014 (most recent year for which production statistics are available prior to the implementation of greening). The years of latest information available on farm management practices varied, e.g. for catch crops 2010.

As regards the state of the environment, 2014 data are only available for farmland birds, water quality (nutrient balance) and greenhouse gas (GHG) emission data. For most other indicators the most recent figures are for 2012. In the case of environmental and climate indicators, this does not affect the analysis. Because there are no data for these indicators from 2015, these data only serve as baseline information on which to assess the likely environmental and climate impact of the greening measures based on the effects they have had on farm management practices.

In relation to the policy information — the environmental legislation in place and the implementation of cross-compliance and the agri-environment-climate measure — the counterfactual situation is taken as the current state of implementation, as this is the most relevant data against which to assess the ‘policy off’ situation.

The key issue arising in relation to the data for the static counterfactual is that they are not spatially explicit. This means that it is not possible to ascertain the situation in 2014 on the specific areas of land that are now subject to greening at a regional or more local scale. However, it is possible to give a more general picture of the situation in 2014 and compare it with the data for 2015 onwards where available.

In terms of the CAP budget, the dynamic counterfactual assumes that the total budget for the CAP 2014-2020 is maintained, but without earmarking 30 % of direct payments for the greening measures.

Limitations and robustness of findings

Methodological challenges entailed limitations in the analysis and had an impact on the robustness of the conclusions that can be drawn:

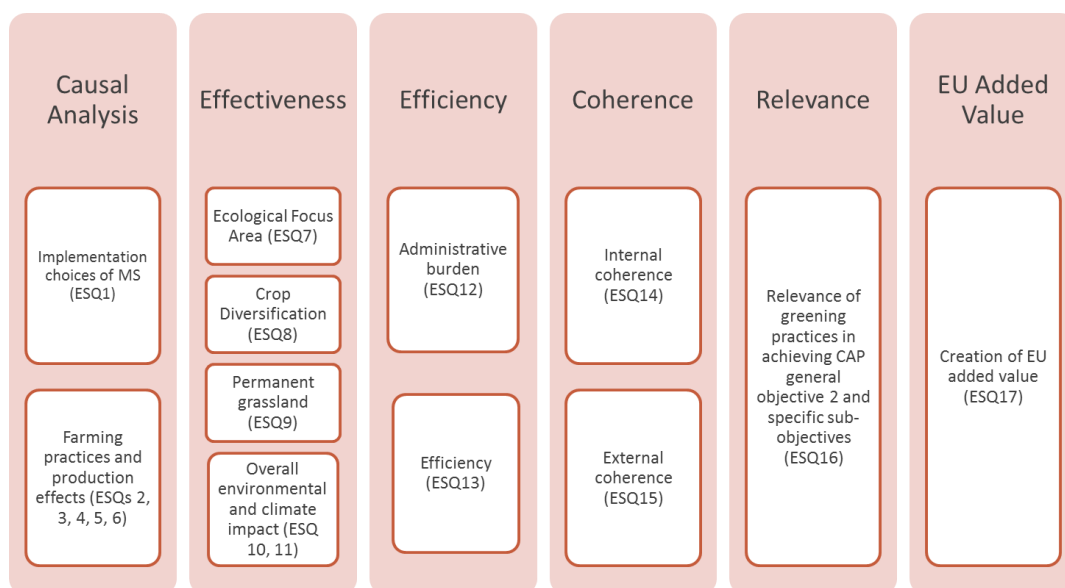
- A number of other instruments — both CAP and non-CAP instruments at EU level, and in national legislation — target similar outcomes. This makes it difficult to single out the impact of greening itself and, within that, the separate elements of crop diversification, permanent grassland and EFAs as required by the study.
- Complex cause-effect relationships associated with specific farm and forest practices, and their different environmental and climate impacts in different locations and at different scales, make it difficult to measure the net impact of a given measure.

- CAP greening is a new measure, first implemented from the start of 2015, with the result that only a very short data series is yet available to compare with what was achieved before. Due to this short timescale for monitoring change, it is difficult to disentangle the short-term issues arising from the introduction of a new policy mechanism from longer-term effects.
- Limited availability of robust baseline data for all greening elements (e.g. no data on catch/cover crops) and the challenge of establishing a robust detailed counterfactual, given the difficulty of ascertaining the situation in 2014 (prior to greening) on the areas of land that are now subject to greening at regional or more local scale.
- There were difficulties in accessing data to perform detailed analysis at parcel level.
- Limited data was available on certain aspects of implementation of the greening measures that are important to enable an assessment of their environmental and climate effects, in particular the species of crops grown under the EFA N-fixing crops and cover/catch crops elements, and information on the location of the EFA elements within the parcel and the farm.
- Literature on the expected environmental impacts of greening in some parts of the EU was relatively scarce — a more detailed evidence base is available on the effects of different farm management practices on biodiversity than on the other environmental and climate issues under investigation. However, even here the available evidence is mainly from well-studied taxa (e.g. butterflies, bees, some plants and especially birds) and mainly from well-studied countries, especially north-west Europe (UK, France, Netherlands, Germany), and some from Spain and Scandinavia. Far fewer data are available from central, eastern and other Mediterranean countries.
- There were issues with scaling up results from case studies to form generalised judgements at EU level.

5. ANALYSIS AND ANSWERS TO THE EVALUATION QUESTIONS

The evaluation of the implementation of the three greening measures (ecological focus areas, crop diversification and permanent grassland) and equivalent practices included 17 evaluation study questions (ESQ). The evaluator started by putting the agricultural production patterns in context, including the broader context of measures with similar objectives. The remaining 11 evaluation study questions covered the five evaluation criteria (effectiveness, efficiency, coherence, relevance and EU added value) as shown in the table below.

Figure 10: Evaluation study questions



Source: Alliance Environnement

5.1. CONTEXTUALISING GREENING CHOICES AND PRACTICES

ESQ1: What are the drivers behind implementation choices regarding the greening practices and to which extent a) at the level of the Member States administrations; b) at the level of the beneficiaries?

This question analyses Member States’ decisions on how to implement the measures where they had the scope to do so, and farmers’ decisions to implement the measures on the ground. It seeks to understand the extent to which their reasons were related to environmental and climate priorities or to other factors such as administrative issues, production effects, the scale of the change in management practices required from farmers, etc.

According to the rules under which direct payments are administered and controlled, Member States are required to map (identify) all the features they offer to farmers as qualifying for an ecological focus area (EFA). Since the implications of inaccurate mapping include reduced payments for farmers, and/or the possibility that CAP expenditure will be disallowed to Member States, there was scope for administrative issues to play a part in the types of EFA that were delivered.

The evaluation study report found that for Member States, administrative issues do appear to have been a key factor in the greening options offered. Member States sought to ensure that the measures were straightforward to implement, reducing the administrative burden and preventing mapping errors and the risk of reductions in payments. Considerations of the effects on farmers’ income were also a significant driver in some Member States (CY, NL in particular). Avoiding constraints on production, ensuring ongoing farm viability and halting land abandonment were other concerns explaining decisions (ES, LV). Environmental priorities were not a major factor,

although they did feature to a small extent in some of the case study countries (AT, CZ, DE, NL, UK-Scotland). Equivalent practices were not extensively used, mainly because the requirements and approval process were considered too complex. In particular, there were difficulties in reconciling AECM and greening rules. As a result, some notification processes were initiated and then abandoned. The desire to limit additional bureaucracy was also mentioned as a justification for opting not to implement the EFA regionally or collectively. The administrative cost of controls and the risk of having expenditure disallowed explains the scant use of management practices concerning fertilisers and pesticides.

The Court of Auditors special report 21/2017¹⁸ identifies administrative burdens as the main driver behind the decisions of the Member States. It considers that Member States gave priority to EFA types which were already a common feature of their normal farming practice and so used the flexibility in greening rules to limit the burden on farmers and themselves rather than to maximise the expected environmental and climate benefit.

The evaluation study report concluded, based on the case studies, that for the farmers, the key factors driving decisions on how to implement the greening measures were: minimising the risk of non-compliance and penalties while avoiding administrative complexity and burden; the degree of fit with existing farm practices, other CAP instruments (e.g. coupled support) and the requirements of cross-compliance and other legislation, such as the Nitrates Directive, to minimise any changes in practices or additional costs. Farmers' choices may also have been affected by the extent to which information, training and support was available. Even though information and support services to farmers were in most cases judged satisfactory, a lack of coverage of environmental matters was reported in almost all Member States, with the focus of the advice available mainly covering administrative issues. From the responses to the public consultation conducted by the European Commission on the first year of greening¹⁹, most farmers regarded greening as either difficult or very difficult to implement (for economic, administrative or technical reasons). While farmers' views on the difficulty of the different EFA options are likely to have influenced their choices to some extent, it is worth noting that fallow land (most difficult) and catch crops (third most difficult) between them still accounted for 55 % of the total EFA area (before weighting factors) in the EU in 2016. However, the evaluation study report considers that after a few more years of implementation, the significance of administrative and compliance drivers in the decisions of Member States and farmers may have decreased.

18 Points 50-53.

19 Commission staff working document 'Review of greening after one year' — Annex 5 '**Synopsis report on stakeholder consultation**' https://ec.europa.eu/agriculture/direct-support/greening_en.

ESQ2: To what extent has the crop diversification measure resulted in more diversified cropping patterns and rotations?

Cropping patterns are the spatial allocation of different crops across farmland. Crop rotation is the multi-annual cropping sequence on the same field (generally over 3-5 years). Farmers do not have to comply with any rules on crop rotation under the greening measure, beyond adhering to the definition of different crop types and no specific indicator exists to collect data at EU level on the evolution of crop rotation. Therefore, the reply to this evaluation question relied on expert and stakeholders' opinions in the case study countries.

Areas where mono-cropping is most prevalent are the ones where the measure might lead to the greatest diversification of cropping patterns. According to available data, the area under mono-cropping in the EU was mainly planted with wheat, maize, barley, oats and to a lesser extent rye, potatoes and sunflowers. This area is mostly located in Italy, Romania, Poland, Spain and Greece. However, most of it is exempt from the crop diversification measure, due to the size of the farms (less than 10 ha of arable land) and to the farms' percentage of permanent grassland (more than 75 %).

In 2014, in the 10 case study Member States, 19 % of the arable area would have been considered exempt from the obligation and at least a further 70 % of the area was already meeting the requirements of the measure. For these countries, changes in cropping patterns were seen on 514 950 ha, representing 0.8 % of the arable area (likely to be an underestimate), although locally the impact has been more significant. The measure may also have slowed the general trend towards mono-cropping. Farmers who diversified their cropping patterns mainly decreased the area of common wheat, barley and maize and introduced leguminous plants, peas, field beans, sweet lupines, rape and turnip rape, fallow land and sunflowers. The greatest changes took place in Spain (on 2.8 % of the arable area), with a shift from barley and wheat to leguminous crops. The choice of replacement crops is also likely to have been influenced by the availability of Voluntary Coupled Support (VCS) and the option of using N-fixing crops to contribute to the EFA obligation. Although based solely on interviews, there is some evidence to suggest that increases in crop diversity are linked with increases in rotation length (number of successive plants: for instance, a typical rotation of three crops is replaced by a rotation of five crops). Where farmers did not increase their rotation length, one positive effect of the crop diversification measure mentioned in interviews is that farmers are encouraged to experiment with new crops and that diversification can be a first step towards rotation. Considering all farmers with arable land, FADN data show that in most Member States the average number of different crops on farms with arable land was falling in most case study Member States before greening measures were introduced, and that this decline stopped after 2015. This result tends to show that a possible effect of the measure was to

stop the general trend towards simpler cropping patterns. However, this result would need to be confirmed after a few more years of implementation.

The Court of Auditors special report 21/2017²⁰ states that, for crop diversification, greening did not require any change in farming practices on most holdings in the Court of Auditors' sample, either because the holdings concerned already met the greening requirements in 2014 or because they were exempt. The Court also stresses that in its opinion crop diversification is less beneficial for soil than crop rotation, and that crop diversification as a greening practice replaced an optional GAEC on crop rotation in force until 2014. According to the Court, while crop rotation limits the depletion of soil nutrients and the spread of pathogens, crop diversification (despite the requirement for at least two crops on a farm in any given year) does not guarantee a similar change in crops on land over time.

ESQ3: To what extent has the permanent grassland measure (including both environmentally sensitive permanent grassland (ESPG) and the ratio of permanent grassland) resulted in maintenance of or reconversion into permanent grassland or triggered its conversion into arable land? In answering this question evaluators should also examine the impact of the broadening of the definition of permanent grassland and permanent pasture²¹.

The area of permanent grassland, like agricultural land overall, has been declining in recent decades. The main reasons for this trend are: (1) the increase in built-up and other artificial areas, which also affects other agricultural land; (2) abandonment of land; and (3) the intensification and mechanisation of agriculture, which is leading to the replacement of permanent grassland by more productive forage resources such as maize silage, annual crops or temporary grassland in favourable areas. Market drivers may lead farmers to choose to convert permanent pastures into arable land to cultivate a more profitable crop than grass for grazing or hay/silage production. Since the permanent grassland measure aims to minimise the overall decline of permanent grassland within certain limits and protect ESPG from ploughing, in Natura 2000 sites and in the wider countryside, it may constrain land-use changes that would otherwise be driven by the market.

The evaluation examined the extent to which the two elements of the permanent grassland measure (the ratio and ESPG), have affected farmers' decisions on their permanent grassland and what the consequences of this have been on the net area of permanent grassland. The changes in the definition and eligibility of permanent grassland that were made in the 2013 CAP reform led to changes in the eligible area of permanent

20 Points 28, 40.

21 Article 4(1)(h) and (i) of Regulation (EU) No 1307/2013.

grassland, which in turn affected the calculation of the ratio. In addition, land under the Small Farmers Scheme and organic farms are not covered by the ratio requirements.

