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*The UK statutory
conservation, countryside
and environment agencies*

Scoping the environmental implications of Pillar 1 reform 2014-2020

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Foreword

The introduction of the greening measures constitutes one of the most significant changes introduced during the most recent round of CAP reform. In particular, they mark a significant departure in the approach to direct payments, especially as greening now accounts for some 20% of the entire CAP budget.

The CAP is one of the major drivers of land use within the European Union. As a consequence, the agencies making up the UK Land Use Policy Group (LUPG) have long been interested in the environmental impacts of the direct payments regime as well as those resulting from the rural development measures¹.

Whilst it is still too early to evaluate fully the impacts of the most recent CAP reforms, there is considerable interest across the EU in the ways in which the various different Member States and Regions are now applying the new requirements. We therefore commissioned the Institute for European Environmental Policy (IEEP) to prepare a briefing on the way in which some key aspects of greening are being implemented within certain administrations. The final report also covers the differing approaches used to determine the acceptability of claims under the Basic Payment Scheme, especially in relation to the treatment of ineligible features and minimum activity requirements for farmers. Both of these issues seem likely to have significant environmental consequences in future.

In view of LUPG's membership, this report places particular emphasis on how the various implementation models adopted within parts of the EU compare with the range of approaches now being used in different parts of the UK. A relatively narrow range of topics have been addressed, but it was necessary to focus on some key implementation issues in order to contain the project within manageable boundaries.

Further analysis of how farmers have chosen to implement the greening measures will be needed before assessing their actual impact on the ground. Despite this, our report suggests a number of ways in which the environmental performance of greening could reasonably be improved at the current time.

Although this is a desk study, we are confident that it can make a useful contribution towards the current CAP simplification exercise through providing a useful overview of the diversity of implementation approaches now being adopted. Comparative studies of this type are likely to become ever more necessary as levels of subsidiarity increase - and in publishing this piece of work at an early stage in the next CAP reform cycle, we are hopeful that it will stimulate further thinking about the kind of evidence base that will be required in future.



Ruth Jenkins
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Chair of Land Use Policy Group

¹ <http://publications.naturalengland.org.uk/publication/6583034053656576?category=6237649992941568>



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Scoping the environmental implications of Pillar 1 reform 2014-2020

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1.1 Purpose and focus of the report

The UK Land Use Policy Group has commissioned this report to explore certain aspects of the reformed CAP Pillar 1 which may have environmental consequences as a result of the implementation rules or the policy decisions taken. The purpose of this work is to provide the LUPG agencies with an understanding of how Pillar 1 policies are being implemented, how close the UK approach is to those adopted by other Member States and any issues that may require further exploration.

The report focuses on five topics relating to the implementation of Pillar 1. The first three topics relate to the implementation of the greening measures in the EU. Firstly the report examines the implementation of Ecological Focus Areas; it provides a broad overview of the implementation choices Member States have made before looking in more detail at three of the measures and the specific rules on crop varieties permitted and other management conditions that have been put in place. It then looks at the new inspection and mapping requirements, reviewing how other Member States are dealing with the new rules. Secondly, the report looks at the designation of environmentally sensitive permanent grasslands (ESPG) under the maintenance of permanent pasture greening measure, providing an overview of what different Member States have done and why. Thirdly it investigates the choices made in four countries to apply 'equivalent practices' from 2015 onwards as an alternative to the three standard greening measures.

Beyond the greening measures, the report also investigates the ongoing issues surrounding eligibility for the Basic Payment Scheme, (and Single Area Payment Scheme, where this is still operates) looking at two issues in particular: the issue of ineligible features; and defining minimum activity criteria for active farmers.

The environmental implications of all aspects of Pillar 1 implementation covered in this report are brought together in a final conclusions section.

1.2 Methods and data availability

This report is based on desk-based research, supplemented by targeted information gathered from experts in selected Member States. Information has been gathered via a literature review, including discussion documents, briefings and presentations given at events where issues on Pillar 1 implementation have been discussed.

On the implementation of the greening measures, information is provided for all 28 Member States where this is in the public domain, the main source for which is the overview provided by the European Commission in its May 2015 information note (European Commission, 2015). This has been supplemented with information from an analysis of the implementation of the greening measures in nine Member States for the European Environmental Bureau (Hart, 2015) and discussions with a number of Member State experts.

2 Implementation of the Pillar 1 ‘greening’ measures

This chapter provides an overview of the implementation of certain aspects of the Pillar 1 greening measures and then considers some of the environmental implications of the decisions made. Information is provided for all 28 Member States where this is in the public domain and supplemented by information for a smaller selection of countries, derived from discussions with Member State experts.

A summary of the EU legislative framework for the greening measures is followed by an examination of the Ecological Focus Area (EFA) measure, in particular the choices made by Member States and issues surrounding mapping and inspection. It then goes on to look at the designation of environmentally sensitive permanent grassland (ESPG) under the ‘maintenance of permanent grassland’ measure and concludes with a review of the equivalent practices introduced by Member States in 2015 as an alternative to the standard three greening measures.

2.1 The legislative framework

Within the new Pillar 1 of the CAP there are three main measures providing farmers with ‘payment for agricultural practices beneficial for the climate and the environment’, otherwise known as ‘green direct payments’ or ‘greening’². These are:

- crop diversification,
- the maintenance of permanent grassland,
- and Ecological Focus areas (EFA).

Each measure has a suite of requirements and rules determining the land on the holding to which the obligations apply; 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) as well as 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 639/2014. A summary of the rules is set out in Annex 1.

In addition to the basic model of green payments whereby the three measures apply directly, there is an alternative approach that Member States may take. This allows for the introduction of ‘equivalent practices’. These are defined as ‘similar practices which yield an equivalent or higher level of benefit for the climate and the environment’ (Article 43(3)). All Member State decisions on the implementation of greening must be notified to the European Commission, but only the use of equivalent practices is subject to Commission approval. Section 2.4 provides further information on those equivalent practices implemented by Member States in 2015.

² Article 43 of Regulation (EU) 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.

The greening measures apply on the whole eligible area of the holding. However, organic farmers are deemed to comply automatically with these requirements and those participating in the small farmers' scheme are exempt (in those countries where this is available). Those land managers farming land within Natura 2000 sites or catchments 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.

2.2 Approaches to the implementation of Ecological Focus Areas (EFA) in different Member States

This section examines the different approaches taken within Member States to the implementation of EFAs. In particular, it reviews which of the ten permitted elements (covering both features and land management practices) have been chosen in different Member States as being eligible to fulfil EFA obligations. It also examines some of the detailed implementation choices surrounding certain elements (land lying fallow, short rotation coppice, catch crops/green cover, and nitrogen fixing crops) – such as the choice of crop types permitted, as well as where and how they can be grown (i.e. whether fertilisers and pesticides are permitted).

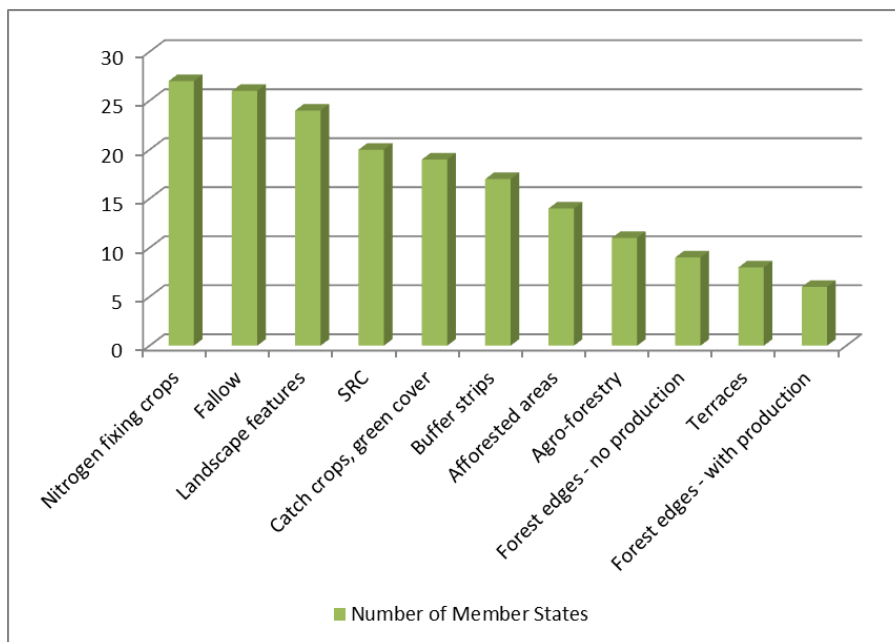
The information in this section is derived largely from the overview provided by the European Commission in its May 2015 information note (European Commission, 2015), supplemented with information from an analysis of the implementation of the greening measures in nine Member States for the European Environmental Bureau (Hart, 2015) and discussions with a number of Member State experts.

2.2.1 EFA options chosen within Member States

The most popular EFA elements, chosen in more than two-thirds of Member States³ (MS) are areas with nitrogen fixing crops (27 MS), followed by land lying fallow (26); landscape features (24); areas with short rotation coppice or SRC (20); and areas with catch crops or green cover (19) – see Figure 1.

³ In countries where decisions were taken at sub-Member State level (only the UK and Belgium), these figures highlight EFA elements if chosen in any of the four UK countries or two Belgian regions.

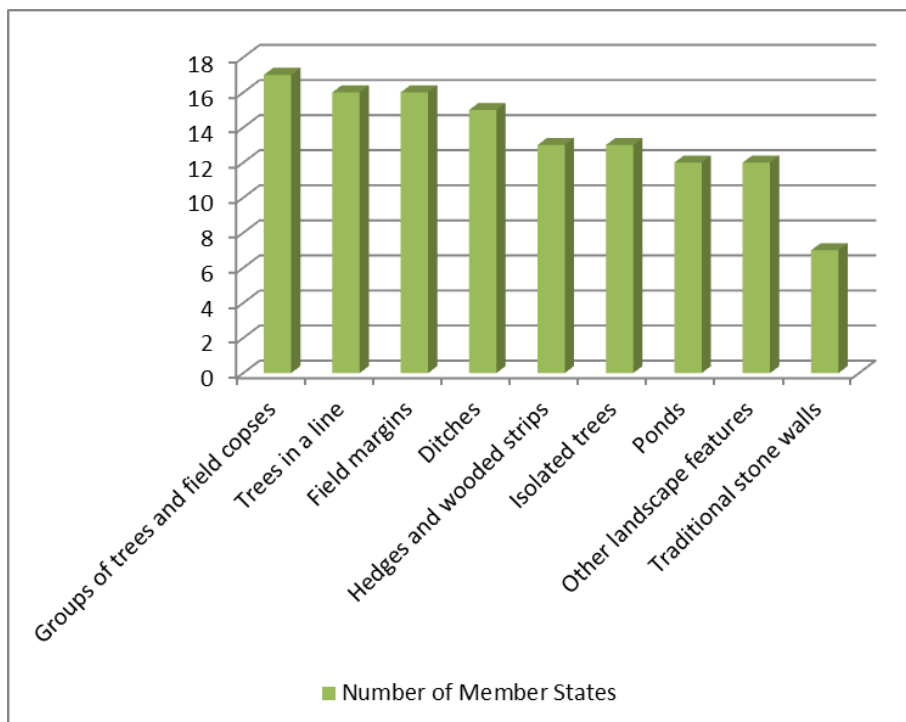
Figure 1: EFA elements chosen by Member States as eligible to qualify as EFA



Source: European Commission, 2015

Member States (and in the UK, each of the four countries) could also choose which of a series of nine landscape features were eligible to count towards the EFA obligation, if the main landscape feature option was chosen, which it was in 24 Member States. The relative popularity of the different landscape features is shown in Figure 2.

Figure 2: Types of landscape features permitted within EFAs for the EU-28



Source: European Commission, 2015

A breakdown of which elements have been chosen within each Member State is included in Table 6 in Annex 2. Only three have chosen to implement all or nearly all EFA elements (France, Germany, Hungary and Italy). The remaining Member States have limited the choice of elements available to farmers to fulfil their EFA obligations, with Lithuania choosing the least (only land lying fallow and nitrogen-fixing crops) and Finland, Spain and the Netherlands only choosing four elements each:

- Finland: land lying fallow, one landscape feature, SRC and N fixing crops;
- The Netherlands: one landscape feature, SRC, catch crops/green cover and N fixing crops; and
- Spain: land lying fallow, agro-forestry, afforested areas and N fixing crops.

The rationales for the different choices vary. For those Member States that have chosen to implement a large number of elements, the reason for doing so has been to keep the measure as flexible as possible for farmers to implement and to avoid farmers having to take land out of production (Germany and Italy, *pers. comm.*). Observations from some experts indicate that from the start, the greening measures have been perceived by some farming interests as a constraint on production rather than an opportunity to improve the sustainability of land management practices. As a result the negotiations were characterised by efforts to minimise the changes in management required by the measures.

Where a more limited range of options has been chosen, the reasons for this are varied. Some elements are excluded because they are not relevant (the management practice or feature may not occur in the territory in question e.g. terraces) or no funding has been provided in either previous or current RDPs for options that are only permissible if the practice has been supported in the past via rural development funding (e.g. agro-forestry, afforestation).