Clear pressures on permanent grassland were already evident in 2015/2016 in 12 Member States, of which 5 are over the 5 % threshold (CY, EE, FR-Haut-de-France, RO, UK-EN²²). All but 4 Member States (BE, DE, FR and UK) chose to apply the ratio rules at a national level, which masks significant levels of permanent grassland loss at the NUTS3 level in some countries. However, the pre-authorisation system put in place in 6 countries (DE, IT, LU, PT, CY, FR) does appear to be a disincentive to ploughing permanent grassland, especially in Germany. Moreover, in some countries, the transposition of EU legislation (e.g. the Nitrates, Birds and Habitats Directives) and national legislation (e.g. in CZ and RO) prevents ploughing in some areas. In the absence of data at parcel level, it was not possible to calculate the actual changes in permanent grassland taking place within Member States at the more local level.

Within Natura 2000 sites, 7.7 million ha of permanent grassland was designated as ESPG in 2016 (51 % of the total). Although 7 Member States declared all permanent grassland in Natura 2000 sites as ESPG, most others designated a lower proportion of habitat types. The area of ESPG declared by farmers, i.e. to which the rules apply, is lower than the area designated and stood at about 5 million hectares in 2016 (61 % of the ESPG area), of which 4.74 million hectares within Natura 2000 sites. The net effect of the measure within Natura sites is uncertain, given their existing protection, but it is likely that ESPG designation will lead to closer control of these areas, especially in countries where ploughing bans or pre-authorisation requirements for these habitats are not in place.

The option of designating ESPG outside the Natura 2000 network was taken up by 5 Member States in 2016 (BE-Flanders, CZ, LV, LU and UK-Wales), covering 309 775 hectares. While the added protection afforded by ESPG designation will vary between Member States depending on the existing protection and compliance control measures in place, it is expected to be greater than in Natura 2000 areas. Nevertheless, its overall net effect outside the Natura 2000 network is inevitably very low due to its limited coverage. In some Member States, ESPG areas are concentrated in specific areas where the threat is more from land abandonment than conversion to arable land. By increasing constraints on agricultural improvements, the measure might tend to increase land abandonment. Hence this may create a need for targeted incentive instruments (e.g. AECM) for such areas to compensate for the relevant opportunity costs of the ESPG measure.

The Court of Auditors²³ takes the view that while designating permanent grassland as ESPG offers a new form of parcel-level protection against conversion, this protection is

22 Although in UK-EN this is thought to be due to data issues rather than a reflection of the actual situation.

23 Special report 21/2017, point 45.

limited in scope: ESPG covers around 16 % of all permanent grassland in the EU (with significant variation between Member States).

ESQ4: To what extent has the ecological focus area (EFA) measure led to changes in use of the arable cropping area and creation of additional ecological focus area (fallow, landscape features, agroforestry, etc.)?

The evaluation sought to determine the extent to which the EFA measure has led to changes in the use of the arable cropping area, the adoption of new farming practices and/or the creation of additional landscape features or other ecological areas. Farmers declared a much higher proportion of their eligible arable area as EFA than required (9.7 % compared to the required 5 %), although percentages differ at farm level. The total physical area (before applying weighting factors) declared as EFA in 2016 was 8.5 million ha, or 14 % of EU arable land. The main types of EFA declared by farmers at EU level are linked to productive or potentially productive areas: N-fixing crops and catch crops together accounted for 73 % of the total EFA area in 2016, followed by land lying fallow (24 %). Landscape features came fourth, at 1.4 % of the total EFA area in 2016.

In terms of effects, the data suggest that the EFA measure is one of a range of factors driving an increase in the area cultivated with N-fixing crops, such as pulses, soybean and green fodder (alongside VCS, the crop diversification measure and market developments). It has also helped spread the use of catch and cover crops in some regions (FR, DE, CZ, UK-EN), although this is also influenced by requirements under the Nitrate Action Plan (e.g. in NL) and under cross-compliance. For land lying fallow, the negative trend in EU fallow area stabilised in 2015 in many of the Member States where land lying fallow was used by farmers to meet their EFA obligations, suggesting the EFA measure is one of the drivers of this change. However, factors other than CAP policy instruments must also be considered when analysing the change in fallow area. For instance, in the UK there is evidence from the case study that the relative attractiveness of leaving land fallow increased due to a combination of factors including low cereal prices and pest control. Overall, when the prices for crops are low, fallow land becomes a more attractive option, especially if it allows receiving extra payments with AECMs.

The impact of the EFA measure on the maintenance of landscape features is likely to be small, given the limited uptake and the fact that most landscape features are already subject to some degree of protection under national law, or through cross-compliance. However there is some evidence that the EFA measure encouraged some Member States to increase the range of landscape features protected under cross-compliance.

The Court of Auditors²⁴ takes the view that the predominance of productive EFAs, together with insufficient management requirements, reduces the potential benefits of greening for biodiversity.

ESQ5: To what extent have the greening practices influenced agricultural production in terms of: Quantity; Quality; Producer prices; Geographical distribution?

The effects of only the EFA and crop diversification measures were analysed, as few direct impacts were anticipated from the permanent grassland measure in the short term. Production was analysed by cultivated area rather than volume, to exclude the impact of changes in yields. The EFA measure has had a very low impact on the area available for crop production. The crop diversification measure led to a slight decrease in the area planted with cereals (mainly soft wheat, but representing less than 1 % of the EU soft wheat area).

Figure 11: Influence of greening measures on production areas

Crops	Positive impact	Negative impact	% area impacted (10 CS MS)**
Soft wheat		FR, DE, PL, RO, UK, ES*, CZ	-1.1
Barley	FR, DE, RO, CZ	ES*, UK, PL*	-0.8
Maize	RO, PL, CZ	FR, DE, ES	-0.7
Durum wheat	FR	ES	0.0
Rapeseed	FR, DE, PL, UK, RO*, CZ		0.3
Sunflower	RO*, ES, FR		0.7
Soybean	RO, FR, AT, CZ		2.0
Leguminous	RO, ES*, DE*, NL, FR	PL, CZ	16.2
Dry pulses	ES*, PL*, FR*, UK*, DE*		7.2

* Change in area > 1 % of the national area in 2014

** % change in area of newly diversified farmers on area grown in 2014

Source: Alliance Environnement

However, the two measures together do appear to have helped to halt the decline in the area of dry pulses and leguminous plants, alongside other factors including VCS. They also appear to have made a small contribution to increasing the cultivation of soybean, but this effect is more driven by the market and VCS. The crop diversification measure has also helped halt the declines in rapeseed and sunflower. Of the case study countries, changes in production were particularly significant in Spain (a decline of 6 % and 4.5 % in the area of soft wheat and barley respectively, whereas dry pulses and leguminous crops increased). The crop diversification and EFA measures together also seem to have

24 Special report 21/2017, points 46 and 79.

stimulated changes in the geographical distribution of the area of dry pulses, contributing to increases for instance in Poland. No significant effects were identified on price.

ESQ6: To what extent have the obligations and related payments under the greening in direct payments impacted on the economic viability of the farms as regards farm income and the levels of production cost and revenue in the farms affected?

The greening measures can influence production costs and revenues in different ways depending on the agricultural activities concerned. The EFA and crop diversification measures, by reducing the maximum land available for the most profitable crop, may reduce total profitability including any economies of scale in the short term. However, in the longer term, productivity could increase, for instance if the diversification measure has beneficial effects on soil quality. Over time, crop diversification could have a positive effect by making farm income less vulnerable to movements in the price of a single crop (or two crops). The diversification measure and some EFA options could also increase or reduce production costs, depending on the type of substitution between crops and changes in management practices (for instance, regarding the application of fertiliser or plant protection products for some EFA elements).

As regards economic viability, proper counterfactual analysis was only possible for the crop diversification measure. The results show that, at national level, this measure had no significant effect on the profitability of farmers who had to diversify. However, some effects were identified in specific NUTS2 regions. This is also true for production costs, reflecting the fact that the effects on profitability of introducing protein and leguminous crops vary depending on local context, which in turn affects feed costs. For instance, an increase in seed costs was mentioned by farmers in interviews and was observed in ES-Castilla y Leon based on FADN analysis: the cost of crop protection increased more for newly diversified farms than for others, suggesting an impact of the crop diversification measure caused by the increased need for crop protection of the new crops grown (e.g. protein crops). Conversely, fertiliser costs decreased as a result of the crop diversification measure in DE and PL-Zachodniopomorskie: this effect might be explained by the limited nitrogen fertiliser required by the leguminous and protein crops mainly chosen for diversification in these areas. There is no evidence that the crop diversification measure affected farmer incomes, except in the Weser-Ems region of Germany (negatively). This contrasts with the expectations of many farmers, as reported in the case studies.

Since farmers mostly chose to use productive EFA (catch crops and nitrogen-fixing crops), the effect of the EFA measure on farmers' income was limited. The main impact mentioned in interviews is an increase in the amount spent for seed (for catch crops) and machinery (to manage new crops). Even though relatively little permanent grassland has had to be reinstated by farmers under the permanent grassland measure, the ban on ploughing some grassland could potentially impact upon the economic viability of farms by limiting the development of farm production systems, particularly if this is in areas where livestock production is in decline.

Finally, little impact on economic viability was observed at EU level; the effects were mostly localised. Further impacts could be expected in the long term, but it was not possible to observe them at the time of the evaluation.

5.2. EFFECTIVENESS

ESQs 7-10 assessed the net environmental and climate effects anticipated from changes in farming practices brought about by the greening measures. As the greening measures had only been implemented for 2 years at the time of the evaluation, there were no data available on which to assess actual environmental impacts. Moreover, many environmental and climate impacts of greening would not be detectable at that stage. Effectiveness was therefore assessed based on inference, drawing on scientific evidence of the general impacts of the farming practices influenced by the greening measures, supplemented with information from the case studies. Thus, the results should not be interpreted as being evidence of actual impacts.

ESQ7: To what extent has the ecological focus area measure impacted on the environment and climate in terms of a) biodiversity; b) other environmental areas, such as soil quality and erosion, water, climate?

EFA elements have the potential to deliver benefits not just for biodiversity, their main objective, but also for water, soils and climate. Member States were given considerable flexibility to choose the pool of EFA options available to farmers, and whether and how to lay down rules for their structure and management. The nature and magnitude of EFA elements' impacts is expected to vary greatly, depending on the type of EFA element and on the way they are managed, the latter depending *inter alia* on the rules attached to them (e.g. use of pesticides and fertiliser, location, the timing of cutting dates).

The analysis shows that for the EU-28, the EFA element with the potential for the greatest net positive environmental and climate impact is land lying fallow, with net benefits also possible from landscape features (i.e. hedges, trees, ponds and ditches), field margins, buffer strips and from multiannual nitrogen-fixing forage crops. However, few benefits are expected from these EFA elements because of the lack of appropriate management requirements (e.g. to prevent pesticide use or N-leaching after the use of N-fixing crops), the low level of uptake (e.g. the non-productive options) and in some cases their protection under other policy measures as well. Nonetheless, some Member States have put in place requirements to bolster the environmental performance of EFAs, for example rules on the post-harvest management of N-fixing crops in Spain and Germany, and the EFA equivalence scheme under the agri-environment-climate measure in Austria. In addition, where the EFA measure has helped slow the decline of multiannual forage legumes, this is expected to be beneficial, e.g. in Spain, where traditionally cultivated legumes provide suitable habitats for a wide range of species, including wild bees and other pollinators, and some mammals and birds that are threatened in the EU. On the other hand, there are some examples where the EFA measure may be reinforcing the use of certain types of management that result in net negative impacts on biodiversity in

certain situations, such as the replacement of overwinter stubble with cover crop mixes over winter.

Figure 12: Effects of EFA measures on environment and climate

Effects of EFA measure	Biodiversity		Soils	Water		Climate mitigation	Climate adaptation			
EFA - N-fixing crops Overall additionality low	Where more forage crops are cultivated without pesticides (e.g. ES)	Little effect, even harmful where grain legumes cultivated with pesticides (N/W)	Some benefit to SOM particularly from fodder crops, but additionality from EFA measure is low	Positive where post harvest mgt in place and where limits N fertiliser use on subsequent crops	Pollution risks where post harvest mgt not put in place	Positive but little additionality	Positive but with little additionality			
EFA - catch crops Overall additionality low	Little effect, but can be beneficial for soil fauna	Damaging where crop stubbles are replaced	Positive effects anticipated. However the scale of additional benefit from the EFA measure is limited, but variable depending on what is required under MS Nitrate Action Plans.							
EFA – Land lying fallow Overall additionality: high	Positive in intensive arable farmland where fallow was not present before	Some rules are not compatible: ploughing dates, application of broad spectrum herbicides, topping of vegetation	Positive if vegetation cover and mgt are appropriate	Risks where bare soil permitted	Positive if vegetation cover and mgt are appropriate	Risks where bare soil permitted and herbicide use	Positive where soil cover in place and reduces use of fertiliser for a period	Risks where bare soil permitted	Positive if soil cover in place and carbon sequestered / soil quality improved	Uncertain in other situations
EFA - landscape features, buffer strips, margins & forest edges Overall additionality low	Very little impact due to low uptake to date. Where there is uptake there is limited additionality from the EFA measure (e.g. cross-compliance GAEC standards, requirements under Nitrate Action Plans). Positive effects on all environmental and climate issues possible locally, but these depend on management.									
EFA - Agroforestry, SRC and afforested land Overall additionality low	Very little impact due to low uptake to date. Where there is uptake there is little additionality from the EFA measure Positive effects on all environmental and climate issues possible locally, but these depend on management and are highly context specific.									

Source: Alliance Environnement

The net biodiversity impact of the EFA requirement could be significantly enhanced if farmers were to coordinate types and spatial arrangements to form larger habitat patches (as larger areas tend to be more resilient, hold more viable populations and have greater species richness) and/or mosaics of complementary habitats. This might also be beneficial from a soil and water management perspective, depending on the location of the EFA elements.

The Court of Auditors special report 21/2017²⁵ concludes that although Member States have a significant degree of discretion in implementing greening, in the choice of EFA types and the designation of ESPG, in general they do not use this discretion to maximise the policy’s environmental and climate benefits. Member States rather strive to implement greening in a way which minimises the burden on themselves and their farmers.

25 Points 51-54, 80.

ESQ8: To what extent has the crop diversification measure impacted on the environment and climate in terms of: a) soil quality and erosion; b) other environmental areas, such as water, biodiversity, climate?

Although the main objective of the crop diversification measure is to improve soil quality, increasing the number of crops that are cultivated may also have some effects on biodiversity (particularly soil biodiversity), water and climate. These effects, however, depend on the types of crops grown and when (e.g. spring-sown versus autumn-sown). Greater environmental and climate benefits can be achieved where multi-year crop rotations are put in place. In terms of net effects, the measure probably benefits biodiversity in the most intensive arable landscapes, especially those dominated by maize or winter wheat, but overall the impact is minor due to the low percentage of land diversified. The assessment of this effect, however, does not take into account the effect of slowing the trend towards greater monoculture. There is some suggestion that a shift from winter to spring crops may be partly encouraged by this measure and this would be beneficial for biodiversity, particularly if stubble is left in the ground over winter. Protection of soil from erosion may have improved in countries such as France, Germany and the Netherlands where maize has frequently been replaced by crops providing better soil cover, e.g. wheat, barley and other cereals, or by legumes. Although this may not always be the case if shorter growing seasons for legumes such as peas leave the soil without cover for longer or where maize has been replaced with another row crop such as sunflowers, as in France. The greatest environmental impact is likely to have been in Spain, since it accounts for the largest area of land on which changes in cropping have taken place. Since the main changes were the replacement of cereal crops by legumes, benefits for soil and water quality and GHG emissions are likely to have occurred (the latter two as a result of reduced applications of nitrogen fertiliser).

ESQ9: To what extent has the permanent grassland measure impacted on the environment and climate in terms of: a) climate (carbon sequestration)? b) biodiversity especially where permanent grassland benefit from additional protection as ESPG?; c) other environmental areas such as biodiversity, soil quality and erosion, water?

The main objectives of this measure are carbon sequestration and biodiversity. The environmental and climate benefits of maintaining the area of permanent grassland by limiting declines in the ratio of permanent grassland to total agricultural area to less than 5 % depend on the location and type of grassland maintained, and the extent to which the grassland that remains in place is ploughed or reseeded. Compared with the counterfactual situation which permitted declines in the ratio of up to 10 %, greater protection is afforded. The changes in the definition and eligibility of permanent grassland that were made in the 2013 CAP though led to changes in the eligible area of permanent grassland under protection and the calculation of the ratio. Where prior authorisation processes are in place, greater environmental and climate benefits are likely to accrue since these provide the opportunity to assess the environmental and climate impacts of proposed grassland removals and proceed accordingly.

The ESPG measure protects large areas of permanent grassland within the Natura 2000 network from being ploughed up. This has the potential to result in substantial and wide environmental benefits given their importance for biodiversity, soils, water and climate objectives, complementing the protection under the Birds and Habitats Directives. However, the potential benefits of this ESPG measure are limited by the low area of sensitive grasslands²⁶ designated in many countries. The evidence of how Member States have designated ESPG suggests that there are different interpretations of what constitutes ‘the environmentally most sensitive areas’ which ‘need strict protection’ under the Direct Payments Regulation. The low levels of ESPG designation in some Member States suggest that there is scope to extend its coverage and increase its impact, particular in light of the important challenge of achieving good conservation status of these valuable grasslands to which the ESPG measure should contribute. There is also the potential for wide environmental benefits from the designation of ESPG beyond Natura 2000 sites. However, such impacts are currently very limited because the option to designate ESPG outside Natura 2000 sites was only taken up by five Member States, the combined area was only equivalent to about 2 % of the total EU area of Annex I habitats outside the network, and much of the area is already protected to some extent under national legislation. Evidence from the case studies indicates that ESPG designation is nonetheless adding some value within and outside Natura 2000 sites as a means of complementing the implementation and enforcement of the directives in Member States and helping to reduce the continuing pressure from agriculture.

ESQ10: To what extent have the greening practices overall contributed to the environmental and climate performance of farming?

As explained in previous replies, the impact of greening measures on the environment and climate is highly dependent on Member States’ and farmers implementation choices. As a result, the evaluation analysis draws especially on evidence relating to these aspects, mainly the effectiveness assessments on the case study countries. The analysis is primarily qualitative and does not attempt to provide a score for the environmental performance of the greening measures, as these would be unreliable. In summary, although the greening measures have made a small contribution to improving the environmental performance of farming, far more could be done to improve their performance in this regard. This requires changes to the rules governing the operation of the measures and greater emphasis in Member States on using the greening measures in combination with cross-compliance and rural development measures, such as the AECM,

26 Permanent grassland in areas covered by Directives 92/43/EEC or 2009/147/EC can include Habitats Directive Annex I grassland habitats designated as Site of Community Interest, Habitats Directive Annex II habitats of species which depend from grassland management designated as Site of Community Interest and Birds Directive Annex I habitats of birds which depends from grassland management designated as Special Protected Area.

to address the environmental and climate needs and problems they face in agricultural areas. The table below gives an overview of the contribution of the greening measures to environmental and climate objectives.

Figure 13: Contribution of greening measures to environmental and climate objectives

	Biodiversity	Soils	Water	Climate mitigation	Climate adaptation
EFA					
N-fixing crops	Minimal for grain crops as potential biodiversity impacts are low, and possibly detrimental, and as EFA not the main driver of N-fixing crops. Some net benefit from increased forage/fodder legumes and particularly the green manure legumes.	Positive impacts, but mostly minimal magnitude, as EFA not the main driver of N-fixing crops in most MS.	Mostly positive impacts, but mostly minimal magnitude, as EFA not the main driver of N-fixing crops in most MS. Some negative impacts from N leaching if suitable post-harvest requirements are not put in place.	Positive impacts, but mostly minimal magnitude, as EFA not the main driver of N-fixing crops in most MS.	
Catch/cover crops	Minimal net benefit for soil fauna, but possibly small negative impacts for seed-eating birds in some areas.	Little to no net benefit, but higher where farmers were not using crop mixes before.		Little to no net benefit.	
Fallow	Positive in intensive arable farmland where fallow was not present, or where the measure helps maintain fallow areas. Magnitude of impacts vary as the rules associated with EFA fallow are not always compatible with achieving biodiversity benefits.	Uncertain as positive or negative depending on the soil cover introduced and susceptibility of region to soil erosion.		Uncertain as benefits depend greatly on whether fallow is helping build soil organic matter in areas.	Uncertain as positive or negative depending on the soil cover in place and extent to which the land can sequester soil carbon.

	Biodiversity	Soils	Water	Climate mitigation	Climate adaptation
Landscape features, buffer strips, field margins, forest edge strips	Positive, but probably minimal net impacts in most MS, except in the few cases where farmers opt for options that go beyond cross-compliance GAEC and N Directive requirements.				
Agroforestry, SRC and afforested land	May be positive or negative depending on species and context, but magnitude of impacts probably minimal.	Mostly positive but minimal, although for SRC there may be greater benefits for soil carbon, but risks for water quality where established using fertilisers.		Positive but minimal impacts.	Positive but minimal impacts, although for SRC there may be greater benefits for soil carbon.
Crop diversification	Probably beneficial in the most intensive arable landscapes, especially where dominated by maize or winter wheat, but overall impact minimal due to low percentage of land affected.	Possible minor improvements in soil biota and protection from erosion.	Some localised benefits, but probably minimal benefits to water quality in most areas.	Possible slight positive impact from reduced N ₂ O emissions given increases in use of legume crops in some countries, greater than caused by VCS.	Positive but minor impact.
Maintenance of permanent grassland					
Permanent grassland ratio	Probably beneficial in most MS but magnitude uncertain due to lack of data on the types of grassland affected and the effectiveness of current protection. But less area is protected than before 2015 under cross-compliance in many Member States.				
Environmentally sensitive permanent grassland	Benefits from greater protection of some grassland habitats and grassland habitats of species, carbon rich soils and wetlands within N2000 areas but the proportion of these habitats designated as ESPG varies greatly among MS and the level of added protection is uncertain. Probably minor benefits from designation of ESPG outside N2000 sites due to very low take up and existing protection of existing areas.				

Source: Alliance Environnement

The Court of Auditors special report 21/2017²⁷ considers that certain design limitations reduced the effectiveness of the three greening practices. Crop diversification could not provide the full environmental benefits of crop rotation. The ESPG designation was based mainly on biodiversity-related criteria and poorly targeted carbon-rich permanent grassland outside Natura 2000 areas. Finally, the predominance of productive EFA types, combined with a lack of meaningful requirements on management, limited the positive impact of EFAs on biodiversity.

ESQ11: To what extent has the greening increased the environmental awareness of farmers and increased their interest in more sustainable types of agricultural systems like organic farming, agro-ecology or encouraged farmers to enter in agri-environment-climate measures?

Changes in environmental awareness are difficult to assess. This is because ‘awareness’ is a highly subjective concept and as such it is difficult to monitor through constant, comparable survey indicators.

Factors influencing farmers’ awareness and attitudes in relation to environmental policy measures include personal attitude and motivations, perceived social norms and perceived personal ability, while advice and facilitation are critical factors not only to increase farmers’ knowledge and therefore interest over time but also to ensure appropriate implementation of the measures. Importantly, changes in environmental awareness do not necessarily translate into the adoption of more sustainable practices. This is because although environmental awareness may increase, it usually remains one of many different factors influencing farmers’ decisions about which types of management practices to adopt. Farm advisers in all the case study countries examined reported that it was uncommon for environmental considerations to play a part in farmers’ decisions, and this was confirmed by a number of the farmers interviewed. There are various possible reasons, the main one being that information and advice provided to farmers was not focused on the potential environmental benefits of the measure. In many of the case study countries examined, this was to do with the limited time available to put in place the measures, together with the complexity of the rules. This situation could therefore change over time as authorities, farmers and advisers become more familiar with the implementation of greening.

In short, greening measures did not appear to have increased farmers’ awareness of environmental issues. Partly because many farmers did not have to change their farming practices to comply, but also because advice to farmers in the first years of

27 Points 40-50 and 79.

implementation has been focused primarily on compliance with rules rather than achieving environmental outcomes, albeit with a few exceptions (e.g. AT, CZ, UK-Scotland).

5.3. EFFICIENCY

ESQ12: To what extent has the implementation of the greening practices led to a change in administrative burden: a) at the level of the beneficiaries; b) at the level of the Member States administration; c) at the level of the Commission services?

Administrative burden is that portion of the administrative costs associated with complying with legislation which cannot be regarded as business as usual. For farmers, this new scheme may be difficult to understand at first, causing them to invest time in working out how to comply with the requirements, and controls might take longer. Even if these are the only costs which are additional to the previous situation, they may discourage potential beneficiaries from applying for aid or persuade beneficiaries to stop complying with the measures, despite the risks of financial penalties. For national and regional authorities, the management and control of the greening measures may lead to additional costs / organisational issues. The rules set out in the regulations may require more complex verification procedures than those required previously to verify other CAP payments, such as direct payments. In addition, national authorities must now verify that there is no double funding of the same activity through the greening payment and the AECM.

Evidence from a small sample of farmers in the case studies suggests that private transaction costs for farmers were equivalent to 3-9 hours per year per farm and largely irrespective of farm size, costing between EUR 36 million and EUR 217 million a year. Over 85 % of farmers subject to at least one greening obligation that responded to the Commission's 2015/2016 public consultation reported some administrative burden, with 60 % using professional advice.

A survey of 21 Member States provided data on which a conservative estimate of the additional public administration costs of the greening measures was based. Although it is difficult to estimate these accurately, extrapolating the information provided to the EU-28 suggests that these are likely to fall between EUR 27 and EUR 76 million per year, with running costs accounting for 80-90 % of these. This represents approximately 0.2-0.65 % of the value of the budget dedicated to the greening payment and between 3 % and 8.5 % of the total public administrative cost of direct payments as a whole, estimated at EUR 890 million in 2016. For small countries and those with highly decentralised CAP administration, these costs are likely to be at the higher end of the range, mainly due to set-up costs.

The cost for Commission departments as estimated by the contractor is some EUR 0.6 million per year, which is a small percentage of greening payments.

Figure 14: Overview of the magnitude of the transaction costs associated with greening

Aspects of administrative costs	In million €	% of green payment
Public administration costs (EU-services)	0.6	0 %
Public administration costs (MS-services)	27-76	0.2-0.65 %
Private administrative cost	36-217	0.3-1.8 %
Sum	63.6-293.6	0.5-2.5 %

Source: Alliance Environnement

The Court of Auditors special report 21/2017²⁸ concluded that greening added significant complexity to the CAP which was not justified in view of the results that greening was expected to produce. It stated that as greening overlaps with the CAP's other environmental instruments, there is risk of deadweight and double funding, although certain decisions and actions by the Commission and Member States mitigate these risks. It also considered that the Commission's supervision of how Member States implement greening was good.

ESQ13: To what extent have the greening practices been efficient in achieving the general objective of sustainable management of natural resources and climate action enhancing the environmental performance of farming?

In terms of overall efficiency, the scarcity of quantitative data, in particular for benefits, made it impossible to carry out a true efficiency analysis of the greening measures. In qualitative terms, the level of administrative costs associated with delivering these measures via the IACS system is to be set against a low level of net environmental and climate benefits associated with the greening measures as currently applied. However, many of the reasons for the low level of environmental performance could be overcome by changes in the requirements (e.g. regarding the use of pesticides, timing of operations etc. for EFAs, or operating the permanent grassland measure at regional level). Such changes were introduced following the review²⁹ carried out by the Commission at the end of the first year of implementation of the greening measures, but come only into force in 2018, following the entry into force of Regulation 2017/1155, which bans the use of plant protection products on fallow land, catch crops and green cover, N-fixing crops and strips of eligible hectares along forest edges with production.