In other cases there has been a more active decision to exclude certain elements. For example where they are already covered by cross compliance and no further action is deemed necessary or appropriate via greening; options may have been discounted because they potentially had limited environmental benefit or added value; and/or their implementation may pose difficulties in relation to the control and verification of actions – for example where certain features are hard to map and/or control, for example using remote sensing.

2.2.2 Choice of crops, use of inputs and dates specified

For a number of the EFA elements, Member States have a choice to make about the types of crops permitted, as well as where, when and how they can be grown (i.e. whether fertilisers and pesticides are permitted and when the crops must be in the ground). This is the case for nitrogen fixing crops, catch crops/green cover and short rotation coppice (SRC). The number of permitted species varies considerably between Member States, but there are also a significant number of species which appear on more than one list. Different lengths of harvest cycles are identified for SRC.

Nitrogen fixing crops: The regulations state that Member States should establish a list of permitted crops and that these should be crops that the Member State considers to contribute to the objective of biodiversity. Rules must also be put in place on where such crops can be grown so as to avoid increased nitrogen leaching, deterioration in water quality or compromise biodiversity objectives. N-fixing crops must be present during the growing season (according to the crop specific growing season which is typical for the given species and production purpose). The rules established by Member States must take into account the requirements of the Nitrates Directive and the Water Framework Directive. Additional conditions can also be imposed, for example in relation to production methods.

Across the EU, 27 of the 28 Member States chose to allow N-fixing crops to count towards an EFA, making it the most popular EFA option chosen. The number of species permitted ranged between four and 19 crops. The most popular were: faba bean (*Vicia faba*) (all 27 MSs), pea (*Pisum spp*) (26), alfalfa (*Medicago*) (26), lupin (*Lupinus*) (24), and clover (*Trifolium*) (24). A full list of the species chosen by Member States can be found in **Table 7** Annex 2. The information provided by the European Commission does not provide any information on whether or not Member States are permitting fertilisers and pesticides to be used on N-fixing crops. The recent study for the EEB (Hart, 2015) found that in the nine Member States examined only the Netherlands had banned the use of fertilisers. In Hungary, the rules specify that the ceilings specified in the Nitrate Action Plan (NAP) for fertiliser inputs must be respected. In Germany, the rationale provided for allowing pesticides on N-fixing crops was that pesticides would promote higher yields than would otherwise be the case. In the case of Germany, as the rationale for the inclusion of this element as part of an EFA was to substitute for GM protein crops (particularly soya beans) from abroad, it was not seen as sensible to limit their yields unnecessarily. For this reason, even some Green Party Länder Ministers conceded to the use of pesticides on N-fixing crops (*pers. comm.*).

A range of different dates are stipulated for the time period over which N-fixing crops must be in the ground (see Box 1). In addition, in both Spain and Germany, the need to prevent nitrogen leaching means that there are particular requirements relating to the type of crop that immediately follows the N-fixing crop. In Scotland the crop area must have an adjacent EFA field margin to provide environmental benefits.

Box 1: Rules relating to N-fixing crops in selected Member States

Germany: there are different dates stipulated for different crops:

- Soyabeans, Linseed, Lupins and beans: 15 May – 15 August
- All other species: 15 May – 31 August

These must be followed by a winter crop or cover crop which must stay in the ground until 15 February the following year to avoid nitrate leaching.

Spain – the crop must be in the ground for a minimum period of time as follows:

- Crops for food – to be left until grain is mature.
- Crops for fodder - leave until flowering starts.

N fixing crops must be followed by a crop needing nitrogen (i.e. not fallow) to avoid risk of nitrogen leaching.

UK (England): the crop must be in the soil between 1 May and 30 June for inspection and the minimum area that can count towards the EFA obligation is 0.01 ha.

UK (Northern Ireland): the crop must be in situ for the entire period from 1 June - 31 July

UK (Scotland): the crop must not be harvested before 1 August in order to protect ground nesting birds and the crop area must have an adjacent EFA field margin.

UK (Wales): the crop must be present during the growing season - it can be a single crop or a mix of nitrogen-fixing crops, but the mix cannot include other crops.

Source: Hart, 2015

Catch crops/green cover: Member States are obliged to set up a list of crop species that can be used for this purpose within an EFA, identify the period for the sowing of these crops (which must not be later than 1 October) and can establish (but are not obliged to) additional conditions on their use and cultivation. Areas of catch crops eligible to count towards an EFA must comply with the rules relating to cross compliance SMR1 (covering compliance with Articles 4 and 5 of the Nitrates Directive⁴). They must be established by sowing a mixture of crop species or by under-sowing grass in the main crop but must not include areas under winter crops sown in autumn for harvesting or grazing

Across the EU, 19 Member States opted to include catch crops/green cover as being eligible to count towards EFA obligations. Romania is the only country to have opted for green cover alone and Sweden has permitted only catch crops that are established through under-sowing. Those that did not choose this option were Estonia, Greece, Spain, Italy, Cyprus, Lithuania, Malta, Portugal, Finland and, within the UK, Northern Ireland and Wales.

The number of species permitted varies significantly, ranging from seven (in the UK – England and Scotland) to 84 in Germany (see Table 8 in Annex 2). Germany is somewhat of an exception and most Member States have identified between 15-30 species. In some Member States, crop families are specified, rather than specific species (Denmark, Latvia, Poland, Slovakia) and in others the species are identified but grouped into separate crop families. Information on the actual species on the lists was identified for Germany, Hungary and the UK (England and Scotland) (Hart, 2015). This showed that three species were

⁴ Council Directive 91/676/EEC of 12 December 1991 concerning the protection of waters against pollution caused by nitrates from agricultural sources (OJ L 375, 31.12.1991, p. 1)

included on all four lists (Broad bean – *vicia faba*; white mustard – *sinapsis alba*; and purple tansy – *phacelia tanacetifolia*) whilst a further two species were included on three of the lists (alfalfa – *medicago sativa*; and rye – *secale cereale*).

There is an array of start and end dates for the sowing period identified for catch crops and green cover as shown in Table 1. The start dates range from 15 May in Slovakia (with Denmark permitting undersowing from 1 January) to 1 September in Bulgaria. The end dates range from 15 June in Sweden (31 May in Denmark for undersowing) and 1 October, with 15 October the end date in Romania for green cover.

Table 1: Sowing period - Start and end dates in Member States

Start Date	Member States	End Date	Member States
1 January	DK for undersowing		
15 May	SK	31 May	DK (undersowing)
1 June	BE (Wa) for undersowing, HR, SI		
15 June	LV	15 June	SE
20 June	CZ		
		30 June	DK (undersowing of maize)
1 July	BE (Wa) non undersown crops, FR, LU, HU, PL, UK (Eng)		
15 July	IE, NL		
16 July	DE		
1 August	RO, UK (Sc)		
		15 August	HR
		20 August	DK (all but undersowing), PL (some)
		31 August	BE (Fl) polders
1 September	BG	1 September	SI
		15 September	IE LV
		20 September	CZ
		30 September	BE (Fl) all regions except polders, BG, SK
		1 October	BE (Wa), DE, FR, LU, HU, NL, PL (some), UK (Eng), UK (Sc)
		15 October	RO (green cover)

In terms of input restrictions, from the information available, it appears that only three Member States have not permitted the use of fertilisers and/or pesticides, with Belgium(Wallonia) and Germany banning both and Belgium (Flanders) and the Netherlands only banning pesticides (with exceptions).

Some Member States and devolved countries within them have included conditions on the types of seed mixtures permitted (Belgium (Flanders), Belgium (Wallonia), Germany, Lithuania, Austria) and others have included other conditions e.g. Germany has added a condition that grazing is permitted but only with sheep and goats whilst Belgium (Wallonia) specifies that the destruction of the crop can only be via mechanical means or by freezing. Minimum periods for the crops to be visible in the field are also identified for a number of

Member States. These vary quite significantly: until 1 Oct (Poland – for stubble intercrops), 15 Oct (Austria), 20 October (Denmark), 31 December (UK-Scotland), 1 January (Lithuania) and 15 February (Poland – winter intercrops). In England, catch crops must be visible by 31 August and retained until 1 October and cover crops must be visible by 1 October and retained until 15 January the following year. In Slovenia crops must be visible between 15 September and 16 October. Table 8 in Annex 2 sets out the information available for all Member States as compiled by the European Commission.

Short rotation coppice (SRC): Member States have to produce a list of species that can be used for SRC within EFAs. The species chosen should be those that are most appropriate ‘from an ecological perspective’ and exclude species that are ‘clearly not indigenous’. No use of mineral fertiliser and/or plant protection products is permitted on SRC if it is to count towards an EFA.

Across the EU, 20 Member States chose to allow SRC to count towards an EFA. The number of species chosen ranged from one (in Estonia, Finland and the Netherlands) to 10 (in Belgium (Wallonia), Denmark and Ireland). The most popular species chosen are willow (*Salix*) (20 MS), poplar (*Populus*) (17), alder (*Alnus*) (14), birch (*Betula*) (11) and ash (*Fraxinus*) (11) (European Commission, 2015). However, there are also some more unusual species included on Member States’ lists, not often cited in the literature as species commonly used for SRC. These include walnut, mulberry, plane trees, oak and rowan. The inclusion of black locust (*Robinia spp*) on the list in Romania could be a cause for concern if planted in the wrong place, as its invasive nature has been reported as a threat to a number of Natura 2000 habitats (^{5,6} as quoted in Hart, 2015).

The use of mineral fertilisers is permitted in five Member States (Bulgaria, Denmark, Romania, Slovakia and Sweden); although there are limits imposed in Romania and Slovakia and in Sweden they can only be used in the first year of establishing the crop. Plant protection products are not allowed in 14 Member States, but are permitted in the six others. In some of these territories conditions have been added. For example, in Bulgaria pesticides are permitted only for poplar and willow and can only be used during the first two years and in Northern Ireland they are permitted for all species up to the end of the second year. In some territories, herbicides are also permitted, either in the first year of establishment (e.g. Belgium (Wallonia), Finland and Hungary) or first two years (Republic of Ireland). In Italy no inputs are permitted except for biological insecticides.

⁵ SFC Calimani-Gurghiu - Securing favourable conservation status for priority habitats from SCI Calimani-Gurghiu, LIFE08 NAT/RO/000502 (http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=3546)

⁶ Sturm U and Wilke C (eds) (2012), Management practices for invasive species in Danube Delta Biosphere Reserve (Romania) and Triglav National Park (Slovenia) (http://www2.ioer.de/download/habit-change/HABIT-CHANGE_3_4_1_A_Invasive%20species%20management%20in%20DDBR%20and%20TNP_update.pdf)

Figure 3: Seasonal timing rules for the implementation of land lying fallow, catch crops, green cover and N-fixing crops in selected Member States

Timing	Year 1												Year 2					
	Jan	Feb	March	April	May	June	July	August	September	October	November	December	Jan	Feb	March			
FR							Sown 1 July - 1 Oct											
							Sown 16 July - 1 Oct. No mineral fertiliser or PPP. Can be grazed, but only by sheep & goats				Cover crop period -> 15 Feb if follow an N fixing crop							
					Must be in ground from 15 May - 15 August (for certain crops) and 31 August for others													
DE	No agricultural use until 31 July																	
	No agricultural use from 1 Jan - 30 Sept																	
HU								Sown 1 July - 1 Oct										
IT	No information																	
NL							Sown 15 July- 1 Oct. Must have at least 10 wks growing period. No PPP allowed (some exceptions). Crops sown after maize on sand/loess soils does not count towards EFA				Cover crop period							
							Sown from 1 July - 20 August OR 1 Oct.				stubble intercrops in ground until 1 Oct / winter intercrops until 15 Feb							
RO								From 1 August - 15 Oct - only green cover										
ES	In place for at least 9 months any time from previous Oct to August																	
UK E					Must be in ground from 1 May - 30 June		Sown 1 July onwards - must be visible by 31 August and retained to 1 Oct				Cover crop period - to be visible by 1 Oct and retained to 15 Jan							
	In place from 1 Jan to 30 June																	
UK NI						Must be in ground from 1 June - 31 July												
	In place from 1 Feb - 31 July																	
UK S			Sown between 1 March - 1 Oct . Grazing permitted after harvest of main crop.							Can be retained later in season as winter cover until 31 December								
						do not harvest before 1 August												
	In place from 15 Jan - 15 July																	
UK W					must be present during growing season													
	In place for at least 6 months																	

Source: Hart (2015) based on questionnaire responses from case study experts and European Commission (2015)

Legend: Fallow Cover crops and green cover N fixing crops

2.2.3 Environmental implications of EFA implementation choices

Each of the EFA options varies in terms of its potential environmental benefits for biodiversity, soil, water and climate. The nature of the impacts, however, will depend on the type, location and management of features at farm level. Impacts will be context specific and depend on the area of land subject to the requirements and the extent to which the options applied will lead to a change in management. The choices made by farmers as to which of the permissible options they will implement on their land are not yet known and further analysis will be needed at the point at which this information becomes available.

An initial examination of the broad spectrum of implementation choices suggests that the majority of Member States have prioritised availability of choice for farmers and administrative considerations above environmental change. In particular this has been done by taking full advantage of the opportunities to support N-fixing crops, permitting fertiliser and plant protection products to be used (wherever this is not restricted in the legislation), including landscape features, buffer strips and terraces as they are already protected under cross compliance and introducing limited additional requirements for these features, as permitted under the greening measures. In these situations, there is unlikely to be much environmental added value arising from the use of the EFA measure. Although in the case of landscape features, it could be argued that including those protected under cross-compliance is a way of recognising the contribution made by existing landscape features and incentivising further farmers to maintain them.

One of the key impacts arising might be an increase in the use of N-fixing crops, particularly in areas with suitable growing conditions. Such crops can also count towards the crop diversification greening measure and most countries have also introduced voluntary coupled payments for protein crops (Hart, 2015).

Looking more closely at the implications of the species chosen and conditions placed on the options for N-fixing crops, catch crops/green cover and short rotation coppice, leads to the following conclusions. The environmental impacts of planting N-fixing crops are very dependent on location and vary according to both the choice of crop and the way in which it is managed. A study for the European Parliament (Bues *et al*, 2013) examined the environmental impacts of protein crops in the EU and highlighted reductions in CO₂ emissions due to reduced fertiliser requirements, improved soil structure and soil organic matter content, as well as benefits for pollinators from the flowering habits of such crops. However, the report also highlighted the fact that 'protein crops can decrease or increase emissions of nitrates to ground water, depending on the management of crop residues and the use of other crops to reduce nitrate leaching'.

Although Member States were supposed to provide evidence that the N-fixing crops on their lists of permitted crops would meet biodiversity objectives, it is unclear how rigorous this process has been. For example, evidence suggests that row/agriculture legumes with wide spaces between the rows are less beneficial for biodiversity due to their uneven and short flowering period and the fact that they require soil tilling and additional nutrients, whereas pasture legumes such as clover species are more beneficial for pollinators as they flower more evenly and grow more densely in the field, providing a better source of nectar

and requiring less tilling and lower levels of inputs (Keenleyside et al, 2014). While a number of these more beneficial pasture legumes feature on the lists of approved N-fixing crops⁷, many of the less beneficial crops also appear. Indeed these less beneficial crops are amongst the most popular implementation choices across the EU-28⁸.

Suitable post-harvest management of N-fixing crops is critical to avoid sudden emissions of nitrates from the soil (leaching) when ploughed. From the information gathered as part of this study, the only countries that have specific restrictions to guard against this eventuality are Germany and Spain. Despite the objectives of EFAs, most countries have chosen to allow N-fertilisers to be applied to N-fixing crops. The rationale for this appears mainly to ensure that the crop yield is not compromised and it is hypothesised that it would also be very difficult to control a rule prescribing fertiliser use that applied only on that part of the crop which is used to count towards the EFA obligation. Nonetheless, this is a concern from an environmental perspective.

Another argument in favour of including N-fixing crops within EFAs is the desire to stimulate the production of European-grown protein crops so as to reduce the EU's dependence on imported soya. Life cycle analysis suggests that, depending on what crops are replaced by the N-fixing crops and taking into account assumptions about what sort of land use change is induced in third countries by the production of protein crops (predominantly soya), the growing of protein crops in the EU generally 'reduces product life-cycle fossil energy use and the environmental impacts of cropping systems and ... products of animals fed with European-grown protein crops compared with animal products using imported soya bean' (Bues *et al*, 2013).

In relation to catch crops and green cover, it is difficult to assess the environmental implications of the different conditions that have been placed on their establishment and subsequent management as this depends substantially on local conditions. In general these crops should have some environmental benefits, with catch crops helping reduce nitrogen losses from soils during the winter and cover crops helping reduce soil erosion and nutrient losses. There may also be some benefits for farmland birds, although cereal stubble has been shown to be more beneficial (Golawski *et al*. 2013⁹).

The fact that only three Member States have banned the use of fertilisers and/or pesticides on catch crops and green cover is likely to reduce their environmental benefits. The periods over which the crops need to be present in the field also vary and some of the end dates appear to be rather early (e.g. end of December in Scotland and Luxembourg) but the extent to which this is an issue or not will depend on the optimal dates for the sowing of spring crops in different territories.

For short rotation coppice (SRC), the environmental implications of the species chosen and when and how inputs are permitted depend very much on local conditions. However, perhaps the most striking point relates to the inclusion in the permitted lists of species such

⁷ For example, lucerne/alfalfa (*Medicago sativa*), clover (*Trifolium spp*), vetch (*Vicia spp.*), birdsfoot trefoil (*Lotus corniculatus*), vetchlings (*Lathyrus spp*)

⁸ For example bean (*Phaseolus spp.*), bean (*Vigna spp.*), chickpea (*Cicer spp.*), faba bean (*Vicia faba*), lentil (*Lens culinaris*), lupin (*Lupinus spp.*) and soya (*Glycine max*)

⁹ Golawski, A., Kasprzykowski, Z., Jobda, M., Duer, I. (2013). The importance of winter catch crops compared with other farmland habitats to birds wintering in Poland. *Polish Journal of Ecology* **61** (357 – 364).

as walnut, mulberry, plane trees, oak and rowan. These are not species that are generally known for their speed of growth and use for SRC. The presence of black locust (*Robinia spp*) on the list for Romania will need careful assessment to ensure that it does not cause problems for biodiversity as it is known to be very invasive in open habitats. Although it is a common tree used for plantations in Romania and recommended for the restoration of degraded soils since it grows quickly, fixes nitrogen and improves soil organic matter, it has been reported as a threat to a number of Natura 2000 habitats (^{10,11} as quoted in Hart, 2015).

2.2.4 Mapping and inspection

In order to control Pillar 1 payments, the rules for establishing an identification system for agricultural parcels¹² stipulate that the system, which must be GIS based, must ‘contain a reference layer to accommodate ecological focus areas.’ This reference layer must hold information on all the elements included within EFAs, or equivalent practices/certification schemes. It has to be in place at the latest for the 2018 claim year. Member States are obliged to carry out a systematic administrative check of all aid applications and payment claims to ensure that they are compliant with the rules and this is then supplemented by On-The-Spot Controls (OTSCs). Further detailed rules are set out in the relevant Commission Delegated Regulation¹³.

EFA layer guidance from the European Commission

This guidance (European Commission 2014a) is in two parts. The first part explains the requirements for this layer, which is one of the major new demands on the Land Parcel Identification System (LPIS) under the current CAP. The second part provides detailed guidance on establishing the EFA layer.

Requirements for the EFA layer

The basic principle is that this layer should contain details of all the potential types of Ecological Focus Area (EFA) chosen by the Member State that are stable in time or expected to remain for at least three years. The EFA layer also has to contain details of features included in any equivalent practices allowed by the Member State, which can include five-year agri-environment climate (AEC) commitments or national or regional certification schemes. These are listed in Annex IX of Regulation (EU) No 1307/2013.

The requirement to map all potential types of EFA means that features may have to be mapped even though they are not actually being declared by the farmer as part of the EFA on that holding. This is an area of ongoing discussion and the guidance was still being

¹⁰ SFC Calimani-Gurghiu - Securing favourable conservation status for priority habitats from SCI Calimani-Gurghiu, LIFE08 NAT/RO/000502

(http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=3546)

¹¹ Sturm U and Wilke C (eds) (2012), Management practices for invasive species in Danube Delta Biosphere Reserve (Romania) and Triglav National Park (Slovenia) (http://www2.ioer.de/download/habit-change/HABIT-CHANGE_3_4_1_A_Invasive%20species%20management%20in%20DDBR%20and%20TNP_update.pdf)

¹² Regulation (EU) No 1306/2013 of the European Parliament and of the Council

¹³ Commission Delegated Regulation (EU) No 639/2014 of 11 March 2014

discussed at the time this report was being prepared. In the version of the guidance current at the time of writing (summer 2015)¹⁴, the position was as follows:

- For beneficiaries who are exempt from EFA because they are in the Organic Farming or Small Farmers Scheme all types of EFA at their disposal should be mapped, unless there is more than 75% permanent grassland on their holding.
- Potential EFAs that are never likely to be used as such (e.g. landscape features surrounded on all sides by permanent grassland) do not have to be mapped as part of the EFA layer.

As well as features that are expected to remain for at least three years (e.g. a hedgerow), there is also a requirement to map all those features that actually do remain for at least three years, even if this might not be expected (e.g. buffer strips or fallow).

Landscape features may count towards EFA and so may need to be mapped as part of the EFA layer, even where they do not need to be mapped for the purpose of determining Maximum Eligible Area (MEA). The Commission guidance points out that landscape features covered by cross-compliance can also count towards an EFA, but the EFA requirements for features such as ditches and ponds may specify a different width or area to those used for cross-compliance purposes. Within the EFA layer, only those parts of the feature conforming to the width or area requirements for EFA should be mapped.

EFA elements adjacent to parcels of arable land can be included in the EFA layer if they are in contact with it. For linear features, such as hedges, contact has to be along one of the long sides of the feature. This is another issue that appeared to be still under discussion - Revision One of the Commission's guidance (current in summer 2015) allowed the inclusion of EFA features that are not adjacent to arable land but which are within a five metre buffer zone around the edge of such areas.

The requirements for the EFA layer are made more complex by the need for it to be able to support any regional and/or collective implementation of the EFA requirement. For regional implementation the EFA layer needs to record the 'contiguous structures' of the following EFA features:

- Land lying fallow
- Landscape features
- Buffer strips afforested areas

The layer also needs to include the information needed to define the boundaries within which regional implementation applies and any specific rules relating to 'contiguous structures'. In addition, collective implementation requires the ability to perform GIS-based controls to check that EFA features are 'in close proximity'.

Establishing the EFA layer

This part of the Commission guidance starts with a reminder about the need to be able to distinguish arable, permanent grassland and permanent crops, since this determines

¹⁴ Guidance document on the establishment of the EFA-Layer referred to in Article 70(2) Of Regulation (EU) 1306/2013 (DSCG/2014/31-FINAL REV 1)

whether there is an EFA requirement and whether any potential EFA features can be included in the area of any particular EFA.

The guidance strongly recommends that the EFA layer should be established using photo-interpretation of the same aerial orthoimages¹⁵ used for the LPIS. Very High or High Resolution (VHR/HR) satellite imagery may be used in support (i.e. to help characterise features or to monitor change), but should not normally be used as the primary basis for mapping.

It is not always necessary to accurately map linear or point features as polygons. They can be mapped as lines or points and converted to areas using standard conversion factors. These conversion factors are defined in Annex II of Regulation (EU) No 639/2014.

The type of EFA feature must be recorded as well as the measured or converted area. Different types of EFA are subject to different weightings, which are used to adjust the measured or converted area of the feature. These weightings are broadly intended to reflect the relative environmental value of different types of ecological focus area. They are also listed in Annex II of Regulation (EU) No 639/2014. The EFA layer must, for each particular area of EFA, record the weighting factor applied and the weighted area. Different types of EFA areas cannot overlap as, if they did, there would be a danger of double counting.

The requirement to include in this layer EFAs that are essentially temporary, even though they have remained or are expected to remain in place for three years, as well as the requirement to bring in features adjacent to areas of permanent grassland that are ploughed up, together mean that it is necessary to keep the EFA layer under constant review.

Technical challenges posed by the mapping and inspection of EFA

Member States are finding the mapping and inspection requirements for EFAs challenging. For example, in the UK, the English Rural Payments Agency is reported to be experiencing some difficulty developing adequate systems to monitor and inspect EFA in accordance with the Commission's requirements. These difficulties appear to stem mainly from the limited amount of information currently stored in the Rural Land Registry in England. This holds information on the location of each land parcel, and identifies ineligible areas within each parcel, but there is no information on what is in each parcel or sub-parcel. There is little information on boundary features and hedges are not mapped. It also no longer records crop codes.

The German Paying Agencies provide examples of best practice in Europe. Across Germany, more than two million cross compliance landscape features have been digitised, occupying a total area of 120,000 ha, with an average area of 0.06 ha per feature. Farmers were required to report landscape features within the eligible area from 2005 to 2007 and have been required to notify omissions and changes since then. Permanent grassland, arable land and permanent crops are geographically separated in the German LPIS systems and the

¹⁵ orthoimages are aerial photographs geometrically corrected ("orthorectified") such that the scale is uniform: the photos have the same lack of distortion as a map.

Länder-based German Paying Agencies have already fully integrated the use of remote sensing imagery into their mapping and inspection procedures. Across Germany in 2012 there were 13,851 Direct Payment checks performed using remote sensing and only 3,845 performed 'classically', that is by field inspection (Geldermann, 2014).

Despite having already mapped many of the features, as well as having already integrated remote sensing into their systems, the German Paying Agencies were, in November 2014, expressing considerable concern at the increased initial (and ongoing) workload and cost involved in controlling the greening measures in general and the EFA measure in particular. These concerns were set out in a presentation by the German coordinating body to the 20th Monitoring Agricultural Resources (MARS) Conference in November 2014 (Gelderman, 2014).

In the German presentation, the implementation workload under the previous system in 2014 was contrasted with the anticipated workload for 2015 as follows:

2014 Direct payments

- Goal of reaching simplified system has been achieved
- Just one type of premium
- Everything decoupled
- One uniform value for all payment entitlements for each German Land

As of 2015 (CAP Reform)

- Four types of premium: basic payment, administratively very demanding green payment, young farmers' payment, redistributive payment
- Small farmers' scheme
- Active farmer
- Significantly high need for adjusting the GIS in technical terms

The presentation hints, without giving details, that Germany's implementation choices have been guided by the need to contain the level of additional administrative complexity, but it concludes that significant additional workload will nonetheless be unavoidable.