28 Points 58-69, 82.

29 SWD(2016) 218 final, https://ec.europa.eu/agriculture/direct-support/greening_en.

5.4. COHERENCE

ESQ 14: *To what extent have the greening practices as part of the entire set of relevant CAP measures: a) delivered a coherent and complementary contribution to achieving the general objective of sustainable management of natural resources and climate action? b) impacted on the other general CAP objectives (viable food production and balanced territorial development)?*

The results showed that the greening measures are generally consistent with other relevant measures to achieve the objective ‘sustainable management of natural resources and climate action’, particularly cross-compliance and the agri-environment-climate measure, although more could be done to make these work together in a synergistic way. One coherence issue was highlighted: the way that the Member States apply (1) the CAP eligibility rules and (2) the definition of permanent grassland.

The greening measures are also shown to be consistent with the wider CAP objectives of viable food production and balanced territorial development. The table below shows the overall results for the consistency of the individual greening measures with each sub-objective of the wider CAP objectives of viable food production and balanced territorial development.

Figure 15: Coherence of greening and wider CAP objectives

	Market stability	Competitiveness	Enhanced income	Consumer Expectations	Innovation	Socioeconomic Development	Diversity of farm types
Crop diversification	Green	Green	Green	Amber	Green	Amber	Green
Permanent grassland ratio	Green *	Green *	Green *	Amber	Amber	Green *	Green
ESPG	Green	Green	Green	Amber	Green	Green	Green
EFA	Green	Green	Green	Amber	Green	Amber	Amber

Source: Alliance Environnement analysis

*contradiction where strict application of a ratio at regional level using authorisations impedes farmers’ economic room for manoeuvre

Red: contradictions or competition with the sub-objective

Amber: neutral, or no particular association with the sub-objective

Green: positive, or synergistic relationship with the sub-objective

ESQ15: To what extent have the greening practices as part of the entire set of relevant CAP measures delivered a coherent and complementary contribution to achieving the objective of Environmental/climate legislation and strategies, in particular the EU Biodiversity Strategy, Nature Directives, the Water Framework Directive, Nitrates Directive and the EU Soil Thematic Strategy?

In terms of the coherence of EU environmental and climate legislation, in most cases the greening measures are consistent with other policies examined, although there are not necessarily safeguards in place to prevent conflicts occurring in practice. For instance, the main objective of the crop diversification measure is to enhance soil quality. There is no formal policy framework for soils at the EU level, but the soil thematic strategy and the seventh environmental action programme both set out non-binding objectives for soil at EU level, focusing on soil erosion and soil organic matter. The crop diversification measure does not conflict with these objectives since it does not stipulate the use of particular crops or the way that they should be managed. However, since the extent to which the crop diversification measure can contribute to soil objectives depends on the crops grown and the way they are managed, the rules influencing these aspects mean that although the measure has the potential to be consistent with soil objectives, the extent of the contribution depends on the way the measure is implemented in practice.

Figure 16: Summary of the theoretical potential coherence of the greening measures and other key environmental policies and strategies

Score	Meaning
-1 (Red)	Contradictory
0 (Orange)	Neutral
+1 (Green)	Coherent
M	Mixed

CAP environmental and climate objectives	detailed and	Related EU environmental and climate objectives, priorities and needs	Permanent grassland ratio	ESPG	Crop diversification	EFA
Protect and enhance biodiversity		Halt the deterioration in the status of all habitats listed under Annex I of the Habitats Directive, that depend on or are affected by agriculture, and achieve a significant and measurable improvement in their status (Target 1 of the EU biodiversity strategy to 2020 in relation to Birds Directive 2009/147/EC and Habitats Directive 92/43/EEC)	+1	+1	0	0
		Halt the deterioration in the status of species listed under Annex II and/or IV and V of the Habitats Directive, and bird species listed under Annex I of the Birds Directive, that depend on or are	+1	+1	M	M

CAP environmental and climate objectives	detailed and needs	Permanent grassland ratio	ESPG	Crop diversification	EFA
	affected by agriculture, and achieve a significant and measurable improvement in their status (Target 1 of the EU biodiversity strategy to 2020 in relation to Birds Directive 2009/147/EC and Habitats Directive 92/43/EEC)				
	Bring about a measurable improvement in the conservation status of habitats and species, other than those covered by Target 1 of the biodiversity strategy, that depend on or are affected by agriculture (Targets 2 and 3 of the EU biodiversity strategy to 2020)	+1	+1	M	M
Protect and improve soils	To protect, conserve and enhance the Union's natural capital: Land is managed sustainably in the Union, soil is adequately protected ...[through]... increasing efforts to reduce soil erosion and increase soil organic matter (Seventh Environmental Action Programme — Decision No 1386/2013/EU)	+1		+1	+1
Reduce air pollution	to achieve levels of air quality that do not give rise to significant negative impacts on, and risks to, human health and the environment (Seventh Environmental Action Programme — Decision No 1386/2013/EU) Member States shall, as a minimum, limit their annual anthropogenic emissions of ... ammonia in accordance with the	+1	0	+1	+1

CAP environmental and climate objectives	detailed and needs	Permanent grassland ratio	ESPG	Crop diversification	EFA
	Related EU environmental and climate objectives, priorities and needs				
	national emission reduction commitments applicable from 2020 to 2029 and from 2030 onwards, as laid down in Annex II (Directive (EU) 2016/2284)				
Protect and improve water quality	To reduce the pollution of water caused or induced by the application and storage of inorganic fertiliser and manure on farmland and prevent further such pollution to safeguard drinking water supplies and to prevent wider ecological damage through the eutrophication of freshwater and marine waters (Nitrates Directive 91/676/EC)	+1	+1	+1	+1
	To enhance the status and prevent further deterioration of aquatic ecosystems and associated wetlands, promote the sustainable use of water and reduce water pollution (Water Framework Directive 2000/60/EC)	+1	+1	+1	+1
	In order to protect the environment as a whole, and human health in particular, detrimental concentrations of harmful pollutants in groundwater must be avoided, prevented or reduced (Groundwater Directive 2006/118/EC)	+1	+1	0	+1
	To reduce risks and impacts of pesticide use on human health and the environment and encourage the development and introduction of integrated pest management and of alternative	0	0	+1	+1

CAP environmental and climate objectives	detailed and	Related EU environmental and climate objectives, priorities and needs	Permanent grassland ratio	ESPG	Crop diversification	EFA
		approaches or techniques in order to reduce dependency on the use of pesticides (Sustainable Use of Pesticides Directive 2009/128/EC)				
Climate mitigation: Reduce greenhouse gas emissions	change	Agriculture to contribute to the EU-level target of reductions in GHG emissions of 20 % in GHG emissions by 2020 from 1990 levels (current target) '40 % by 2030 (against 1990 levels) and 80 % by 2050' (COM/2014/015 final, A policy framework for climate and energy in the period from 2020 to 2030)	+1	+1	+1	=1
Climate mitigation: Encourage carbon sequestration	change					
Climate adaptation	change	To reduce the probability of flooding and its potential consequences (Floods Directive 2007/60/EC).	+1	+1	0	+1
		To promote the sustainable use of water and to mitigate the effects of droughts (Water Framework Directive 2000/60/EC)	0	0	+1	+1

Source: Alliance Environnement based on EU legislation

5.5. RELEVANCE

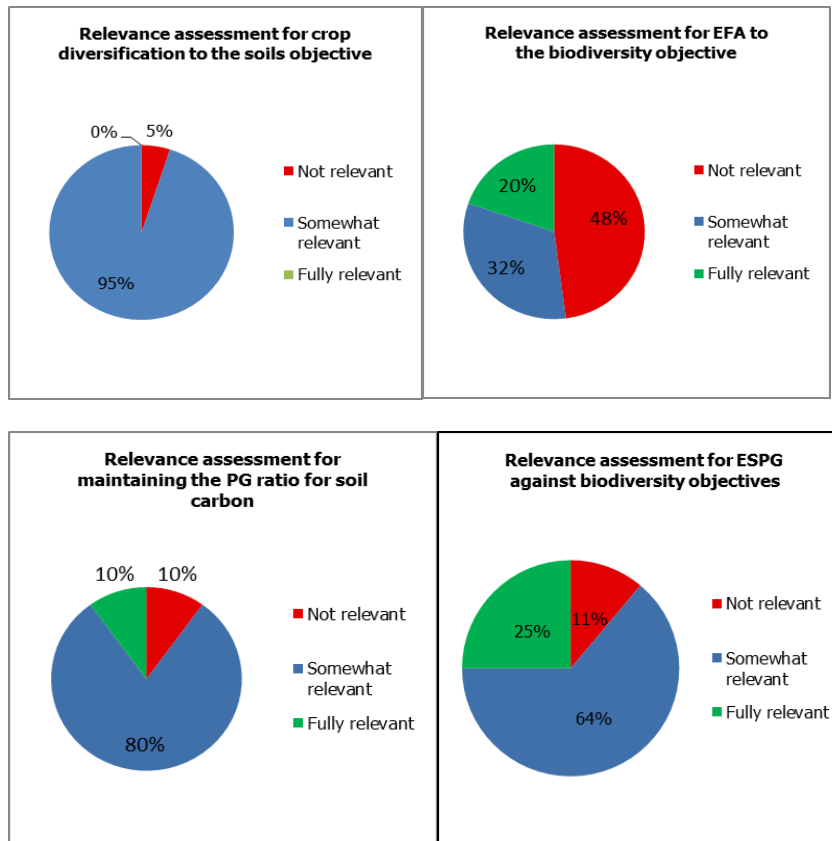
ESQ16: To what extent have the greening practices been relevant in contributing to the sustainable management of natural resources and climate action and the related specific objectives?

At EU level, all three greening measures have some relevance for addressing all the environmental and climate priorities and needs relating to EU objectives. However, the measures are not assessed as fully relevant because their rules often limit the degree of relevance. The ESPG is of greatest relevance to the EU's biodiversity objectives, and of substantial relevance to water and climate objectives, as it targets semi-natural habitats that have much greater biodiversity value than arable farmland habitats. A number of EFA elements are the most relevant to delivering biodiversity priorities on arable farmland. The type of EFA elements available per Member State and the ways in which they are implemented affect the relevance of EFA. Member States can apply additional conditions to some measures to improve their relevance to the needs and priorities of their territory. However, only a few Member States have done this. For instance, Member States often included nitrogen-fixing crops in the EFA list while the option of using hedges and other landscape features was less favoured.

The exemptions and thresholds associated with greening had also an impact on the success of the measures. For instance, in 2015 and 2016, the main reason for exempting land from the requirements of the EFA measure was farm size (i.e. farms with fewer than 15 ha and/or under the Small Farmers Scheme were exempt). The 15 ha threshold exempts 13 % to 21 % of the total arable area in Member States. However, the importance of the different exemptions and the distribution of the area declared as EFA is uneven across the EU. For example, in many of the Mediterranean Member States (e.g. ES, IT, EL), at NUTS3 level, farmers have declared a higher proportion of their arable land as EFA (over 10 %), whereas in north-western Europe (e.g. DE, PL, CZ) farmers have generally declared a lower proportion of their land as EFAs (below 8 %). This may indicate that lower land-use intensity in Mediterranean Member States makes it easier to meet the EFA requirements there than elsewhere.

The relevance of the crop diversification measure against all objectives (even soil quality) is far lower than that of the other greening measures. The soil benefits of crop diversity depend on the types of crops grown and the nature of the rotation applied. As the crop diversification measure only requires a number of crops to be grown and does not specify which, or that they should be in rotation, the relevance to soil quality needs is variable.

Figure 17: Relevance of greening measures to intended objectives



Source: Alliance Environnement

With a few exceptions, the evaluation shows that the Member States' strategy in applying the greening measures was to minimise the economic impact of greening on their farmers and to contain their administrative costs and risk of having expenditure disallowed. Thus, across the EU, there is potential to improve the relevance of the greening measures by applying a more (environmentally) tailored approach at national and regional level.

5.6. EU ADDED VALUE

ESQ17: To what extent have the greening practices created EU added value?

EU added value is defined in the Better Regulations Guidelines as the value resulting from applying policy measures at EU level which is additional to the value that would have resulted from public authorities applying similar measures solely at the regional or national level. It has both an economic aspect and a social or political one.

The assessment shows that having the greening measures laid down at EU level does provide added value, chiefly by introducing:

- a higher level of environmental ambition than Member States are likely to have opted for if acting alone;

- a strong control system applied equally in all Member States — increasing likelihood that the ambition will be achieved;
- complementarity between different policy mechanisms;
- legal certainty that the payment will be available over a given period of time;
- a greater degree of uniformity (although with considerable scope for divergence in ambition due to the discretion allowed in the EFA measure and equivalence schemes); and
- a stronger financial incentive than would be likely from all Member States if left to choose for themselves.

However, there is less evidence that it has delivered EU added value to date in relation to greater effectiveness and broader coordination.