The mapping and inspection of EFA was a source of particular concern to the German Paying Agencies. There appear to be three main reasons for this:

- The requirement to map EFA features that are 'stable in time', which will involve the mapping and continual updating of numerous often very small elements, especially as anything that remains in place, or is expected to remain in place, for three years is regarded as stable in time.
- The need for imagery to be collected and analysed at different times of the year to control nitrogen-fixing crops, especially given the requirement in Germany for the crop to be followed by another crop or a catch crop (see Table 2)
- The fact that not all of the conditions can be inspected and controlled by remote sensing (see Table 3).

Table 2: German assessment of the time windows during which remote sensing imagery is needed to control ‘greening’ requirements, including EFA

Time period	Requirement controlled
Mid-March to mid-May	Capturing the situation for all requirements immediately before the application deadline (as at present)
Start of June to mid-July	Crop diversification
Mid October to end of November	EFA catch crops and winter catch crops after nitrogen fixing crops

Source: Geldermann (2014)

Table 3: German assessment of the applicability of remote sensing to the control of Basic Payment requirements, including EFA

Control item	Is remote sensing applicable?	Comments
Active farmer	No	Guidance needed from the Commission on how this is to be controlled
Maintenance of areas taken out of production	Yes	Likely to generate many Rapid Field Visits (RFV)
Crop diversification	Yes	Short time period for imagery, needs high quality ortho photos, likely to generate more RFV
Protection/maintenance of Permanent Grassland	Yes	Likely to result in more RFV e.g. in the case of the reconversion obligation
EFA catch crops	No	Different time period. Also, the mixture of species, the avoidance of plant protection products and absence of nitrogen fertiliser application are only controllable by field visits
EFA nitrogen-fixing crops	Yes	Can identify the crop, but likely to generate a large number of RFV
	No	Can’t control the German requirement for an over-wintering follow-up crop
Short rotation coppice	Yes	With the exception of species allowed in the first year and the no plant protection products/no fertiliser obligation
Other EFA types	Yes	But likely to generate a lot of RFV

Source: Geldermann (2014)

The information in these two tables makes the point that the control requirements of EFA are only part of the task that needs to be done, as the other aspects of Greening and the Basic Payment Scheme also have demanding control requirements. In Table 2 it is repeatedly stressed that, whilst remote sensing can provide a lot of information, it will often raise questions and issues that can only be resolved through field visits.

The German Paying Agencies are at least starting from a position where they have already identified permanent grassland, arable land and permanent crops, which is a necessary precursor to inspecting and controlling EFA. Their presentation raises questions about how Paying Agencies that have yet to do this are going to cope with the workload in 2015.

One possible short cut, allowed under EU rules, is to use conversion factors to estimate the area of EFA features rather than making accurate measurements of the area. The German

Paying Agencies have however largely rejected the use of conversion factors when calculating Ecological Focus Areas. A number of reasons were cited for this decision:

- Cross compliance landscape features were already polygons in the system;
- The environmental value depends on the actual area;
- Actual areas are needed for second pillar measurements and for calculating fertilizer balances; and
- Opinion in Germany was that field margins, buffer strips and strips along forest edges without production should count as fallow land and should count towards the crop diversification target.

These arguments appear to suggest that those countries which have used conversion factors as a short cut may be merely putting off work that they will have to do later, and so may end up doing more work in the long term.

The presentation concludes by also expressing concern about the administrative burden on applicants and wondering whether all the extra work is actually achieving anything – it asks the rhetorical question “What does the EFA layer really provide for the future?” This raises an important question about whether and when the information justifies the very high cost of these technologies for the tax payer.

Technical solutions for mapping and inspecting in accordance with the EFA layer guidance

In terms of the technical side, despite the scale of work needed, a range of technologies has been suggested to help Paying Agencies meet the requirements set out in the Commission Guidance. Several of these were the subject of presentations at the 20th MARS Conference, held in November 2014. The two key challenges to which technical solutions appear to be available are mapping and updating the features that are considered ‘stable in time’ and identifying crop cover, both nitrogen fixing crops grown in summer and catch and green cover crops, including those that some countries require to be grown after the nitrogen fixing crops are harvested.

Mapping features that are ‘stable in time’

The Control Unit for the German region of Hesse seems to have developed a system for keeping on top of the requirement to map EFA features that are ‘stable in time’. In a presentation to the 20th MARS conference (Vogel, 2014) the head of the control unit described how much of their control is based on orthophotos, of which a third are new each year, and how their GIS system supports all aspects of the On the Spot Control (OTSC) process.

Orthophotos are used in the GIS to identify landscape features and perform EFA validation, checking maximum and minimum widths, length axis and mean width. The GIS also supports interactive report forms for both Pillar 1 and Pillar 2. Forms are activated according to the CAP programs participated in; they are cross-linked to geodata and include automated data checks for correctness and completeness. OTSCs can be finished ‘in the field’ and the results are automatically uploaded into the LPIS, with further validation and automatic reference parcel update.

The Italian Government seems to be taking a similar approach to the identification of EFA features that are 'stable in time' (*pers. comm.*). The controls for EFA (and crop diversification requirements) will be carried out through remote sensing, using satellite and aerial images that are updated every year. Uncertain cases and those of apparent non-compliance will be verified in the field.

The identification of EFA areas in Italy that are stable in time and their registration on the EFA layer of the LPIS is proceeding. The process is carried out by SIN (National Information System on Agriculture) under the coordination and supervision of AGEA (the national paying agency). EFA areas are identified and mapped for all the arable areas potentially affected by this greening requirement (> 15 ha of arable land) on the basis of the available data. For the rest of the Italian territory "potential EFA" is also being mapped, based on the data already available (an update on land use, which is carried out every three years).

Identifying crops, including green and cover crops

Another presentation to the MARS conference by a representative of Netherlands Geomatics and Earth Observation BV (van der Sande 2014) explained how satellite imagery could be used to control seasonal EFA features such as areas with nitrogen fixing crops or areas with catch or cover crops.

This presentation explained the very wide range of satellite imagery now available. This includes satellite data from the EU's Joint Research Centre at both High Resolution (HR) and Very High Resolution (VHR), Landsat8 data from March 2013 and a range of satellite imagery available through the Dutch National Satellite Portal. Since 2012 this has included imagery with a two metre spatial resolution and a nine day temporal resolution. Coming on stream during 2014/2015 are two further satellites, Sentinel 1 and Sentinel 2, which will gather far red as well as visible light imagery and which will be linked to an automated processing chain.

With such high resolution, broad spectrum imagery available at such short intervals of time, the classification of crops at a parcel level should be straightforward. The imagery can also be interpreted by automated data processing, which is vital if very large areas are to be controlled in a limited time. This should also allow control of green cover and catch crops by remote sensing, which is vital for the full control of nitrogen-fixing crops as an EFA option in some Member States. The presentation suggests that this requires comparison of an image taken after harvest with one taken after the cover crop has become established, which is a further elaboration of the schedule set out in Table 2. Spot6 satellite data with 1.5m spatial resolution is apparently suitable for this purpose.

The Dutch presentation pointed out that remote sensing cannot yet identify crop mixtures. Since crop mixtures are required for catch crops, this is an important limitation.

Conclusions

Mapping and inspection of the EFA requirements poses a range of challenges of which the three main ones appear to be:

1. The need to identify whether land parcels contain permanent grassland, arable land or permanent crops in order to determine their EFA requirement;
2. The need to map and inspect a very large number of EFA features, many of which are small and which, although classified as 'stable in time', are actually subject to change over relatively short periods;
3. The need to identify nitrogen fixing crops and, where applicable, to check whether they are being followed by a catch crop to limit the release of the stored nitrogen.

Mapping and inspection of regional and collective application of the EFA requirements would bring additional complications, which may help to explain why few Member States appear to have taken advantage of this option.

The use of remote sensing, using both satellite and aerial imagery, seems to be essential for the cost-effective mapping and inspection of the EFA requirement. Up-to-date aerial orthophotos are required by the EU for the mapping of features that are 'stable in time' and Very High Resolution Satellite data is necessary for the mapping of crop types as the latter requires comparisons between imagery taken during specific, short, windows of time during the claim year.

Cost effective mapping and inspection also requires the use of remote sensing imagery to be fully integrated into the GIS system running the LPIS. In situations such as the mapping and inspection of EFA features, where the situation on the ground changes rapidly, automated image processing has the potential to speed up processing times and reduce workloads. However, re-mapping using remote sensing can cause difficulties during the transition process, both because of difficulties of interpretation and because it may show up inaccuracies in the existing maps. In Scotland (*pers. comm.*) this has led to some confusion and a substantial number of appeals. It should be noted that remote sensing does not eliminate the need for some controls to be inspected during field visits and its use will frequently generate queries that need follow-up field visits to resolve.

It has not proved possible within the scope of this study to gain an overview of just how prepared the various European Paying Agencies actually were for EFA implementation. The Paying Agencies in Italy appear to have embraced remote sensing and to be working towards implementation. There is evidence that Paying Agencies in Germany already had the systems and technology required before 2015, but even they are anticipating increased workloads.

There is an interesting suggestion that one reason why farmers in the north of Italy have chosen to fulfil their EFA requirement by planting soya may be a desire to reduce the administrative complexity and inspection risk of their Basic Payment Scheme claims (*pers. comm.*).

The high cost of EFA mapping and inspection for Paying Agencies and the additional workload for applicants are factors that will, in any future review of the CAP, need to be weighed against the environmental benefits that may, or may not, have been generated by the EFA requirements. The complexity of the requirements and the need for simplification has been recognised by the European Commission and by Member States. As a result, the rules on Ecological Focus Areas is one of the key areas identified by the Commission as requiring simplification, some aspects of which are already in the process of being addressed¹⁶.

2.3 Designation of Environmentally Sensitive Permanent Grassland

The protection of environmentally sensitive permanent grassland (ESPG) is one element within the ‘maintenance of permanent grassland’ greening measure¹⁷. The objective for the protection of ESPG is to protect species, land of High Nature Value, protect against soil erosion and protect water quality (Article 41 of Regulation (EU) 639/2014).

This measure requires Member States to designate permanent grasslands which are environmentally sensitive in areas covered by the Birds and Habitats Directives, including peat and wetlands situated in these areas, and which need strict protection in order to meet the objectives of those Directives. Member States also have the option to delineate further environmentally sensitive areas not covered by the Habitats Directive (Article 45 of Regulation (EU) 1307/2013). Where land is designated as ESPG, there is a ban on ploughing and conversion of permanent grassland within those areas. New areas of ESPG can be designated each year.

Delegated Regulation 639/2014 sets out the criteria for designating ESPG outside of Natura 2000 areas, which include the following types of grassland:

- covering organic soils with a high percentage of organic carbon, such as peat land or wetlands;
- hosting habitats listed in Annex I of Directive 92/43/EEC or protected under national legislation;
- hosting plant species listed in Annex II of Directive 92/43/EEC or protected under national legislation;
- being of significant importance for wild bird species listed in Annex I of Directive 2009/147/EC;
- being of significant importance for wild animal species protected under Directive 92/43/EEC or protected under national legislation;
- of high nature value as defined by other objective criteria to be established by the Member State;
- Covering soils with a high risk of erosion;
- Being located in a sensitive area designated within the river basin management plans pursuant to Directive 2000/60/C.

¹⁶ <http://www.consilium.europa.eu/en/policies/cap-simplification/>

¹⁷ The other element is the requirement to ‘ensure that the ratio of the land under permanent grassland in relation to the total agricultural area declared by the farmer...does not decrease by more than 5% compared to a reference ratio to be established by Member States in 2015’ (Article 31(2)) – operated at national, regional or local level.

Permanent grassland is defined as grassland that has not been included in the crop rotation for at least five years. This means that grassland that is ploughed and reseeded directly to grassland remains classified as permanent grassland. The permanent grassland definition has been extended for the 2014-20 period¹⁸, to allow Member States some flexibility to include areas of predominantly non-herbaceous vegetation used for grazing (e.g. heathland, wood pasture) if they make a case for this.

2.3.1 Designation of ESPG in the EU-28 in 2015

ESPG within Natura 2000 areas

The proportion of land designated as ESPG within Natura 2000 areas varies significantly between Member States¹⁹, from as little as one per cent in Estonia and Portugal to 100 per cent in a third of Member States.

It is perhaps surprising that, despite the caveat in the regulation that Member States are obliged only to designate areas of permanent grassland within Natura 2000 areas that require 'strict protection in order to meet the objectives of those Directives', ten Member States plus three of the countries of the UK (England, Wales²⁰ and Northern Ireland) have designated 100 per cent of permanent grassland within Natura 2000 areas. The reasons for this are unclear, but it may simply be that the transposition of the Birds and Habitats Directives into national law in these countries already bans the ploughing and cultivation of permanent grassland in these areas, or it may in fact deliver environmental added value by reinforcing and even strengthening national legislation in some cases.

This still leaves 17 Member States (and one country of the UK (Scotland) which have designated less than 100 per cent of their Natura 2000 permanent grassland. At the lower end of the spectrum are five Member States which designated less than ten per cent of the Natura 2000 permanent grassland area (Austria 6%, Latvia 3%, Ireland 2%, Portugal 1% and Estonia 1%), with the remaining countries in between. The figures for all countries are set out in Table 4.