Figure 18: Comparison of the EU added value of the greening measures and alternative national measures

	Greening measures	Counterfactual situation	EU added value
Contributions to agreed objectives	The greening measure addresses the common EU objectives of reducing greenhouse gas emissions, sequestering more carbon and maintaining and improving biodiversity. Soil quality objectives are not set at EU level. The level of ambition set by the greening measure is generally higher than could be expected of Member States acting alone.	Member States would not necessarily incentivise actions by farmers which addressed EU-level objectives or soil quality. There is strong evidence that many Member States would have set a lower level of ambition in respect of soil quality, the protection of permanent grassland and the provision of ecological focus areas.	Yes — strong evidence of added value.
Increased effectiveness through EU action	Theoretically possible, but no evidence so far and range of choice given to Member States and farmers means it may be limited.	None	Yes in theory, but not evidenced so far and likely to be limited.
Gains in coordination	Little evidence, but some knowledge exchange likely to have occurred during the implementation process.	None	Yes, but limited.
Efficiency gains	Linking performance to part of the direct payment is a strong incentive to compliance, but limited	Member States could not link any actions required by them to the direct payment	Uncertain, but the greening payment is likely to be a

	information on overall impact of the greening measure means a view on overall efficiency cannot be reached at present.	unless they used the weaker incentive of cross-compliance.	more effective means of incentivising any given level of environmental performance than Member State action.
Legal certainty	Strong certainty through EU legislation which fixes the broad framework of greening, but uncertainties about yearly Member State decisions.	No certainty over a broad framework.	Yes
Promoting complementarity	The greening measure is designed to work in tandem with cross-compliance and the AECM, and offers the greatest certainty that double funding can be avoided.	Member States could each achieve a similar level of complementarity if they chose, but the likelihood of double funding would increase.	Yes

Source: Alliance Environnement

5.7. STAKEHOLDERS' VIEWS

The results of the public consultation³⁰ on greening have been taken into account. The consultation approach in 2016 involved using available information from the CAP simplification process and existing discussion fora with relevant stakeholders (Council, European Parliament, etc.), on the one hand, and activities specifically designed to fit the purpose of the targeted review of greening secondary legislation (discussions within the expert group, civil dialogue group, the online survey), on the other.

Moreover, as part the CAP (post-2020) reform, a large scale public consultation was held in summer 2017. The results of all the consultation activities contributing to the staff working document on the review of greening after the first year of implementation are summarised in part 6 of this staff working document³¹. The 2017 consultation on modernising and simplifying the CAP also covered greening. A majority of stakeholders,

30 https://ec.europa.eu/agriculture/sites/agriculture/files/consultations/greening/greening-001-results-online-survey_en.pdf.

31 https://ec.europa.eu/agriculture/sites/agriculture/files/direct-support/pdf/2016-staff-working-document-greening-annex-5_en.pdf.

including farmers, agree that the CAP should do more for the environment. At the same time, farmers and Member States voiced concern on the administrative burden. In particular, answers to open questions indicate greening as a burdensome element, with specific references to the restrictive definitions of permanent grassland and the ecological focus areas (especially landscape elements)³².

Environmental non-governmental organisations pointed at limited environmental benefits.

The Commission is also taking into account the suggestions made in the Regulatory Fitness and Performance (REFIT) programme (as part of the ongoing revision of the CAP). The Board of Swedish Industry and Commerce for Better Regulation (NNR) commented on the need to evaluate and review the greening measures within the CAP: the stakeholder group recommends that the costs and benefits of the greening measures are examined as part of the public consultation on the CAP. The Board's submissions on greening are only partially supported by the government group. The majority of Member States consider that the submissions made by the NNR require discussions at the right political level. A few Member States support the stakeholder group's recommendation that the Commission take account of the suggestions in the ongoing revision of the CAP and also in the continued work ahead.

6. CONCLUSIONS

A major innovation in direct payments to farmers under the CAP was the introduction of payments for carrying out a compulsory set of greening measures.

This evaluation was carried out after only two years of implementation of the greening measures and so no data were available to directly assess environmental impacts. Moreover, many environmental and climate impacts of greening will not be detectable at this stage. Effectiveness was therefore assessed based on inference, drawing on scientific evidence of the general impacts of the greening farming practices, supplemented with information from case studies.

However, it is clear that despite the objectives of the greening measures set out in the Direct Payments Regulation, **environmental and climate objectives have not been generally a major factor in the Member States' implementation choices.** Member States have significant flexibility in implementing the measures, yet, in general, they do not use this flexibility to maximise the environmental and climate benefits; decisions seem to have been driven rather by administrative issues and agricultural considerations, including wanting to ensure minimal disturbance to farming practices. For both Member States and farmers, the main concern tends to have been to minimise the administrative

32

https://ec.europa.eu/agriculture/consultations/cap-modernising/2017_en.

burden of implementation, and to avoid any errors with controls and enforcement that might lead to the reduction of CAP payments.

The majority of utilised agricultural area (Eurostat 2013 data) is covered by at least one greening measure (78 %) and a similar proportion of arable land is covered by the crop diversification (75 %) and EFA (68 %) measures. A further 5.6 % of UAA is farmed organically and so treated as ‘green by definition’. The whole area on which permanent crops are grown and the area under the Small Farmers Scheme (in countries where it is applied) is not subject to the greening obligations, although it still receives the payment. These average figures also mask significant differences between Member States and all exclude France, for which no data were available.

1. Effectiveness

The overall effects of the greening measures, as currently applied, on farm management practices and the environment/climate are uncertain but appear to be fairly limited, although there are variations across the Member States, depending on the greening measure, the areas concerned and the way in which they are managed.

Crop diversification

The measure’s main objective is to improve soil quality, but it could also benefit biodiversity, water and climate. These effects depend on the types of crops grown and when (e.g. spring-sown versus autumn-sown).

In the 2011 Impact Assessment, the Commission already recognised that ‘crop diversification may not bring the full environmental benefits of crop rotation’, but found that it fits better with the annual nature of direct payments. Moreover, there were concerns over increased difficulty to check compliance with crop rotation requirements, hence the choice for crop diversification.

Analysis by the contractor and calculations by the Court of Auditors showed that **the crop diversification measure has resulted in an increase in the diversity of cultivated crops of around 0.8 % of the arable area.** Given this low percentage of land more diversified than before, **the net environmental and climate effects are also very limited, although locally the impact has been more significant. The measure may have also slowed the general trend towards monocropping.** The greatest impact is likely to have been in Spain, where legumes replaced cereal crops on 2.8 % of the arable area, and this is likely to have brought benefits for soil and water quality and greenhouse gas (GHG) emissions. Protection against soil erosion may have improved in cases where maize has been replaced by crops providing better soil cover, e.g. wheat, barley and other cereals, or by legumes. In terms of net effects, the measure probably benefits biodiversity in the most intensive arable landscapes dominated by maize or winter wheat, bearing in mind that this would be the case only in places where cropping patterns had to change.

Maintenance of permanent grassland

The main objectives of this measure are carbon sequestration and biodiversity. The benefits depend on the location and type of grassland maintained, and the extent to which the grassland that remains in place is ploughed or reseeded. **Greater protection is afforded compared with the counterfactual situation which permitted declines in the ratio of up to 10 %.** Where prior authorisation processes are in place, greater environmental and climate benefits are likely to accrue since these provide the opportunity to assess the impacts of proposed grassland removals.

ESPG

The potential benefits of the ESPG measure are limited by the low area of sensitive grasslands protected by the Habitats and Birds Directives designated in many countries. The evidence of how Member States have designated ESPG suggests that there are different interpretations of what constitutes ‘the environmentally most sensitive areas’ which ‘need strict protection’ in accordance with the Direct Payments Regulation. The low levels of ESPG designation in some Member States have to be seen in the light of the important challenge of achieving good conservation status of these valuable grasslands and species dependent on extensive grassland management. **The same conclusions hold for the ESPG beyond Natura 2000 sites** which, in the five Member States concerned, cover only an area equivalent to about 2 % of the total EU area of Annex I habitats.

Ecological focus areas

EFA elements have the potential to deliver benefits not just for biodiversity, their main objective, but also for water, soils and climate. However, these impacts are expected to vary greatly, depending on the type of EFA element and on the way in which they are managed (e.g. use of pesticides and fertiliser, location, and timing of cutting dates).

The analysis shows that for the EU-28, the EFA element with the potential to have the greatest net positive impact is the fallow option, where ‘fallow’ consists of stubble with natural regeneration of weeds or of wildlife seed mixes. Net benefits are also possible from landscape features (i.e. field margins, hedges, trees, ponds and ditches), buffer strips and multiannual N-fixing forage crops. Again, the benefits from these EFA elements are expected to be low as a result of the lack of appropriate management requirements (e.g. to prevent pesticide use or nitrogen leaching after the use of N-fixing crops), the low level of uptake (e.g. the non-productive options) and in some cases their protection under other policy measures as well.

Nonetheless, some Member States have introduced requirements to boost the environmental performance of EFAs, for example rules on the management of N-fixing crops post-harvest in Spain and Germany, and the EFA equivalence scheme in Austria. In addition, where EFAs have helped to slow the decline of multiannual forage legumes this is expected to be beneficial, e.g. in Spain where traditionally cultivated legumes provide

suitable habitats for a wide range of species, including wild bees and other pollinators, and some EU threatened mammals and birds.

From an environmental perspective, the analysis shows that **the EFA elements vary greatly in their net effects**, which also vary between Member States and regions, **because their environmental efficacy is largely dependent on the way in which they are implemented on the ground and the rules attached to them** (e.g. use of pesticides and fertiliser, location, and timing of cutting dates).

The introduction of the new Delegated Regulation³³ changes some of the rules applying to the various EFA elements, including a ban on pesticides in productive EFAs. It also simplifies some of the requirements on landscape features. It is expected that these changes, together with the fact that the spatial ‘EFA layer’ in IACS is increasingly fine-tuned in Member States, allowing more accurate identification and control of landscape features, will have an effect on farmers’ choices, most likely shifting the balance away from N-fixing crops towards some of the more non-productive EFA elements.

Combined contribution of the greening measures to sustainable farming practices

The combined net contribution of the greening measures to biodiversity, soil, water and climate objectives, and, in turn, the overall sustainability of farming are expected to be positive. However, the size of the benefits varies across the Member States and is difficult to quantify. On the basis of the evidence available to date, the permanent grassland measures and the EFA fallow option are likely to generate the greatest net benefits for biodiversity, soils, water, and climate mitigation and adaptation.

In theory, some of the equivalence schemes, particularly those put in place for EFAs, seem to have more potential to deliver environmental benefits than the standard practices, although only a small number of farmers have used these as a means of meeting their greening requirements.

In summary, therefore, **far more could be done to improve the environmental and climate performance of the greening measures, especially if they are designed to work in combination with cross-compliance and rural development measures** such as the AECM to address environmental and climate needs and problems in agricultural areas.

33 Commission Delegated Regulation (EU) 2017/1155 of 15 February 2017 amending Delegated Regulation (EU) No 639/2014 as regards the control measures relating to the cultivation of hemp, certain provisions on the greening payment, the payment for young farmers in control of a legal person, the calculation of the per unit amount in the framework of voluntary coupled support, the fractions of payment entitlements and certain notification requirements relating to the single area payment scheme and the voluntary coupled support, and amending Annex X to Regulation (EU) No 1307/2013 of the European Parliament and of the Council; C/2017/0735; OJ L 167 of 30.6.2017, p. 1.

Effects on agricultural production and economic viability

Overall, the greening measures do not appear to have had any significant effect on agricultural production or economic viability of farms. The EFA measure had a very low impact on the area available for crop production. The crop diversification measure led to a slight decrease in the area cultivated for cereals, and (in addition to the EFA measure in the case of soybean) an increase of the overall area of oilseeds. Finally, the crop diversification measure together with the EFA measure led to significant increases in dry pulses and leguminous areas. No significant effects on prices were identified.

As regards economic viability, a proper counterfactual analysis was only possible for the crop diversification measure. There is no evidence that the crop diversification measure affected the incomes of farmers, except in the Weser-Ems region (negatively). This contrasts to some extent with the expectations of many farmers.

Qualitative information suggests that the EFA and permanent grassland measure probably had only marginal effects. Since farmers mostly choose to use productive EFA (catch crops and nitrogen-fixing crops), **the effect of the EFA measure on farmers' income is limited.** Although the **permanent grassland measure** does not appear to have led to significant restrictions on farm management decisions, the ban on ploughing some grassland could affect the economic viability of farms by limiting changes to farming systems.

Administrative costs and efficiency

Based on a survey of 21 Member States, **the annual additional public administration costs** associated with the greening measure for Member States **are likely to fall by between EUR 27 million and EUR 76 million**, or between 3.0 % and 8.5 % of the public administrative cost of direct payments, estimated at EUR 890 million (2016 figures). The cost for the Commission department, as estimated by the contractor, is around EUR 0.6 million per year, which is a small percentage of greening payments. **The private administration costs to farmers were estimated, based on a small and unrepresentative sample, to be the equivalent of 3-9 hours per year per farm**, largely irrespective of farm size, costing between EUR 36 million and EUR 217 million a year. Some 85 % of farmers subject to at least one greening requirement who responded to the Commission's 2015-2016 public consultation reported some administrative burden, with 60 % relying on professional advice.

Given the scarcity of quantitative data, in particular for benefits, it was impossible to carry out a true efficiency analysis of the greening measures. In qualitative terms, the limited administrative costs associated with delivering these measures via the IACS system is set against a low level of net environmental and climate benefits associated with the greening measures as currently applied. However, changes in the requirements could alter the low level of environmental performance, which suggests there is scope to improve the efficiency of this type of mechanism in the future.

Internal and external coherence of the greening measures

Between them, the three greening obligations form a coherent whole, with no conflicts identified. Overall, the evaluation shows that **the greening measures are generally consistent (i.e. do not conflict) with other relevant measures to achieve the CAP general objective ‘sustainable management of natural resources and climate action’**. This relates mainly to the interaction between cross-compliance GAEC standards, the greening measures and rural development programme measures such as the AECM. Yet, there are very few examples of Member States having designed the instruments to operate in a synergistic way. One coherence issue stemmed from the aims of the permanent grassland measure and the CAP eligibility criteria, or at least the way these have been implemented in some Member States.

The greening measures are also shown to be consistent with the wider CAP objectives of viable food production and balanced territorial development. Since the implementation decisions have been made to allow maximum flexibility to farmers in most cases, then these also enable coherence with the objectives of income and competitiveness.

In terms of external coherence — consistency with other EU environmental and climate legislation — the assessment shows that here too, in most cases, the greening measures are consistent in terms of their objectives with all policies examined (biodiversity, water, soils, air, climate).

Relevance

At the EU level, **all three greening measures have some relevance for addressing all the environmental and climate needs and problems relating to EU objectives.** However, in most cases the measures are not assessed as fully relevant because their rules often limit their degree of relevance. **The ESPG is of greatest relevance to the EU’s biodiversity objectives,** and of substantial relevance to water and climate objectives, as it targets semi-natural habitats that have much greater biodiversity value than arable farmland habitats. **The EFA measures are the most relevant to delivering biodiversity priorities on arable farmland.** From a biodiversity perspective, the most relevant elements are those that can improve in-field habitat conditions, in particular fallow land, and can be complemented by landscape features. Short rotation coppice, agroforestry, buffer strips and catch/cover crops are of most relevance for the soils, water and soil carbon objectives. **The relevance of the crop diversification measure against all objectives (even soil quality) is far lower than the other greening measures.**

EU added value

The assessment shows that having the greening measures laid down at EU level does provide added value, chiefly by setting a higher level of environmental ambition, a greater degree of uniformity (although with considerable scope for divergence in ambition due to the options allowed in the EFA measure and equivalence schemes) and a stronger financial incentive than would be likely from all Member States if left to choose for themselves.

From the above, it is clear that the greening measures have not fully realised their intended potential to provide ambitious benefits for climate and environment. The current environmental and climate architecture of the CAP has also proved complex and somewhat difficult to manage.

Lessons learned

Regarding the implementation of greening, as already shown in earlier studies, Member States have used the flexibility offered in a way that minimises administrative burden or minimises overall changes needed. The current concept of greening is based on annual, simple, general and non-contractual measures, whose implementation is compulsory for both Member States and farmers. The measures go beyond the requirements for ‘cross-compliance’. This allows a common level playing field and a minimum environmental and climate ambition across the EU. In order to take into account specific characteristics of the diversity of European farming, the legislation provides for exemptions or adaptations, for example depending on the size of the farm (e.g. application of the rules above 10 ha, etc.) or its location (Nordic exemption for EFA, etc.). In any case, Member States have the power to make implementation decisions, especially on EFA. Member States could also set up schemes equivalent to greening measures. Despite these possibilities of adaptation, one of the main criticisms of greening was its perceived ‘one-size-fits-all’ aspect. Another criticism expressed was the lack of link between the budget involved and the results expected in relation to environmental and climate objectives.

The findings of this evaluation, those included in the Court of Auditors report on the greening measures, and stakeholder opinions related to the administrative burden have been taken into account in drafting proposals for the CAP post-2020. Important issues will be the establishment of quantifiable policy targets at EU level and subsidiarity for Member States to choose the appropriate set of measures/actions to deliver on these targets.

The concept for the future CAP was announced in the Commission communication *The future of food and farming*³⁴ and further elaborated in the legislative proposals of 1 June 2018³⁵. **It will be completely different, moving from compliance to performance, based on a more integrated strategic approach and on environmental need assessment. This new approach takes on board several recommendations from the greening evaluation study.** This goes in particular for three groups of findings in this evaluation:

- 1) A clearer targeting of actions towards environmental objectives is addressed with the new architecture of “green” measures;

34 COM(2017) 713 final, 29 November 2017.

35 COM(2018) 392, 393, 394 final, 1 June 2018.

- 2) Flexibility for Member States to cope with recognised environmental and climate priorities;
- 3) Substantial simplification through the elaboration of specific strategic plans covering both pillars of the CAP.

Hence, the CAP-proposals reshape the support for environmental and climate action; three out of the nine specific CAP objectives will concern the environment and climate.

Member States' CAP Strategic Plans will spell out how these objectives are met and how funding from both CAP pillars are deployed.

New "conditionality" will link all farmers' income support to enhanced environment- and climate-friendly farming practices. "Eco-schemes", funded from national direct payment allocations will have to address the CAP environment and climate objectives in ways that complement the other relevant tools available and go beyond the conditionality requirements; Member States design them as they see fit.

At least 30% of Member States' rural development budget must be dedicated to environment and climate measures, in particular 'agri-environment-climate commitments' (voluntary for farmers).

Actions under the CAP are expected to contribute 40 per cent of the overall CAP budget to climate action.

Annex 1: Procedural information

1. Lead DG, Decide Planning/CWP references

Lead DG: Directorate-General Agriculture and Rural Development (DG AGRI)

Decide planning reference: 2017/AGRI/002

2. Organisation and timing

This was a policy evaluation project included in the DG AGRI evaluation plan 2016-2020. It followed the Better Regulation guidelines with regard to evaluations. The evaluation work was carried out through an external evaluation study, contracted through a service request under a framework contract, conducted in line with the DG AGRI procedure for the organisation and management of policy evaluations carried out by external contractors. The project was supervised under the technical as well as the contractual management of DG AGRI unit C.4, in charge of Monitoring and Evaluation.

An Inter-service Steering Group (ISG) was set up by the Commission in May 2016, with a mandate to provide information, prepare the terms of reference, monitor the work of the external study team, discuss and give advice on the approval of the final report, and comment on the draft evaluation staff working document.

The ISG was composed of the Secretariat-General of the Commission and DGs ENV, CLIMA, JRC, REGIO, BUDG, ENER, ECFIN, GROW and AGRI (12 different units). The Steering Group started its meetings in May 2016 and held eight meetings.

The evaluation roadmap was published on 20 September 2016 and set out the context, scope and aim of the exercise. The roadmap presented the questions to be addressed under the five categories of effectiveness, efficiency, relevance, coherence and EU added value. During the public consultation period no feedback on the roadmap was received.

The evaluation project carried out by the external contractor started in November 2016. The final deliverable was received on 7 November 2017 and accepted. The external evaluation study provided the basis for this staff working document.

3. Exceptions to the Better Regulation guidelines

There was an exception in relation to the need to organise a dedicated open public consultation as part of this evaluation, since an open public consultation on the greening measures had just been carried out as part of the 2016 greening review. That public consultation was held between 15 December 2015 and 8 March 2016 with a very

successful response rate: 3 304 replies received with a good spread of different categories of respondents (individual farmers, public authorities, non-governmental organisations (NGOs), farmers’ professional organisations at EU, national, regional and local level). The consultation sought information from stakeholders with regard to their experience of the first year of application of the greening obligations under the CAP direct payment scheme. The scope of the questions to a large extent covered the needs of the present evaluation:

- effectiveness: questions on agreement with environmental objectives, decision factor for management choices, impact on soil/carbon/biodiversity, impact on production potential;
- efficiency: questions on administrative burden, ease of implementation, questions on simplification;
- coherence and relevance: questions on agreement with environmental objectives, ease of implementation;
- EU value added: questions on level playing field.

4. Consultation of the Regulatory Scrutiny Board (RSB)

The RSB scrutinised this evaluation staff working document at a meeting on 21 March 2018. The opinion of the board was positive, with some comments; the comments made (in the left column in the table below) have been addressed as follows:

Board’s recommendation	How the draft was amended
<p>Better explain what was expected of the evaluation. The report could more clearly explain the initial objectives, i.e. the state of the initiative’s implementation at the level of Member States. It could better delimit what the evaluation was expected to deliver, given the short reference period and the constraints of the analysis. Also, the analysis could be clearer on the reasons for the information gaps encountered during the evaluation and clarify how these could be resolved in the future.</p>	<p>Chapter 1 — text added on: strong scrutiny greening has been subject to; incipient implementation of greening at the time of the evaluation; greening coverage in the EU — Member States’ level (also including a reference to Chapter 3); delimitation of evaluation; reasons for information gaps and solutions for the future depending on choice of future greening measures.</p>
<p>The policy context could be clearer on how the initiative is supposed to interact with other relevant policy initiatives, e.g. Natura 2000 and other environmental measures within the CAP.</p>	<p>Chapter 2 — text added on greening v Natura 2000 and other environmental legislation.</p>
<p>Improve the analysis of the relevance. The report could provide a more in-depth analysis of the relevance of the initiative, with regard to the balance between</p>	<p>Chapter 2 — text added on the Commission’s greening proposal and the watered-down text adopted by the Council and Parliament;</p>

<p>environmental ambition and implementation flexibility for Member States. It could better explain whether further EU action is necessary, and what would be the consequences of the lack of appropriate measures. The report could also better explain the impact of thresholds and exemptions on the success of the greening measures.</p>	<p>Chapters 5.5 and 5.6 — text added on: analysis of the relevance of greening measures; Member States focusing more on reducing administrative burden and smooth implementation; beneficiaries’ decisions follow primarily agricultural considerations; room for improvement at EU level by applying an environmental approach to implementation; thresholds and exemptions varying from one Member State to another and the reasons/consequences.</p>
<p>Better describe the lessons learned. The analysis should provide conclusions that build on the recommendations of the support study and the Court of Auditors report. The evaluation should better report on lessons learned from the implementation of the initiative to inspire further the policy decision process. It could also explain how to better link environmental performance to payments, without impeding the ability of farmers to innovate.</p>	<p>Chapter 6: Text added on lessons learned, their impact on the design of the future policy, with reference to the relevant Commission documents (Communication and legislative proposals)</p>
<p>Better present stakeholders’ views. The report needs to present more comprehensively the views of various stakeholders, including from the REFIT Platform, on the different evaluation questions. Views of the agricultural sector and the farmers could be presented in more detail, especially with regard to regulatory burdens associated with greening.</p>	<p>New Chapter 5.7 added: text on stakeholders’ views.</p>

5. Evidence, sources and quality

An external independent study is the basis for the conclusions presented in this document. A contract was signed on 7 November 2016 with Alliance Environnement.

From the start of this evaluation, it was clear that the availability of data on implementation on the ground would be limited, given the short period the policy has been in place. In addition, the introduction of the greening measures, a significant new type of instrument for direct payments under the CAP, involved both Member States and the European Commission having to become familiar with a whole set of new implementation rules, which inevitably take time to bed down. It is worth pointing out that this change came about at a time of other significant changes to the way in which

direct payments worked. The methodological approach designed for each ESQ has had to take these factors into account to enable as deep an analysis as possible within the limitations faced. The following data sources were used for the evaluation study. The data sources for each ESQ are specified in the relevant chapter of the evaluation study report (the list of ESQs can be found in Annex 4).

Eurostat data

Eurostat **annual crop statistics** have been used to source detailed information on area, yield and production harvested during the crop year at national level, together with information on the selling prices³⁶ of the main agricultural commodities, such as wheat, rye and barley (absolute prices and indices). These data were used to inform the causal analysis in ESQs 2-6, including establishing the counterfactual situation in 2014.

Although it was intended to use Eurostat data on permanent grassland to inform ESQ3, this proved not to be possible due to the difficulty in establishing which areas were subject to CAP payments and which not. This is largely due to the changes in the CAP eligibility criteria in 2013 and the multiplicity of other factors influencing which areas of permanent grassland are subject to CAP payments.

The **Eurostat Farm Structure Survey** (2010) was also used to identify the area of land and number of farmers in different Member States and regions where monocropping is most prevalent, and where as a result, the crop diversification measure might be expected to have most impact.

Integrated Administration and Control System (IACS)

Definition: In the Integrated Administration and Control System (IACS), all data declared by the farmers on their application forms is recorded (e.g. land use, animals etc.). In order to source detailed information on cropping patterns and land use at the farm scale, it had been hoped that data from IACS could be made available as this contains information on farmers' declarations for direct payments.

Availability: IACS data are managed by the national administration in each Member State. The use of these data is restricted according to national privacy rules as they contain private and sensitive data. In some Member States, data can be extracted and provided upon request, mainly as aggregated data. Thus, it was not possible to access the data in a consistent, comprehensive manner for the purposes of this evaluation. An email request was sent to named individuals in Member States requesting specific information directly. The request focused on the extraction of individual data on crop declarations in order to identify farms that had to diversify their cropping patterns and the types of crops

36 'Selling prices' are defined in Eurostat as prices recorded at the first marketing stage, i.e. producer prices.

being grown by farmers as N-fixing and catch crops. It also requested areas of landscape features, terraces, buffer strips and forest edge strips which farmers declared for GAEC both before greening and subsequently. Despite this, few responses were received (i.e. IACS data from CZ, DE, ES, LV, PL and RO); in most cases, the data provided did not allow to carry out consistent analysis.

Use for the analysis: Indeed, data from crop declarations were aggregated instead of individual, preventing the identification of individual choices of farmers who had to diversify.

Regarding N-fixing crops and catch and cover crops, the ES and CZ data provided were the same as those sent as monitoring data to the European Commission. For Germany, the database was incomplete (missing some Länder and counterfactual data) and the code meanings were missing. Therefore, only data for LV, PL and RO could be used. Their analysis allowed assessing the main N-fixing crops and catch and cover crop mixes declared as EFA (which could not be determined from monitoring data analysis).

For landscape features, for all these Member States except Germany, the data collected were those transmitted to the European Commission as monitoring data. Regarding Germany, the data included walls, hedges and tree lines declared as EFA and those protected under cross-compliance. Yet, the database was incomplete since only some Länder had delivered such data to the German system. Also the code meanings were missing. For these reasons no analyses were carried out on IACS data for landscape features.

Land Parcel Identification System (LPIS)

It had also been hoped to access the vector-based Land Parcel Identification System (LPIS) of agricultural areas as a means of identifying and quantifying the land eligible for payments in a spatially explicit way and tracking land-use changes over time.