¹⁸ Article 4(h) of Regulation EU 1307/2013 provides the definition of "permanent grassland and permanent pasture" (together referred to as "permanent grassland") for the purposes of the CAP as "land used to grow grasses or other herbaceous forage naturally (self-seeded) or through cultivation (sown) and that has not been included in the crop rotation of the holding for five years or more; it may include other species such as shrubs and/or trees which can be grazed provided that the grasses and other herbaceous forage remain predominant as well as, where Member States so decide, land which can be grazed and which forms part of established local practices where grasses and other herbaceous forage are traditionally not predominant in grazing areas;

¹⁹ NB – In the UK, designation takes place at the country level and in Belgium at the regional level.

²⁰ Wales has designated 100 per cent of the permanent grassland within N2K sites as Environmentally Sensitive Permanent Grassland, but grassland within Natura 2000 sites that can be ploughed (where Natural Resources Wales is prepared to grant consent) is not defined as permanent. See section 15 of the relevant SI - http://www.legislation.gov.uk/wsi/2015/1252/pdfs/wsi_20151252_mi.pdf

Table 4: Area and proportion of permanent grassland in Natura 2000 areas designated as environmentally sensitive by Member States.

	Total area of permanent grassland in Natura 2000 (ha)	Total area of designated sensitive grassland in Natura 2000 (ha)	% ESPG in Natura 2000 (per MS or region)
BG	426,348.00	426,348.00	100%
CZ	131,914.99	131,914.99	100%
EL	489,922.99	489,922.99	100%
ES	1,914,265.44	1,914,265.44	100%
IT	869,545.00	869,545.00	100%
HU	499,691.51	499,691.51	100%
NL	51,451.00	51,451.00	100%
SK	149,651.33	149,651.33	100%
FI	2,700.00	2,700.00	100%
SE	45,595.00	45,595.00	100%
UK – England	304,969.00	304,969.00	100%
UK – Wales	111,330.00	111,330.00	100%
UK – Northern Ireland	37,338.26	37,238.77	100%
HR	44,101.64	35,227.97	80%
CY	776.68	557.83	72%
DE	958,000.00	615,000.00	64%
FR	1,760,000.00	1,111,000.00	63%
BE – Flanders	24,586.00	12,188.00	50%
LT	68,880.54	29,135.51	42%
PL	622,927.00	260,715.00	42%
UK – Scotland	812,178.00	332,702.00	41%
BE – Wallonia	25,850.00	9,050.00	35%
SL	73,909.00	19,400.00	26%
LU	8,573.00	2,121.00	25%
DK	52,000.00	10,500.00	20%
AT	269,414.00	15,276.00	6%
LV	62,634.00	1,797.00	3%
IE	32,933.22	613.63	2%
PT	284,049.59	1,726.68	1%
EE	26,000.00	130.00	1%
MT	No permanent grassland	No permanent grassland	
RO	No information	No information	
Total	10,161,535.19	7,491,763.65	74%

Source: European Commission (2015)

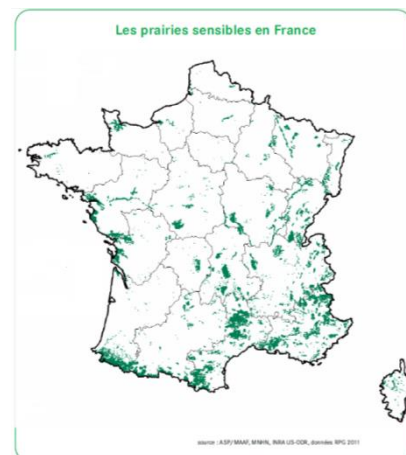
The criteria used to decide what proportion of permanent grassland within Natura 2000 areas vary between Member States, as do the reasons for choosing these criteria (see Box 2).

From the information we have managed to source, it would seem that some countries have just chosen to designate permanent grassland protected under the Habitats Directive (i.e. Special Areas of Conservation – SACs) and not those areas protected under the Birds Directive (i.e. Special Protected Areas – SPAs). This in the case in Germany and Austria, for example. In France and Luxembourg, more detailed sets of criteria appear to have been applied to limit ESPG to a selected set of habitats within Natura 2000 areas (and outside too

in the case of Luxembourg). Scotland (UK) has also restricted the Natura 2000 permanent grassland habitats that are designated as ESPG, but the reasons in this case are that some species or semi-natural habitats can depend on periodic cultivation and therefore a ban on ploughing would be inappropriate. This is also the case in Wales, where permanent grassland in Natura 2000 areas where ploughing is permitted have been excluded. Estonia, on the other hand, has restricted its ESPG to a proportion of its permanent grasslands on peat soils within Natura 2000 areas. The reasons for this are twofold: partly because the inclusion of other semi-natural habitats would have required significant investment in detailed mapping of the habitats and this was not considered worthwhile given that they should already be protected under national nature protection laws; and partly because they were unclear what implications their designation would have on their ability to pay for their protection via the Rural Development Programme, which was seen as a more flexible means of protecting these habitats.

Box 2: Examples of criteria used by Member States for the designation of ESPG

<p>Scotland (UK):</p> <p>41% of permanent grassland designated as ESPG (332,702 ha) in N2K areas</p>	<p>ESPG has been defined as ‘site of special scientific interest’ where land managers are already bound by the management agreements in place to ensure they are protected and managed sympathetically’. The selected sites of special scientific interest were those that underpin SACs, designated because they have a qualifying grassland feature relevant to the CAP regulations. Ploughing is not forbidden on some grassland within these areas since, for some semi-natural habitats (such as “machair” habitat), plant communities depend on periodic cultivation for their survival. Certain semi-natural habitats are therefore excluded from the designated area. Similarly with bird interests, some species are dependent on crop rotations for winter food. Boundaries for the designated sites have been used for the purposes of the Land Parcel Identification Scheme (LPIS). But these boundaries may include other land that is not environmentally sensitive grassland. To enable distinction of areas which don’t require protection any area that has been cultivated within the last 15 years is exempt from classification as environmentally sensitive grassland (<i>Article 17 (1) of the Common Agricultural Policy (Direct Payments) (Scotland) Regulations 2015.</i>).</p> <p>Source: Scottish Government (2015b), Basic Payment Scheme: Greening</p>
<p>France:</p> <p>63% of permanent grassland designated as ESPG (1,111,000 ha) in N2K areas</p>	<p>In France, two criteria were used to designate environmentally sensitive permanent grassland within Natura 2000 areas :</p> <ul style="list-style-type: none"> • All areas declared as ‘landes et parcours (areas that are rarely managed agriculturally with various vegetation types – moorland, heathland, steppe etc) and as mountain summer pasture (‘estives’) in Natura 2000 (629,000 ha); • Natural pastures (‘prairies naturelles’) considered to be rich in biodiversity within Natura 2000 areas (482,000 ha) based on the distribution of habitats and species in Natura 2000 grassland of community interest as set out in the Birds and Habitats Directives. <p>There has been a particular focus on protecting particular those areas with rich humid or mesophilic biodiversity. All farmers have access via the French CAP e-platform to a map of the permanent grassland and environmentally sensitive permanent grassland located on their farm. The national map is included here.</p> <p>Sources: French Senate, April-June 2015</p>



<http://www.senat.fr/questions/base/2015/qSEQ150516289.html>

<p>Germany: 64% of permanent grassland designated as ESPG (615,000 ha) in N2K areas</p>	<p>Germany has designated permanent grassland that was covered by the Habitats Directive on 1 January 2015, with the exception of permanent grassland in these areas that are covered by environmental measures under Pillar 2 of the CAP with obligations to maintain permanent pasture. It has not included permanent grassland covered by the Birds Directive.</p> <p>Source: Bundesministerium für Ernährung und Landwirtschaft (2015) Umsetzung der EU-Agrarreform in Deutschland, Ausgabe 2015</p>
<p>Luxembourg: 25% of permanent grassland designated as ESPG (2,121 ha) in N2K areas</p>	<p>Luxembourg has designated permanent grasslands that are protected habitats and floodplains as ESPG, irrespective of whether or not they are in Natura 2000 areas. More specifically ESPG includes: a) habitats, which have been mapped under Article 17 of the Nature Conservation Act of 19 January 2004; and b) permanent pasture in flood zones which have been mapped under Article 38 of the Water Act of 19 December 2008</p> <p>Source: Le Gouvernement du Grand-Duché de Luxembourg, 2015.</p>
<p>Estonia: 1% of permanent grassland designated as ESPG (130 ha) in N2K areas</p>	<p>Estonia decided to include only a proportion of permanent grasslands on peatland soils in Natura 2000 areas as ESPG. Consideration was given to the inclusion of other habitats, such as all semi-natural grasslands, however this option was not taken because:</p> <ul style="list-style-type: none"> a) it would have required very precise mapping data which would have required numerous inventories to have been compiled; and b) The national Nature Protection Law already prohibits the ploughing of semi-natural grasslands in Natura 2000 areas. <p>Another factor contributing to the decision was the lack of clarity on what the implications of designating ESPG might be for supporting these areas under Pillar 2. Estonia therefore decided to use the RDP as a more flexible tool to support these important habitats through Natura 2000 payments on agricultural land and a special agri-environment-climate measure for peatland grasslands. This latter measure was the reason for not including all permanent grasslands on peatland soils as ESPG.</p> <p>Source: <i>pers. comm.</i></p>

ESPG designated outside Natura 2000 areas

Only four Member States have decided to designate grassland outside Natura 2000 areas in 2015: Czech Republic, Latvia, Luxemburg and UK (Wales). The areas of additional permanent grassland designated are set out in Table 5.

Table 5: Area of ESPG designated outside Natura 2000 areas in 2015

	Total area of designated sensitive grassland outside Natura 2000 (hectares)
CZ	257,767.56
LV	5,739.00
LU	3,904.00
UK - W	53,718.00
Total	321,128.56

Source: European Commission, 2015

Luxembourg has designated permanent grasslands that are protected habitats and floodplains as ESPG, irrespective of whether or not they are in Natura 2000 areas. More specifically ESPG includes: a) habitats, which have been mapped under Article 17 of the Nature Conservation Act of 19 January 2004; and b) permanent pasture in flood zones which have been mapped under Article 38 of the Water Act of 19 December 2008 (Le Gouvernement du Grand-Duché de Luxembourg, 2015). Although no information has been found that details this, these habitats presumably cover the area designated both as ESPG within Natura 2000 areas (2,121 ha) plus the area designated outside Natura 2000 areas (3,904 ha). It is not clear, however, why the remaining permanent grasslands within Natura 2000 areas have not been designated.

The additional permanent grassland designated by Wales comprises land protected under national nature conservation legislation, known as Sites of Special Scientific interest (SSSI). The aim is to protect all of these from being converted to arable use or ploughing even if they are not part of the Natura 2000 network. The only exception is where the SSSI requirements include written consent to plough in accordance with Section 28E of the Wildlife and Countryside Act 1981 (i.e. it requires ploughing for protection of the habitat)²¹.

In the Czech Republic the government decree states that ESPG outside Natura 2000 areas consists of a number of different areas of permanent grassland as follows: areas in the 'first zone' of national parks (landscape protected areas) that are not already within Natura 2000; in small scale protected areas not already designated as Natura 2000; permanent grassland within 12 metres of water bodies; permanent grassland at risk of soil erosion; permanent grassland on peat soils (wet meadows and peat meadows); and those with the 'third zone' of nitrate vulnerable zones (*pers.comm.*).

2.3.2 Environmental implications of ESPG designations

The likely environmental impacts of Member States' designation of ESPG, both within and outside Natura 2000 areas is likely to have some positive outcomes for biodiversity, carbon, soil and water. However, for the areas of ESPG within Natura 2000 areas the actual impact will depend on a number of factors. These include: the proportion of land designated; whether the penalties for non-compliance lead to greater adherence to the rules not to plough protected grasslands than those in place under the Birds and Habitats Directives; and where less than 100 per cent of Natura 2000 areas have been designated, the reasons for this. In some cases (in Scotland, for example) there are valid environmental reasons for only designating a proportion of the area, since some semi-natural habitats require periodic cultivation. However, in other countries, for example Estonia, at least part of the reason seems to have been the lack of availability of sufficiently accurate mapping data to allow payments to be controlled (*pers. comm.*). Further investigation of the different reasons for the area of ESPG designated in Member States would be needed in order to understand whether or not there are particular issues that need resolving as part of ensuring suitable semi-natural habitats are protected from ploughing.

²¹ Welsh Government Statutory Instrument 2015 No. 1252 (W84)
http://www.legislation.gov.uk/wsi/2015/1252/pdfs/wsi_20151252_mi.pdf

The designation of ESG outside Natura 2000 areas is particularly positive from an environmental perspective since in some of the examples provided, the areas in question would not necessarily be protected from ploughing otherwise. Information on what types of permanent grassland have been designated has been obtained for Luxembourg, the Czech Republic and Wales in the UK. This shows different approaches taken, from reinforcing the designation of land that is already protected via national law (e.g. the protection of further SSSIs in Wales and those protected under the national Nature Conservation Act in Luxembourg) to those that are important for other reasons such as soil or water resources (Luxembourg and Czech Republic). Although not stated in documents found for these countries, banning the ploughing of these sensitive grasslands is likely also to contribute to the implementation of the Water Framework Directive in these countries.