Definition: The LPIS is mainly designed to identify, locate and quantify the agricultural land eligible for payments. The data the LPIS holds are geo-referenced polygons of land parcels (units of management or production), and information on the type of agricultural area (land cover type), as a minimum in terms of broad categories such as arable land, grassland, permanent crops, and broad families of crops, with their area values (eligible hectares). The basic entity in the LPIS for identification of the land is the reference parcel. The reference parcel is always digitised and should hold stable land units with a validated agricultural area to which the agricultural parcels can be related. The agricultural parcel has to be completely geospatial from 2018 onwards.

Since over the years the CAP has reinforced efforts to take on board environmental issues (e.g. via cross-compliance), LPIS could potentially store additional data and interact with environmental and other databases (depending on the Member State).

Availability: Although LPIS data are subject to the INSPIRE directive, the policy of making LPIS data publicly available varies between Member States, due to issues

surrounding the confidentiality of the data. As a result, in most Member States, LPIS data are not public and must be requested from the national authorities. Where these are made available (e.g. AT, BE-FI, DK, NL), and can be downloaded on the internet only information on the land use on parcels is available but not the farm holding boundaries. In some Member States, maps from the LPIS can be viewed but not downloaded (ES, SI, and SK).

Use for the analysis: The fact that the data on land parcels in the publicly available portals are not linked to data about the farm holding prevents analyses being carried out at farm level and linked with the information contained in the IACS³⁷. Hence, LPIS analysis had only limited potential for the present evaluation, where the rules relating to the greening measures apply at farm level, and especially since it was not possible to carry out any analysis common to all case study Member States. Given the significant differences in the various indicators and formats available, it was not judged efficient to carry out individual analysis for each of the few Member States where data are available.

Farm accountancy data network

FADN data have been used to carry out analyses of changes in farm management and economic viability at farm level. This is particularly important for ESQ2 (crop diversification), and ESQ6 (effects on economic viability). Data from 2014 have been compared with 2015 data, the latest year for which Member States have collected FADN data. However, although most Member States have provided the European Commission with the 2015 data, these have not yet been quality checked and made available in a comparable form across all Member States at EU level. So the data used for this evaluation study are provisional data, focusing on the case study countries only. The main caveat for the use of these data is that not all of the crop types which count as separate for the crop diversification measure are shown separately in the FADN database, so the number of undiversified farms is an overestimate.

Data on administrative costs

Data on the administrative costs of greening were received directly from Member States. Of the 28 Member States, 21 responded to the request for data, with 17 providing quantitative estimates, filling in a spreadsheet specifically designed for this study. This differentiated between set-up and running costs. Information was also sourced from the Commission. Data from the CATS (**C**learance of **A**ccounts Audit Trail System)

37 In some Member States, organisations in charge of IACS and LPIS databases are research institutes. Since they have easier access to the data, they have been able to carry out analysis relevant to the evaluation study, and their results have been used to inform judgments. This is the case of Wageningen University (Van Doorn, 2017).

database for 2015³⁸ was also investigated as a means of gaining a broad indication of administration costs for controls and cost of compliance. However, as this was the first time that these data were used for this purpose, the analysis was used in the end as ancillary information, rather than as a source on which to base firm conclusions. The main source for private costs were replies from farmers to the open public consultation, supplemented with interviews with farmers in the case study countries.

Environmental indicators

Environmental indicators were sourced to inform the counterfactual situation prior to the introduction of the greening measures. These include data from the CAP CMEF context indicators, the relevant SEBIs (streamlining European biodiversity indicators) and Eurostat agri-environmental indicators (AEIs). Since there are no data to establish values for these indicators since the introduction of the greening measures in 2015, these data only serve as baseline information on which to assess the likely environmental and climate impact of the greening measures based on the effects the measures have had on farm management practices.

Data on policy implementation

In relation to the greening measures, the core data sources used were as follows:

- **Notification data** for Member State implementation choices for the implementation years 2015, 2016 and 2017. This was provided by Member States in the preceding year.
- **Monitoring data** from Member States against the output indicators relating to the greening measures, at Member State and at NUTS3 level for 2015 and 2016, which provides information on farmer implementation decisions. Data were available for all Member States apart from France (in both years). Information on the permanent grassland ratio was still subject to checks and discussions with Member States in some cases, particularly in the cases where Member State have asked for their reference ratio to be adjusted (as permitted under certain circumstances where trends in the ratio change significantly).

In addition, given the interactions of the greening measures with other CAP policy instruments and measures, information has been sourced on the way cross-compliance is implemented in Member States (using the JRC MARS-Wiki data) and on the use of VCS and the programming of a number of rural development measures, with a particular emphasis on the content of the agri-environment-climate measure. Information was sourced both for the year preceding the introduction of greening (2014) and the current financial period.

38 CATS data shows the numbers of farmers who are detected as having failed to comply with an aspect of greening, and the extent of their non-compliance.

Literature reviews

The short time that has elapsed since the introduction of the greening measures means that there are no values for the environmental indicators through which to discern the specific environmental and climate changes that have arisen as a result of the greening measures and indeed there are no impact indicators for the CAP that are able to isolate environmental impacts specific to the greening measures.

So the evaluation of effectiveness had to be carried out based on inference drawing on peer-reviewed scientific evidence of the general impacts of grassland protection and management practices, combined with an assessment of the degree to which changes in farming practices have occurred as a result of the greening measures. To this end systematic literature reviews were carried out on the effects of farming practices that could be influenced by the greening measures on biodiversity, water, soils, climate mitigation and adaptation and ammonia emissions (see Alliance Environnement, 2017; https://ec.europa.eu/agriculture/sites/agriculture/files/literature-reviews-report_en.pdf).

Given the early stages of implementation of the greening measures, no studies have been found that have monitored the actual impacts of any greening measures to date. Therefore the focus has been on reviewing the literature on the potential environmental and climate effects of the management practices that are related to the three standard greening practices and their equivalent practices.

The literature reviews deliberately cover the range of factors that influence the ability of a particular type of farming practice to deliver these environmental and climate outcomes, for example, whether allowing catch crops to flower has benefits for biodiversity. This has enabled an identification of where the nature, location and timing of farm management practices is critical to the delivery of environmental outcomes and helps to inform the analysis of the likely effectiveness of the greening measures.

The literature reviews have sought systematically to review the available literature to ensure full coverage of the relevant issues. A standardised template was produced for each environmental/climate issue. In summary the process undertaken to identify the relevant information sources was as follows:

- A search through references cited by the reports and information sources that the study team knew to be of relevance from previous work in these fields, supplemented by a search of IEEP's Reference Database and the references included in the literature review on the impacts of EFAs on biodiversity and ecosystem services carried out for JRC³⁹ (Tzilivakis et al., 2015. IEEP's

39 Tzilivakis, J, Warner, D J, Green, A and Lewis, K A (2015) Guidance and tool to support farmers in taking aware decisions on Ecological Focus Areas. Final report for Project JRC/IPR/2014/H.4/0022/NC, Joint Research Centre (JRC), European Commission.

Reference Database currently holds over 12 500 references, including at least 1 500 on agriculture and biodiversity, soils, water and climate.

- A search for references that cite the references found in the previous step, using Google Scholar.
- Systematic literature searches using Science Direct with various combinations of relevant key words in the title, keywords or abstract.
- A search for additional references by key authors and keywords, using Research Gate.

Although this process was carried out for all environmental issues the literature reviews differ in length. That for biodiversity is particularly long owing to the great complexity of the topic — with the variations in effects of farm management practices on different species and habitats to be considered. The length of the reviews also reflects the degree to which literature is available. For example a detailed biodiversity review was feasible due to the fact that this is a topic which has been the subject of significant detailed research over the years.

It should be noted that the JRC published in 2016 and 2018 two studies providing further insights on the impact of greening: *The EU-Wide Individual Farm Model for Common Agricultural Policy Analysis (IFM-CAP v.1): Economic Impacts of CAP Greening* (<http://publications.jrc.ec.europa.eu/repository/handle/JRC108693>) and *Economic and Environmental Impacts of CAP Greening: CAPRI Simulation Results* (<http://publications.jrc.ec.europa.eu/repository/handle/JRC102519>).

Results of the public consultation on the first year of greening

From 15 December 2015 to 8 March 2016, the European Commission carried out an open public consultation on ‘Experience with the first year of application of the greening obligations under the direct payment scheme (CAP)’. This received 3 304 replies. These responses have been used as a data source for this study, particularly in relation to information about the drivers for implementation choices, as well as on the perceived administrative burden of the greening measures.

The use of case studies

Case studies have been used within this evaluation study as a tool for gathering information for two main reasons. First is the lack of available, standardised and consistent information at EU level about most of the land management practices and other effects of the greening practices on which data is required to answer the ESQs. Second is the variety of different implementation choices that can be taken in relation to both the greening measures themselves and their links with implementation choices under other CAP measures in Member States, the combination of which will have context specific effects.

They were a very significant source of data for this evaluation study. The case studies collected primary and secondary information to support the development of the counterfactual and the responses to the ESQs, providing detailed and context specific

qualitative and quantitative information to complement the EU-wide information collected to inform the analysis and answers to the ESQs. The information was gathered via statistical data collection — national, regional and local level; documentary research, including literature reviews; and interviews (face-to-face, semi-structured interviews) at national and regional level with key stakeholders including farmers, farm advisers, environmental NGOs, Government officials and academics.

Ten case study countries were chosen for this evaluation: Austria, Czech Republic, France, Germany, Latvia, the Netherlands, Poland, Romania, Spain, and the UK. The case studies were carried out at a national level, but with a particular focus on two administrative regions in the federal Member States to source more detailed information on the way that the greening measures are operating in practice at farm level and how the measures fit in with other policies in these areas.

All case studies followed the same general approach and applied the same methodology. The case study template and guidance was prepared by the core study team and set out the data to be collected in relation to the counterfactual and the ESQs.

Summary of the data sources used

Table 4 summarises the range of data sources used for the purposes of the evaluation study.

Table 4: Details on the type of data sources used for the evaluation study

Data	Source for counterfactual (2014 or nearest year)	Source for 2015 and 2016 data	Relevant ESQs
Drivers of implementation choices		EC public consultation on greening Unpublished interviews with EU-28 countries from the 2016 study on the implementation of the CAP Case studies	ESQ1
The state of farming in in the EU-28 and specific Member States: <ul style="list-style-type: none"> production statistics for the most important crop and livestock products farm size and 	Eurostat Annual Statistics	Eurostat Annual Statistics	ESQs 2-6
	Farm Business Survey	Farm Business Survey /	

type by country	/ FADN	FADN	
Farming practices:			ESQs 2-6
Crop diversity	FADN	FADN	
Permanent grassland	CAP monitoring data from 2007-2013	CAP monitoring data for 2015 and 2016	
Fallow	Eurostat Annual Statistics FADN	Eurostat Annual Statistics + CAP monitoring data for 2015 and 2016 FADN	
Nitrogen-fixing crops	Eurostat Annual Statistics	Eurostat Annual Statistics + CAP monitoring data for 2015 and 2016	ESQs 2-6
Cover crops	Farm Structure Survey	CAP monitoring data for 2015 and 2016	
Management and condition of landscape features	No data sources available	CAP monitoring data for 2015 and 2016	
State of the environment/climate: Biodiversity Water quality Soils GHG emissions Ammonia Emissions	Data available for 2014 or 2012 for most indicators: CAP CMEF context indicators Eurostat AEIs SEBIs	No updates of these indicators available Assumptions made on the basis of causal analysis linked with established literature on the relationship between farming practices and their environmental and climate effects.	ESQs 7-10
Relationship between farming practices and environmental/climate effects	Literature review		ESQs 7-10
Administrative Costs	N/A	Member State data Case study farmer interviews EC public consultation	ESQs 12-13
Relevant EU legislation (and national legislation in the case study countries) and the requirements they place on farmers	Legislation Case Studies	Legislation Case studies	ESQs 2-10, 14-16
Cross-compliance requirements	JRC MARS-Wiki database	JRC MARS-Wiki database	ESQs 2-10, 14
RDP measures, particularly the agri-environment-climate measure	Case studies RDP programming data and output indicators for the	Case studies RDP programming data for the 2014-2020 period, including the detailed	ESQ 14

	2007-2013 period Data from studies carried out in 2007- 2013 (e.g. Keenleyside et al., 2011)	descriptions of the AECM	
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Annex 2: Stakeholder consultation

The evaluation benefited from the results of the open public consultation on the greening measures carried out in the context of the 2016 greening review. The various contributions received were summarised in a synopsis report⁴⁰.

To guarantee full consultation coverage, the consultation strategy for the evaluation included a presentation of the findings of the external evaluation study to the Civil Dialogue Group on Direct Payments and Greening and a focused discussion on this basis with a view to collecting feedback to be used as input for the preparation of the staff working document. In the context of the external evaluation study work, consultation activities in the form of targeted interviews and surveys, targeted the following main stakeholders: public authorities responsible for implementation of the greening direct payment in EU Member States including paying agencies, and bodies delivering farm advisory services; farmers and farmers' organisations; academia and experts as well as NGOs and other civil society organisations active in environmental and climate protection, and agri-environmental issues. A focused discussion on the preliminary findings of the study was to be held in the context of the expert group on monitoring and Evaluating the CAP to collect the views from evaluation experts from the Member States.

The results of the external evaluation study were presented to the Civil Dialogue Group on the CAP on 11 December 2017.

- The WWF pointed out the importance of not allowing production on fallow land and no grazing as one of the requirements of EFAs.
- The EFFAT addressed the lack of analysis on agroforestry and the role of universities and academics in the implementation of greening.
- FoodDrinkEurope asked what impact the new financial rules under the Omnibus Regulation would have on the implementation of greening.
- BirdLife asked for clarification of (1) the calculation of the ratio of permanent grassland and (2) the difference between designated area and declared area. BirdLife commented on the big difference in terms of crop diversification between Spain and other Member States. BirdLife also noted the difference in outcomes on internal coherence between the evaluation study made by Alliance Environnement and BirdLife's own study. It presented written comments (see below).
- The EFNCP recommended extending the observations to the change of the definition of permanent grassland in the Omnibus Regulation.