One point that has been raised is that the protection offered by ESG is no more than that already required under the Birds and Habitats Directives and therefore duplicates the rules applying to these areas unnecessarily and potentially leads to additional costs required to map the habitats to the standard required for Pillar 1 controls. In Scotland, for example, one Special Area of Conservation (SAC) may contain several different parcels, each with a number of grassland types, some of which may require disturbance and some of which may not. The precise boundaries of individual grassland types may also not be accurately mapped, leading to risks of applying controls on land where it is not appropriate. Mapping and classifying all these grassland areas to the necessary standard would be slow, expensive and requires ground truthing, even using current remote sensing technology. This raises questions about how cost effective this would be, particularly for very large areas of semi-natural vegetation. One solution to this, used in Scotland, has been to put in place a rule that any area that has been cultivated within the last 15 years is exempt from classification as an environmentally sensitive grassland (the EIA regulations for uncultivated land will be used to define areas for this purpose).

However, the benefit of including ESG under the greening measures is that the implementation of the rules relating to its protection is subject to a payment and will be controlled. This means farmers may be inclined to adhere to the no ploughing rules more than might be the case otherwise, due to the risk of the loss of CAP payments for non-compliance. That having been said, the penalties for non-compliance with the greening measure in the first years of operation are relatively small, although after 2018, infringements will start to impinge also on direct payments, so the incentive to comply is likely to increase over time.

2.4 The use of equivalent practices

In addition to implementing the three standard greening measures, five Member States will also implement greening using equivalent measures (France, The Netherlands, Austria, Poland and the Republic of Ireland). Of these, the Commission has approved proposals from two Member States to implement equivalent measures via certification schemes²² - France (for crop diversification) and the Netherlands (for all greening measures). The remaining three Member States have introduced equivalent measures into their agri-environment-

²² In accordance with Article 43 (Regulation EC No 1307/2013)

climate schemes – Ireland and Poland just for crop diversification and Austria for both crop diversification and the EFA measure.

It is understood that for 2016, four more Member States are considering adopting equivalent practices. By July 2015, Portugal and UK (Scotland) had notified the Commission of their intention to apply equivalent measures via national certification schemes and Italy and the Czech Republic via their agri-environment-climate schemes. In addition the Netherlands hope to have gained approval for a third equivalent certification scheme (Biodiversiteit +) for operation in 2016. The details of these proposed schemes are not yet in the public domain.

The details of each of the equivalence options operating in 2015 are set out below:

Equivalence via certification schemes:

France: A certification scheme has been developed for single crop maize producers covering all three greening measures. However, the requirements of the scheme only differ in relation to the crop diversification measure, with the standard rules applying for the other elements (maintaining permanent pasture and EFAs). Farmers signing up to the scheme are permitted to put in place winter soil cover via green cover from a sown crop on all of the arable land being farmed as equivalent to the standard crop diversification measure (see Box 3). The certification scheme was accepted by the Commission as it establishes ‘winter soil cover’, which is one of the possible greening equivalent practices listed in Annex IX of the direct payments regulation (1307/2013).

The original proposal for an equivalence scheme for single crop maize as an alternative for crop diversification was initiated by AGPM, the French association of maize producers (Association Générale des Producteurs de Mais) and the European Confederation of Maize Production (CEPM). In its original form it had proposed that shredding and mulching maize residues should be considered an equivalent practice, arguing that sowing a cover crop can be difficult when maize harvests are late and that mulching residues can achieve the environmental aims of greening as it provides cover, ensures nitrogen fixers and organic matter go into the soil and helps control insect pests and fungal diseases (Hutchison, 2015). However, although this proposal could have been beneficial from a climate perspective, this did not fit within the rules for crop diversification, which requires green cover to be provided via a sown crop.

Box 3: Certification scheme for single crop maize producers in France (2015)

Aim: The certification scheme is targeted at single crop maize producers in France and covers all three greening measures. The standard rules for the maintenance of permanent pasture and Ecological Focus Areas (EFAs) apply, but for crop diversification, it gives farmers the option to meet the greening requirements by growing a winter green cover on land used for monoculture maize production^{23, 24}. The equivalence scheme is voluntary and is subject to certain conditions (see below).

Eligibility criteria: farm holdings with more than 10ha of arable land, of which 75% is dedicated to maize (*zea*) production (all species are valid). The scheme is available in any region in France.

Equivalence conditions:

- A winter green cover must be planted on 100% of the farm's arable land;
- The green cover must be planted no later than 15 days after maize harvest on year *n* and be maintained at least until 1 February of year *n+1*.
- There are no rules relating to the sowing or management of the green cover but there is a result-based obligation that the planted green cover must germinate and grow²⁵.
- The green cover *cannot* count as EFA 'catch crops'.
- The winter green cover must be composed of one or more of the following plant species:
 - o **Grass** (*Poaceae*): oat, wheat, cocksfoot/orchard grass, fescue, timothy, barley, bluegrass, ryegrass, rye, triticale, x-Festulolium;
 - o **Others**: phacelia, flax, turnip rape; faba beans, fenugreek, chickling vetch, lentils, birdsfoot trefoil, lupine (white, blue, yellow), alfalfa, black medick, sweet-clover, peas, chickpeas, sainfoin, common birdsfoot, clovers, vetch.
- The standard rules for the maintenance of permanent pasture and EFAs apply.

Given the environmental objectives underpinning the scheme, the farmers are encouraged not to apply mineral fertilisers or remove the cover mechanically, but this is not mandatory. The winter green cover should also comply with the requirements of the Nitrates Directive (i.e. with the additional obligations applicable in Nitrate Vulnerable Zones).

Controls: Farmers are subject to two types of controls:

- From an **independent certification body** (controls have been awarded to an agency called OCACIA) that verifies farmers' compliance to the maize certification scheme. The scheme, and hence the controls, cover all 3 greening obligations.
All applicants will receive a first on-farm inspection in autumn 2015. After that, 1/3 of certified farms will be controlled between 15 November and 1 February every year while 100% of farms will be subject to annual paper-based audits. OCACIA certification is valid for a period of 3 years.
- From the **Payment and Services Agency**: in addition to the above, 5% of farms adhering to the maize certification scheme will be subject on-farm inspections by the paying agency.

Sanctions: If the independent certification body observes total or partial non-compliance, this is reported to the local services of the Ministry of Agriculture (at the level of the *département*) which then follow the general procedure and rules in case of non-compliance for the crop diversification element of the greening measures.

NB: The proposal by the French government initially included an additional derogation which was rejected by the EC: the possibility to remove the green cover as soon as 15 December in clay soils (e.g. Alsace) to allow ploughing, or in case of floods in the South West of France.

²³ http://agriculture.gouv.fr/sites/minagri/files/documents/pdf/Paiement_vert_-_schema_certification_mais_cle4666ca.pdf

²⁴ <http://www.lafranceagricole.fr/actualite-agricole/mais-pac-la-couverture-hivernale-acceptee-par-bruxelles-100590.html>

²⁵ <http://www.agpm.com/pageLibre00012f24.php>

The Netherlands: In the Netherlands, two separate certification schemes are in place offering equivalent practices to greening: the 'Akkerbouw-strokenpakket incl. Vogelakker' (arable strip package, including bird fields) which is an alternative to the EFA measure; and the Veldleeuwerik (Skylark Foundation). The arable strip package was designed specifically as an equivalence measure for greening, whereas the Skylark Foundation scheme was already going through the certification process and the potential to use it as an equivalent scheme for greening speeded up this process (*pers. comm.*).

The arable strip package allows farmers to implement a combination of equivalent management practices in order to fulfil their EFA requirements. The scheme consists of two elements – an obligatory requirement to put in place managed borders or in-field strips managed for wildlife or specific fauna; and a range of additional supplementary options which can be chosen to meet the EFA obligation (see **Error! Reference source not found.**).

For farmers with a Veldleeuwerik certificate²⁶, the rules for implementing the crop diversification and EFA measure are softened somewhat. For example, soya is permitted as a crop under the crop diversification measure, catch crops have to be kept in the ground for eight instead of 10 weeks and some localised use of herbicides is permitted (see Box 5).

A third certification scheme was proposed - Biodiversiteit+, a set of practices that are deemed equivalent to all three greening practices, however this was not approved by the European Commission for implementation in 2015. Discussions are ongoing to resolve a number of remaining issues and it is hoped that this can then be rolled out for the 2016 year.

²⁶ a certificate that demonstrates compliance with various sustainable farming practices, mainly targeted to soil management

Box 4: Arable strip package (Akkerbouw-strokenpakket incl Vogelakker) equivalence scheme in the Netherlands (2015)

General description: This scheme provides an alternative means of fulfilling EFA obligations using a package/combination of several of the equivalent practices set out in Annex IX of the direct payments regulation. If this scheme is chosen by the farmer, then the whole of the EFA obligation must be fulfilled via this route. The other greening practices (crop diversification and maintaining existing permanent grassland) are implemented using the standard greening rules and do not form part of this scheme.

Equivalence conditions and permitted practices: There are two elements to the scheme: an obligatory element (part 1) and a set of additional/supplementary practices (Part 2). Weighting factors apply as set out in the delegated act (Regulation 639/2014, Annex II).

Part 1 (Obligatory): to have managed borders or in-field strips managed for wildlife or specific fauna. These must:

- i. constitute at least 30% of the weighted area of the overall package;
- ii. be sown with a mixture of in particular herbaceous species, possibly supplemented with cereals and/or grass to promote biodiversity, before the 15th of April of the year of application;
- iii. be at least 3 metres wide;
- iv. not have any pesticides applied or disposal of manure and/or mineral fertilisers.
- v. On at least 50% of the borders and in-field strips the herbaceous vegetation must be maintained from 1 October until at least 1 February.

Part 2 (supplementary options): in order to fulfil the total EFA obligation, the obligatory managed borders or in-field strips can be supplemented with the following options:

- i. Ditches, only if adjacent to the managed borders/strips, with a minimum length of 10 metres; and/or
- ii. Landscape features and strips with riparian vegetation with a width of up to 10 metres, but only where these are subject to an agri-environment commitment and managed by pruning, trimming, mowing etc according to the dates, methods and other specifications described in the Dutch Rural development Programme ; and/or
- iii. Catch crops (limited to those permissible under the standard greening rules) and the use of plant protection products and irrigation are not permitted. In addition, the same crop may not be sown in the same location two years in a row; and/or
- iv. Nitrogen fixing crops: field beans, lupin, red clover, vetch, bird's foot, esparcette, lucerne. For field beans and lupins, fertiliser use is not permitted, but plant protection products can be used. For lucerne, red clover, vetch, bird's foot trefoil and esparcette, fertilisers are permitted, but no plant protection products may be used. No irrigation is allowed and the same crop may not be sown in the same location two years in a row. When on sand and loess soils (as indicated in Dutch Nitrates Action Programme) and if the growing of N-fixing crops ends after the growing season, a follow-up crop should be grown which has to be sown before 1 November of the year concerned and which should stay on the field at least until 1 March of the following calendar year.

Box 5: The Skylark foundation's 'Veldleeuwerik Plus' certification scheme as an equivalent practice in the Netherlands (2015)

Skylark Certificate: Participants of the Skylark certification scheme are farmers who show a high level of commitment to sustainable agriculture. In order to receive the Skylark certificate, farmers must:

- have an annually updated externally verified sustainability plan for their farm
- attend 8 regional group meetings or equivalent every year
- implement at least four measures annually from the 10 indicators that form the Skylark approach and for every indicator, implement at least one measure every 4 years
- verify continuous improvement of their sustainability profile in an annual self-assessment

General rules:

1. For 'crop diversification' and 'maintaining existing permanent grassland' (R.1307/2013, art 43(2) (a) and (b)), implementation must be in compliance with the standard greening rules
2. Due to the fact that Skylark certified farmers already demonstrate a commitment towards sustainable agriculture, they are permitted to have a broader interpretation of the standard greening practice requirements for Ecological Focus Areas.
3. A farmer who chooses to fulfil the EFA obligation with the Skylark certificate as an equivalent practice, must fulfil the entire EFA obligation with this practice.

Equivalent practices:

Skylark certified farmers must cover 5% of their arable land with an ecological focus area. Farmers can choose one or more of the following measures:

1. **Uncultivated buffer strips and field margins:**
 - a. That are at least 1m wide and has a maximum width of 20m;
 - b. That are seeded with a certified biodiversity improving mix, being a flower mix and/or a grass mixed with herbs;
 - c. the use of pesticides is not allowed. Local mechanical treatment of unwanted problematic weeds (for example *Cirsium arvense*) is allowed as well local use of plant protection products (with a back spray);
 - d. must be seeded before April 15th.
 - e. must be mown at least once per year before the October 1st.
2. **Nitrogen fixing crops:** Skylark certified farmers are allowed to use or plant protection or (mineral) fertilisers on the following crops: Field beans (*vicia faba*), Vetch (*Vicia Sativa*), Lupine (*Lupinus spp*), red clover (*Trifolium pratense*), Bird's foot trefoil (*Lotus corniculatus*), Esparcette (*Onobrychis viciifolia*) Lucerne (*Meicago sativa*) and Soybean.
3. **Catch crops:** Skylark certified farmers should use catch crops as listed in the Ecological Focus Area rules, but without the requirement of growing the catch crop for at least 10 weeks.
4. **Landscape features:** Skylark certified farmers can opt for the 'management (pruning, trimming, dates, methods, restoration) of landscape features (trees, hedgerows, riparian woody vegetation, stone walls (terraces), ditches, ponds)' as specified in Annex IX of Regulation (EU) 1307/2013, as long as the landscape features are part of an agri-environment-climate agreement. If ditches are included, these must be adjacent to the field margin/buffer.

Control responsibilities: The Skylark Foundation carries out audits to certify the participation of farmers in this scheme in keeping with the direct payment regulation rules. It is certified under the Control Union Certifications (CUC) certification programme EN ISO 9001:2008. The certification process is structured in accordance with ISO-17065. Control Union Certifications holds a valid accreditation certificate issued by the Dutch accreditation board (Raad voor Accreditatie) for several product certification programs based on EN-45011. Transition from EN-45011 towards ISO-17065 will be completed in 2015.

2.4.1 Equivalence via RDP agri-environment-climate commitments

Austria: In Austria, a broad agri-environment-climate measure has been introduced into the national OPUL agri-environment-climate programme, designed to be equivalent to all three greening measures, but with equivalent practices introduced only in relation to the crop diversification and EFA measures (Austrian RDP, 2015). This measure is called ‘Umweltgerechte und biodiversitätsfördernde Bewirtschaftung’ (environmentally friendly and biodiversity focussed management). Farmers can choose whether or not to deliver greening via this scheme.

The overall objective of the measure is to maintain and improve plant and animal diversity across the farmed landscape. It includes a range of commitments, such as: the maintenance of grassland and landscape features; the mandatory creation of a minimum of five per cent of biodiversity areas on arable land and grassland; specific crop rotation requirements; and mandatory training courses. Implementing this measure is a prerequisite for participation in some other agri-environment-climate measures. The detailed requirements are set out in Box 6. Avoidance of double funding has been achieved by setting the standard greening requirements as the baseline on top of which the payment rates for this measure have been calculated. The payment is €45/ha for arable land and grassland. Additional payments are available for committing more than five per cent of the land as a biodiversity area (an additional €405/ha on arable land or an additional €120/ha for growing flowering plants (+120 Euro/ha)).

Box 6: Detailed requirements for the Austrian agri-environment-climate measure, approved as equivalent to the standard Pillar 1 greening measures.

Detailed requirements for the ‘Umweltgerechte und biodiversitätsfördernde Bewirtschaftung’ agri-environment-climate measure:

1. **Conservation and environmentally friendly management of landscape features:** Requires a nature corridor located 5 metres away from the agricultural land – only those landscape features not included in the eligible area are eligible and those on pastures are exempt.
2. **Maintenance of grassland over the commitment period:** the reference area is the area of permanent grassland in the first year of the agreement and the year preceding the agreement. Up to 5% of grassland can be converted to arable or special crops – up to a maximum of 3 ha.
3. **Crop rotation restrictions on arable land:** if the arable area of the holding is >5ha, crops other than cereals or maize must make up at least 25% of the arable area and no crop can be more than 66% of the arable area (except feed crops); if the arable area is >30 ha, then 3 different crops must be cultivated - the 25% and 66% rules still apply. ‘Biodiversity areas’ on arable land (see below) do not count as one crop.
4. Putting in place **biodiversity areas on arable and grassland:**
 - a. farms with at least 2 ha of arable and mown grassland must allocate 5% of the area as biodiversity areas (with a minimum of 2 ha);
 - b. farms with at least 15 ha of arable land must put at least 5% of the arable area into biodiversity areas;
 - c. areas that have agreements under the national agri-environment-climate scheme (OPUL) may not be used to form these areas, except for those areas under the ‘nature protection’ measure with the options ‘fallow’ or ‘grassland with delayed mowing dates’.
 - d. Specific requirements for the ‘biodiversity areas’ are set out, for both arable and grassland
5. **Training commitment:** by the end of 2018 at the latest, farmers must have attended (and have a

certificate to prove this) a specialist course (minimum 5 hours duration) from an approved training provider on environmental obligations required under this measure: e.g. landscape feature management, biodiversity, climate change, grassland management, fertiliser management, sustainable management.

6. **Optional** – flowering crops, such as medicinal and aromatic plants on arable land, must be established by 15 May, with a break after harvest permitted, but not before 1 July; if for unforeseen circumstances there is no harvest, then no break or shredding etc is permitted before 1 August. The species permitted are set out in the RDP.

Source: Austrian RDP, 2015-2020

Republic of Ireland: Under the Irish agri-environment-climate measure (GLAS) it is possible for farmers to put in place a catch crop /winter cover on the entire arable area (except temporary grassland) for the duration of the GLAS contract, with the GLAS payment being limited to 32 ha. This commitment can be used to fulfil the crop diversification greening requirement as an equivalent practice. In line with Regulation 639/2014 a predetermined amount of one third of the estimated greening payment will be deducted from the farmer's GLAS payment to ensure that no double funding arises (Section 8.1 of the Irish RDP). The rules, as set out in the RDP, can be found in Box 7.

Box 7: Equivalent agri-environment-climate practice for the crop diversification greening measure

Rules applying to the winter tillage management requirement under GLAS:

- Rules apply to the whole arable area, excluding temporary grassland.
- The catch crops must be sown by 15 September in each of the five years of the GLAS commitment. The catch crops cover must remain *in situ* from the date of sowing to 1 December each year.
- The catch crops must consist of at least 2 crops taken from those listed below. Additional species may also be considered eligible provided the objectives of the measure are met. Crops listed are: Buckwheat, Phacelia, Crimson Clover, Rye, Tillage Radish, Mustard, Vetch, Oats (and Black Oats), Leafy Turnip.
- Sowing catch crops on temporary grassland is not required, as this is considered problematic from an ecological and environmental point of view. This is due to the fact that one would be ploughing up and removing a crop that is already in place that prevents N leaching, prevents soil erosion, improves water filtration, increases organic matter and generally improves soil structure. Since these are also the benefits offered by catch crops and that temporary grassland will always be in the ground longer than a catch crop, it is considered that maintaining the temporary grassland would therefore be of greater benefit to the environment.

Although **Poland** also applies an equivalent practice for crop diversification via its RDP, it has not been possible to source any information on the details of this.

2.4.2 Environmental implications

The examples provided above highlight some interesting examples of introducing equivalent practices, both via certification schemes and via the agri-environment-climate measure. In relation to the latter, the Austrian approach is of particular interest as not only does it

create an agri-environment-climate measure that enhances the environmental aspects of some of the standard greening measure requirements and includes valuable additional elements (such as a training requirement), but it also makes entry into this measure a requirement for participation in other agri-environment-climate measures. This could increase the reach of this measure significantly, given the exemptions that apply to the standard greening measures. However, despite the payment rate having been altered to comply with the double funding rules, it will be important to assess the impact that this measure has on the agri-environment budget in Austria and how this impacts upon the budget available for and uptake of other, more demanding and environmentally beneficial agri-environment-climate measures in arable areas.

In relation to implementing equivalent practices via certification schemes, the two schemes approved so far and operating in 2015 in the Netherland contrast with the scheme introduced in France for single crop maize producers. The focus of the French scheme is to find a derogation from the crop diversification measure for farmers growing only maize. The solution found has been the creation of a certification scheme for these producers, covering all three greening measures, but including the ability to sow green cover over winter as an equivalent practice to the standard crop diversification requirements. This may bring about some environmental benefits, although the original request to include mulching residues as an equivalent practice (turned down because it was not on the list of permissible equivalent practices) may have been more beneficial from a climate perspective as it does not require soil disturbance.

On the other hand, the schemes introduced in the Netherlands provide two interesting approaches to introduce more flexibility into the way the EFA measure is applied. An initial environmental assessment of the schemes is included in Box 8. This suggests that of the two schemes the arable strip package equivalence scheme is perhaps more likely to deliver additional environmental benefits to the standard measures than the Skylark Certification scheme, although the latter has been assessed in relation to the ability of the scheme to deliver the habitat required for skylarks rather than its contribution to improving the sustainable management of arable land more generally. More detailed evaluations once these are in operation would be needed to ascertain their environmental implications in practice.

Box 8: Preliminary *ex ante* environmental assessment of the Dutch equivalence schemes

Arable Strip Package: The main requirement of this scheme is to have managed borders or in-field strips managed for wildlife or specific fauna. The strips have to be sown with a suitable seed mix before 15th April. They must be managed without fertilisers or pesticides and at least 50% must be retained until 1st February in the following year. Such strips must make up 30% of the EFA area, the rest can be composed of ditches, landscape features and strips with riparian vegetation with a width of up to 10 metres, catch crops or nitrogen fixing crops.

There is a considerable amount of evidence for the value of borders or in-field strips and how this relates to management. A systematic review of farmland conservation techniques (Dicks et al. 2013) has found good evidence for the environmental benefits of most forms of field margin management in northern and western Europe, including margins designed to provide seed for wild birds. The SAFFIE (Sustainable Arable Farming For an Improved Environment) project in the UK (Clarke et al. 2007), showed that:

- Plots sown with a seed mix of fine grasses and wild flowers generally had the greatest abundance of reproductive resources (buds, flowers, seed/fruit) and plots sown with a grass seed mix generally had

the lowest values

- Sowing a diverse seed mixture of perennial wildflowers was the most effective means of creating foraging habitat for bees and butterflies on arable field margins. Inclusion of forbs in the seed mixture resulted in increases in abundance and diversity of pollen and nectar resources, bumblebees and butterflies.
- A seed mix of tussocky grasses and wild flowers provided an architecturally complex sward and host plants vital for many invertebrate species.
- For a variety of invertebrate taxa there was evidence that abundance and species richness will reach a maximum 2–3 years after margin establishment.
- Plant species diversity in margins decreases over a five year period, regardless of seed mix and treatment.

At a landscape scale, there is evidence (Pywell *et al.* 2006) that the targeted creation of foraging habitat can increase the abundance of bumblebees at both local and 10 x10 km square scales. Landscape heterogeneity also has an important effect on bee abundance suggesting that other habitats, such as tall grass margins for nesting and hibernation, are also important. This reinforces one of the conclusions from a large-scale field trial of field margins and other measures on arable land in England (Heard *et al.* 2012), which is that it is not possible to provide both winter and summer resources for farmland wildlife using a single margin type, so a diversity of margins is required at the farm scale. The Rural Economy and Land Use research programme has found evidence (RELU 2009) that the control of cereal aphids by their natural enemies can be enhanced by the provision of habitat for these natural enemies. Again a variety of margin management is needed with flower-rich areas to provide food for flying predators, and grassy margins and hedgerows to improve the overwintering of ground-based predators.

All of this evidence suggests that the establishment of temporary margins using specific seed mixes has the potential to deliver a wide range of environmental benefits. The SAFFIE project did however find that the use of selective graminicides could help with the establishment of floristically diverse field margins, suggesting that a blanket ban on the use of herbicides may be unwise.

Skylark Certification Scheme: Although the aim of the skylark certification schemes is simply to improve sustainable management practices, rather than specifically create suitable habitat for skylark (*Alda arvensis*), the following looks at the scheme requirements against the habitat requirements for skylark which can be summarised as mid-field areas in which to nest and feed; seeds and weeds throughout the year; nesting habitat to produce up to three broods every year; and insects and spiders in the spring and summer (RSPB undated). The management techniques required to meet these requirements include (RSPB undated, European Commission 2007):

- Sowing crops in spring instead of in autumn (except in the boreal regions with harsh winters) and/or creating skylark plots (small undrilled patches) in autumn-sown cereals to boost nesting success
- Creating tussocky grass margins around arable fields to create overwintering habitat for beneficial insects, which move into the crops in the spring, and using beetle banks in fields greater than 16 hectares to provide over-wintering habitat for beneficial insects in the field centres.
- Providing weedy over-wintered stubbles, which are the most beneficial winter-feeding habitat for skylarks on arable farms. The best stubbles are cereal stubbles that receive no preharvest glyphosate and no postharvest herbicides, and can be maintained until the end of the following March
- Allowing some extensification of grassland management. Specifically: i). allowing some grassland to go to seed at the end of the summer and leaving it uncut and ungrazed through the winter in areas away from hedgerows or woodland. ii). Managing hay or silage fields so that they are not cut or grazed between early April and the end of May, and subsequent cuts are at least seven weeks apart iii). In grazed pasture maintaining a tussocky sward with a low stocking rate through the spring and summer.

Compared with the specific equivalent practices required by the Skylark Certification Scheme:

- Uncultivated buffer strips and field margins would help provide insects and spiders, weeds and seeds in summer. They may produce some seed throughout the year, but the requirement to cut in early autumn may limit seed provision in the autumn and winter. Their value for skylarks will be greatly diminished if they are positioned along field edges. Since the location is not specified, and since there are strong practical reasons for preferring such strips to be along field margins, it is likely that a high proportion

would be of limited value to skylarks.

- Some nitrogen fixing crops, such as red clover (*Trifolium pratense*) or birds foot (*Lotus corniculatus*) may provide nesting habitat, but others such as field beans (*Vicia faba*) are likely to be too dense later in the growing season to allow skylark to raise three broods.
- Catch crops require an additional cultivation to establish and can suppress weed species. They are not likely to be of much help in providing seeds through the winter, and certainly not as good as cereal stubbles.
- Management of landscape features may benefit other bird species, but will not meet any of the key habitat requirements for skylark.