40 Annex 5 to SWD(2016) 218 final.

- COPA underlined that farmers had chosen those greening measures that were the easiest for them to implement. So COPA asked whether there were any plans to continue the study to see whether there were different results in implementation in the next few years. COPA also asked how administrative costs had been estimated in the study.
- COGECA itemized the comparative calculation of the permanent grassland ratio.
- The contractor clarified the issue of flexibility and management of landscape features under the EFA, in particular the time and duration of fallow land, to allow ploughing. As regards agroforestry, the difficulty consists of measuring agroforestry. Concerning the difference between the declared area by farmer and the designated area by Member State, the contractor pointed out that not all would be eligible for the CAP payments. The reason for the difference in terms of coherence was that the evaluation study looked for coherence of similar measures — in particular every single measure with similar objectives — in delivering (cross-compliance, agri-environmental measures, etc). Regarding the calculation of administrative costs, the contractor stated that it was based on the survey of Member States on the administrative costs that they face as a result of greening.

Stakeholders were invited to comment later in writing. Birdlife Europe stated as follows, also explicitly addressing considerations for the impact assessment on the future CAP and explicitly referring to its fitness check on CAP legislation in relation to the environment.

- Study very good, robust methodology; important conclusions for informing the discussion on the future CAP. Problem inclusion of options or baselines by Member States which allowed for very few changes to be made to farming practices.
- EFAs' lack of impact due to Member States' and farmers' options with low biodiversity value, such as catch crops and nitrogen-fixing crops, rather than e.g. field margins and landscape features. Genuine EFAs are needed in the next reform: 1) must apply to all types of farms; 2) only involve natural vegetation with a demonstrable link to supporting pollinator numbers, rather than protein crops and catch crops etc.
- Coherence only compares greening with other environmental requirements of the CAP. By contrast, the recently published study 'Is the CAP Fit for the purpose? An evidence-based fitness check assessment' — based on a meta-analysis of peer-reviewed literature — assessed the overall coherence of the CAP.

At the 8 February 2018 meeting of the expert group on monitoring and evaluating the CAP, the Commission informed participants about the publication of the contractor's evaluation report, which was made available to them via CIRCA, and asked them to send comments in writing, but no feedback was received.

Annex 3: Methods and analytical models

This Annex provides a description of the methodological approach to the evaluation taken by the external contractor that supported this SWD.

A3.1 Intervention logic

The starting point for the evaluation methodology was the development of an intervention logic for the greening measures, focusing on their contribution to the CAP's general objective 'sustainable use of natural resources and climate action'.

The methodological approach combines theoretical and empirical approaches and includes a variety of methods, both quantitative and qualitative, to address the different types of analysis that are required to respond to the ESQs. Where judgments rely on professional judgment, these were carried out by checking for consistency across among multiple sources.

The evaluation framework was developed where for each of the evaluation questions the following was set out:

- a brief understanding of the question;
- the methodological approach to be taken;
- the judgement criteria to be assessed, and the indicators to be used.

A3.2 Analytical tools used

Both quantitative and qualitative analytical tools were used for the study

Table 1: Analytical tools used for the evaluation study

Analytical Tool	Type of Tool	Purpose for which tool has been used	Relevant ESQ
Descriptive statistics	Quantitative	To describe different aspects of the statistical distribution of relevant variables, including frequencies, percentages, mean values etc. enabling basic comparisons between data. Where spatial data are available, these can be presented in maps.	ESQs 2-13, ESQ16
Stakeholder analysis	Qualitative	To analyse stakeholders' (including farmers') attitudes and responses to the greening measures.	ESQ1 ESQs2-6 ESQs7-11
Cost-effectiveness analysis	Quantitative and qualitative	Used to assess the efficiency of policy measures by comparing the costs associated with one policy with those of others with similar objectives.	ESQ13

Coherence and relevance matrices and scoring	Qualitative	Used to describe the coherence between policy measures and their objectives as set out in the intervention logic as well as the relevance of policy measures with identified objectives, priorities and needs. The scoring involves qualitative judgments of the interactions to be carried out and requires triangulation with other data sources to ensure the analysis is robust.	ESQs 14, 15, 16
Legislative analysis	Qualitative	To ensure that all analysis is accurate and robust and to inform the assessments of coherence, relevance and EU added value.	All, esp. ESQs14-17

A3.3 Establishing the counterfactual

The approach ultimately taken was to determine the counterfactual as the situation in 2014, given that the greening measures are a wholly new instrument, implemented for the first time in 2015. However, in practice this is not a completely straightforward counterfactual since not all the greening measures are new. In practice the greening measures comprise:

- Some elements that were previously under cross-compliance GAEC standards;
- Some elements that may have been supported under the AECM previously;
- Some new elements.

In addition, other issues associated with using the year 2014 as a counterfactual include the fact that there is no clear baseline available regarding the full range of farming practices taking place at farm level prior to the introduction of the greening measures and information on the state of the environment is also variable.

In addition to this ‘static’ counterfactual situation, in order to seek to determine whether or not changes would have been likely to occur without the greening measures in place, a ‘dynamic’ counterfactual scenario was set out, primarily for the purposes of determining what the likely future market dynamics might be to 2020 for the different production types affected by the greening measures.

The static counterfactual situation was developed in broad terms for the EU-28 and in detail in the case study countries. The dynamic counterfactual scenario was set out at the EU-28 level, with details of likely differences between Member States identified where feasible. A summary of the indicators and variables used for the static counterfactual is set out below.

Static counterfactual situation — 2014

The static counterfactual comprises information on (see also Table above):

- the state of farming in the EU-28 and specific Member States in 2014 covering production statistics for the most important crop and livestock products and farm size and type;
- information on farm management practices insofar as this was available;
- the state of the environment at EU-28 level and in Member States;
- a list of the relevant EU legislation (and national legislation in the case study countries) and the requirements they place on farmers in 2017;
- information on the contents of the cross-compliance GAEC standards and the AECM measure in the EU-28 in 2014 and in 2017.

Although it was intended to use a single year for the counterfactual wherever possible (2014), this was not always feasible in practice given that different data sources are not updated at the same frequency. For the ‘state of farming’ counterfactual, the year chosen is 2014, as the most recent year for which production statistics are available prior to the implementation of greening. Where information on farm management practices were available, the date for which they were available varied, with the latest information for some of these, such as catch crops, being 2010. For the state of the environment, 2014 data are only available for farmland birds, water quality (nutrient balance) and greenhouse gas emission data. For most other indicators the most recent figures relate to 2012.

In the case of environmental and climate indicators, this did not affect the analysis. Due to the fact that there are no data for these indicators since 2015, these data only served as baseline information on which to assess the likely environmental and climate impact of the greening measures based on the effects they have had on farm management practices.

In relation to the policy information — the environmental legislation in place and the implementation of cross-compliance and the agri-environment-climate measure — the counterfactual situation was taken as the current state of implementation, as this was the most relevant data against which to assess the ‘policy off’ situation, i.e. what would happen if the greening measures were not in place.

The key issue encountered in relation to the data for the static counterfactual is that they are not spatially explicit. This means that it is not possible to ascertain the situation in 2014 on the specific areas of land that are now subject to greening at a regional or more local scale. However, a more general picture of the situation in 2014 could be provided and compared with the data available for 2015 onwards where these were available.

Dynamic 2020 counterfactual scenario

To determine the likely changes in farming and practices and state of the environment that might have occurred anyway over the time period to 2020 without the greening

measures in place, a dynamic counterfactual scenario was developed that identified in broad terms:

- the likely trends to 2020 in a range of macroeconomic factors exogenous to the CAP including world market prices for beef, dairy, pigmeat, poultry meat and lamb plus livestock feed and the 10 arable crops most commonly grown in the EU in 2014; agricultural labour prices; land prices; fuel prices;
- any anticipated major changes (>5 % impact) in the aggregate production of livestock or arable crops expected as a result of wider economic or technological developments, climatic changes or other factors;
- likely significant changes in land use and land cover, without greening in place;
- any anticipated changes in the state of the farmed environment, given these trends, if existing environmental policies were to remain in place, but the CAP greening measures were not operating.

In terms of the CAP budget, this counterfactual assumes the total budget for the CAP agreed as part of the MFF negotiations for the 2014-2020 period is maintained, but without greening measures (i.e. the 30 % of the budget allocated to the greening measures is still allocated to direct payments).

A3.4 Evaluation challenges and limitations

There are challenges in establishing the results of greening.

- A number of other instruments — both CAP and non-CAP at EU level, and in national legislation, target similar outcomes. This makes it difficult to isolate the precise impact of greening and its separate components — crop diversification, permanent grassland and EFAs — as required by the study.
- CAP greening is a wholly new measure introduced in early 2015, so only a very short data series is yet available to compare with what went before.

Some of the main methodological challenges faced have been:

- the limited availability of robust baseline data for all greening elements (e.g. no data on catch/cover crops) and the challenge of establishing a robust detailed counterfactual, given the difficulty in ascertaining the situation in 2014 (prior to greening) on the areas of land that are now subject to greening at a regional or more local scale;
- the lack of access to IACS and LPIS data to perform more detailed analysis of changes at parcel level;
- the limited data available on certain aspects of implementation crucial to assessing the environmental and climate effects of greening, in particular the species of crops grown under the EFA N-fixing crops and cover/catch crops elements, and information on the location of the EFA elements within the parcel and the farm;
- the complex cause and effect relationships associated with specific farm and forest practices and their different environmental and climate impacts in different locations

and at different scales, which makes it difficult to measure the net impact of a given measure;

- the relative scarcity of literature on expected environmental impacts of greening in some parts of the EU; [A more detailed evidence base is available on the effects of different farm management practices on biodiversity than on the other environmental and climate issues under investigation. However, even here the available evidence is mainly from well-studied taxa (e.g. butterflies, bees, some plants and especially birds) and mainly from well-studied countries, especially North-West Europe (UK, France, Netherlands, Germany), and some from Spain and Scandinavia. Far fewer data are available from central, eastern and other Mediterranean countries.]
- the short timescale for monitoring change, given the very recent introduction of the greening measures — in particular it is difficult to disentangle the short-term issues arising from the introduction of a new policy mechanism from longer-term effects;
- the difficulties of isolating the effects of the greening measures from those of other CAP policy instruments and measures or external drivers; and
- issues of scaling up results from case studies to form generalised judgments at EU level.

These limitations inevitably limit the robustness of the conclusions that can be drawn. Over the period of the evaluation the contractor has reviewed the methodological approaches chosen and adapted these where necessary. The contractor expressed confidence that the methods used were appropriate to analysing the data available.

The ISG carried out a quality assessment of the external report and judged that the report could be approved as overall it complied with the conditions of the contract and relevant professional evaluation standards.

Annex 4: Evaluation study questions

A. Causal analysis

Implementation choices of Member States and farmers

1. What are the drivers behind implementation choices regarding the greening practices and to which extent
 - at the level of the Member States administrations;
 - at the level of the beneficiaries?

Farming practices and production effects

2. To what extent has the crop diversification measure resulted in more diversified cropping patterns and rotations?
3. To what extent has the permanent grassland measure (including both environmentally sensitive permanent grassland (ESPG) and the ratio of permanent grassland) resulted in maintenance of or reconversion into permanent grassland or triggered its conversion into arable land?
4. To what extent has the ecological focus area measure led to changes in use of the arable cropping area and creation of additional ecological focus area (fallow, landscape features, agro-forestry, etc)?
5. To what extent have the greening practices influenced agricultural production in terms of:
 - Quantity;
 - Quality;
 - Producer prices;
 - Geographical distribution?
6. To what extent have the obligations and related payments under the greening in direct payments impacted on the economic viability of the farms as regards farm income and the levels of production cost and revenue in the farms affected?

B. Effectiveness

Ecological Focus Area

7. To what extent has the ecological focus area measure impacted on the environment and climate in terms of:

- Biodiversity;
- Other environmental areas, such as soil quality and erosion, water, climate?

Crop diversification

8. To what extent has the crop diversification measure impacted on the environment and climate in terms of:
 - Soil quality and erosion;
 - Other environmental areas, such as water, biodiversity, climate?

Permanent grassland

9. To what extent has the permanent grassland measure impacted on the environment and climate in terms of:
 - Climate (carbon sequestration)?
 - Biodiversity especially where permanent grassland benefit from additional protection as ESPG?
 - Other environmental areas such as biodiversity, soil quality and erosion, water?

Overall environmental and climate impact

10. To what extent have the greening practices overall contributed to the environmental and climate performance of farming?
11. To what extent has the greening increased the environmental awareness of farmers and increased their interest in more sustainable types of agricultural systems like organic farming, agro-ecology or encouraged farmers to enter in agri-environment-climate measures?

C. Efficiency

12. To what extent has the implementation of the greening practices led to a change in administrative burden:
 - at the level of the beneficiaries;
 - at the level of the Member States administration;
 - at the level of the Commission services?
13. To what extent have the greening practices been efficient in achieving the general objective of sustainable management of natural resources and climate action enhancing the environmental performance of farming?

D. Coherence

14. To what extent have the greening practices as part of the entire set of relevant CAP-measures

- delivered a coherent and complementary contribution to achieving the general objective of sustainable management of natural resources and climate action?
- impacted on the other general CAP objectives (viable food production and balanced territorial development)?

15. To what extent have the greening practices as part of the entire set of relevant CAP-measures delivered a coherent and complementary contribution to achieving the objective of Environmental/climate legislation and strategies, in particular the EU Biodiversity Strategy, Nature Directives, the Water Framework Directive, Nitrates Directive and the EU Soil Thematic Strategy?

E. Relevance

16. To what extent have the greening practices been relevant in contributing to the sustainable management of natural resources and climate action and the related specific objectives?

F. EU added value

17. To what extent have the greening practices created EU added value?