Therefore, whilst these practices may have a range of environmental benefits (see assessment of the Arable Strip Package), they will not necessarily provide the key habitat requirements for skylark. The key gaps are the provision of suitable nesting and summer feeding areas away from field margins and the provision of winter stubbles or an equivalent source of seed during the winter. These gaps may be addressed by the broader requirements of the scheme, such as the sustainability plan.

Each of the equivalence schemes adopted to date operates alongside the standard three greening measures. In so doing farmers are provided with the choice of whether to meet their greening requirements by the default three measures **or** via the equivalent alternative. However, DG Agriculture has confirmed²⁷ that the text of the basic regulations should be interpreted as providing Member States with the option of introducing equivalent practices via a certification scheme as the sole route for farmers to meet their greening obligations.

For example, Article 43(6) of the direct payments regulation states that, ‘Member States may decide, including, where appropriate, at regional level, that farmers shall carry out all of their relevant obligations under paragraph 1 [the three core greening measures] in accordance with national or regional environmental certification schemes ...’. Furthermore DG Agriculture’s Guidance Document on ‘Technical elements of agri-environment-climate measure in the programming period 2014–2020’ (version November 2014, page 35), with respect to payment calculations to avoid double funding, states that, ‘Member States may apply equivalence through a restrictive or a flexible approach. In a restrictive approach, the Member State decides upfront whether greening will be implemented through greening obligations or through equivalent AEC commitments’ (paragraph 2.1),.

Although no Member States have so far introduced certification schemes as the only route for farmers to meet their greening requirements, this could be an interesting opportunity to explore as a way of increasing the environmental ambition of greening, by tailoring the requirements of the certification scheme to address nationally identified environmental needs via Pillar 1.

²⁷ Letter from the European Commission, Deputy Director General in charge of Directorates C, D and E, Directorate-General for Agriculture and Rural Development to IEEP, dated 5 January 2016, Ref: agri.ddg2.d.2/AB/mb/(2015)6312840

3 Eligibility of landscape features for the basic payment

3.1 The legislative framework

Rules concerning the extent to which landscape features can be considered as part of the eligible area for direct payments are set out in Articles 9 and 10 of the delegated regulation relating to IACS²⁸. Member States are given flexibility to determine the permitted width of landscape features which must not exceed two metres, unless a width greater than that has previously been notified to the Commission under the previous IACS rules. Member States can also define the maximum density of trees permitted on an agricultural parcel, as long as this does not exceed 100 trees per hectare, or a lower limit set by the Member State (under the previous regulation the limit was 50 trees per hectare). All features covered by cross-compliance are considered part of the eligible area. On permanent pasture with scattered ineligible features, such as scrub or trees (not exceeding the maximum density), Member States can either measure and then total up the ineligible areas within each land parcel or alternatively they can apply a pro-rata system to calculate the eligible agricultural area, whereby standard reduction coefficients are applied to the area, based on thresholds calculated for different land cover types. If the scattered features cover less than 10 per cent of the area, then no deductions to direct payments need to be made.

The delegated act for the direct payments regulation²⁹ sets out the detail on how the definition of permanent grassland, which has been broadened, can be applied. This states that trees and shrubs can be included in the definition as long as grasses and herbaceous forage remain predominant, defined as being over 50 per cent (Article 6), and as long as the trees and shrubs are actually used for grazing. Member States can also decide to include as permanent grassland 'land which can be grazed and which forms part of established local practices...' even if grasses do not predominate. Such local practices can be those important for the conservation of habitats in Annex 1 of the Habitats Directive, those covered by the Birds Directive or 'practices for livestock grazing which are traditional in character and are commonly applied on the areas concerned' (Article 7).

These rules were introduced to try and make the regulations more flexible in relation to the type of land that was eligible for direct payments, particularly to ensure that areas of farmland that were considered valuable from an environmental perspective were not excluded unnecessarily. This was to address issues that had arisen in many Member States under the previous CAP where areas of High Nature Value farmland had been considered ineligible for payments (e.g. Sweden, some Baltic countries, Romania, Bulgaria).

²⁸ Commission Delegated Regulation (EU) No 640/2014 of 11 March 2014 supplementing Regulation (EU) No 1306/2013 of the European Parliament and of the Council with regard to the integrated administration and control system and conditions for refusal or withdrawal of payments and administrative penalties applicable to direct payments, rural development support and cross compliance, OJ L 181, 20.6.2014, p. 48–73

²⁹ 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, 20.6.2014, p. 1–47

3.2 Issues being experienced in the UK countries

Despite the Commission's intention to broaden the definition of eligible land, there are reports from two UK countries, Northern Ireland and Wales, that Paying Agencies are tightening the definitions. In both cases there are concerns that this may be having negative environmental impacts, especially in marginal areas.

Northern Ireland

In Northern Ireland there is concern that the revision of the LPIS for Northern Ireland in order to define Maximum Eligible Area (MEA) for the 2015 claim year is leading to problems on the ground as farmers seek to minimise areas classed as ineligible. Concern has been focused on three particular habitats:

- Scrub;
- Thick rushes; and
- Tall heather in excess of 50 centimetres and western gorse.

Tall heather and western gorse have been causing the most concern as they can both be easily modified to meet the eligibility criteria by burning, making this a very cost-effective intervention.

Concern has not been confined to environmental interests. The Ulster Farmers' Union has expressed public concern about the definition of eligible land in upland areas³⁰. They have pointed out that the boundaries of areas such as scrub, bracken and rushes change from year to year and have urged the Department of Agriculture and Rural Development for Northern Ireland (DARDNI) to follow the example of the Republic of Ireland and adopt a pro-rata approach to the determination of the percentage of ineligible area, which allows for up to 10% of ineligible features before the eligible area of a Reference Parcel is reduced.

DARDNI has issued a 53-page guide to farmers on land eligibility³¹. This provides detailed guidance on how to identify and map ineligible land. The guidance covers scrub, overgrown rushes, bracken, scattered ineligible vegetation, trees, woodland and marginal land.

For scrub, the guidance makes no mention of the exception for grazed scrub. It does mention the various restrictions applying to scrub removal, clearly anticipating that farmers will wish to do this to reduce their ineligible areas. For scattered ineligible vegetation, DARDNI provides a scorecard to help farmers estimate the percentage of the land parcel occupied by ineligible vegetation. This appears to be a form of pro-rata approach but, whilst it conforms to the Commission's upper limit of 50% ineligible area, it does not offer a category with less than 10% ineligible vegetation, to which no reduction in ineligible area should be applied. This perhaps explains the comment by the Ulster Farmers Union about the situation in the Republic of Ireland.

The most detailed guidance is that concerning marginal land. On heather, the advice that DARDNI has received from the European Commission is that heather can be considered eligible if it is:

³⁰ Press release, 5th May <http://www.ufuni.org/news/ufu-seeks-reassurance-from-dard-on-land-eligibility>

³¹ 'Guide to land eligibility 2015' <http://www.dardni.gov.uk/guide-to-land-eligibility-.pdf>.

- accessible to grazing livestock; and
- has significant forage value; and
- is used for agricultural purposes, that is, grazed by livestock and/or management of heather such as flailing or controlled burning has been carried out.

DARDNI states that heather more than 50 centimetres high is considered not to meet these requirements, though it may still be eligible for AECM payments. It concedes that where less than 20 per cent of the heather area exceeds 50 centimetres in height the whole stand may still be considered eligible. The guidance encourages controlled burning or flailing of heather on a 20-year rotation, ideally with 5 per cent burnt each year, although it is permissible to burn up to 20 per cent in a single year.

For blanket bog subject to an agri-environment agreement it recommends grazing at the maximum level allowed (0.075 Livestock Units/hectare during the period 1 March - 31 October only) to maintain eligibility. It does not suggest any exceptions from the guidance on burning for this habitat and says that mowing or flailing may be acceptable instead of grazing. The guidance suggests that other forms of wetland vegetation will often be ineligible for the Basic Payment Scheme, though again not for AECM payments.

Wales

Full details of the rules on declaring ineligible features can be found in the Welsh Government's 2015 Single Application Guide to Declaring and Deducting Ineligible Features³². Natural Resources Wales (*pers. comm.*) report that two issues relating to ineligible features are causing particular concern in Wales:

- Grazed woodland with more than 100 trees per ha; and
- Scattered trees, including those in small groups.

It is areas of grazed woodland that are causing most concern in Wales - not the traditional areas of wood pasture, which generally have densities of trees that are lower than the 100 trees per ha limit, but areas of woodland to which sheep are given access for shelter. The problems have arisen despite the limit on the number of trees per hectare having been raised from 50 to 100. This seems to be because Rural Payments Wales is taking a much stricter line on inspection. The Welsh Government believes that this is necessary to avoid the risk of disallowance³³.

Strict enforcement of the 100 trees per hectare limit is likely to incentivise farmers to reduce the density of trees in these woods. It may work against one of the aims of the Welsh agri-environment climate scheme, Glastir Advanced, which is to promote more woodland management on Welsh farms.

³² Available via this link: <http://gov.wales/docs/drah/publications/150310-single-application-2015-guide-ineligible-features-en.pdf>

³³ Evidence by Rebecca Evans AM (Deputy Minister for Farming and Food) to the Environment and Sustainability Committee of the National Assembly of Wales, 20th May 2015 <http://www.senedd.cynulliad.cymru/documents/s40412/20%20Mai%202015.pdf>

The Welsh Government has decided that the area under isolated trees and the whole area occupied by groups of trees (not just the sum of the areas covered by their individual canopies) will be ineligible for the Basic Payment. There is anecdotal evidence that many farmers are taking action to reduce the impact of this decision on their payments. NRW (*pers. comm.*) report direct experience of one farmer 'siding up' his field and hedgerow trees by removing many of the branches so to reduce the area covered by their canopies. This has had a major impact on the local landscape and may lead to the complete loss of the trees in the longer term.

The exact scale of the problem seems hard to assess. Environmental stakeholders in Wales report widespread action by farmers, but there has been no significant increase in calls to the NRW Incident Line to report such problems.

Concerns over the treatment of trees as ineligible features do not appear to be shared in England, where scattered trees fall within the scope of cross compliance, which means they are included in the eligible area.

3.2.1 Underlying causes of these issues

The principal cause of the issues encountered with ineligible features appears to be much tighter EU requirements for the control and inspection of Maximum Eligible Area (MEA). These requirements are set out very clearly in the Commission guidance (European Commission 2014b). This guidance requires a review of all existing LPISs in preparation for the 2015 claim year. This requirement is driven by the need to take account of the new, wider definition of permanent grassland and the choices made by Member States in determining the eligible areas of agricultural parcels containing landscape features and trees.

The guidance explains that the LPIS must be able to identify the MEAs for the different payments and schemes within the CAP. It points out that the MEA for Pillar 1 area-based payments, including the Basic Payment Scheme and Greening, is likely to be different from the MEA for land-based Pillar 2 schemes such as those using the Agri-Environment Climate Measure. It is essential that the different MEA layers are 'geo-localised' to allow for cross checks between the pillars.

Eligible landscape features (i.e. those meeting minimum and maximum size criteria, those included as EFA and those subject to cross compliance under GAEC 7 or SMR2 or 3) do not have to be mapped for the determination of MEA, as these landscape features are considered to be part of the agricultural area within which they are situated. They may however have to be mapped as part of the EFA layer and/or to control cross compliance.

Detailed guidance is also given on how to determine those ineligible areas that should be excluded from MEA. The principles are relatively straightforward:

- All man-made constructions are excluded;
- Areas of more than 100 m² not taken up by agricultural activities are excluded;

- Landscape features more than 2m wide are excluded unless they have been included in the cross-compliance requirements by Member States (see above); and
- Woods, where the canopy is sufficiently dense to prevent growth of an understorey suitable for grazing, should be excluded.

There are however some very complex rules about how to define, map and measure some categories of ineligible features, particularly landscape features and trees. Scattered trees can be eligible, providing that the density does not exceed 100 trees per hectare, or a lower limit set by the Member State. The idea being that the trees should not be so dense as to prevent the land beneath being used for grazing. Groups of trees are not eligible and must be mapped and excluded from MEA, even if the overall density of trees is less than 100 per hectare.

It is not always necessary to accurately measure every scattered ineligible feature. Article 10 of Regulation 640/2014 allows for 'pro-rata assessment'. This allows Member States to define a series of categories of permanent pasture with different percentages of their area occupied by ineligible features. The MEA of each category is then reduced in proportion to the average percentage of ineligible features, but with no reduction for the category with less than 10% ineligible features.

There is a separate 17 page guidance document (European Commission 2014c) detailing how to set up a pro-rata assessment process. There are basically two methods of doing this:

- Systematic - A series of land cover types are identified that have consistent levels of ineligible feature within them. Each land class is then assigned to a particular pro-rata category.
- Sporadic – The percentage of ineligible features is measured or estimated for each parcel individually.

Member States are discouraged from having any categories where the area of ineligible features exceeds 50 per cent of the area of the parcel. Any individual ineligible area of more than 1,000m² also has to be excluded from the area of the pro-rata assessment.

Trees and bushes are not always ineligible, even if they do prevent the grazing use of the understorey. Fruit trees are eligible, and so are trees and shrubs that are actually used for grazing, providing they cover less than 50 per cent of the grazed area.

The guidance stresses that for areas where grasses and other herbaceous forage are traditionally not predominant to be eligible, the vegetation must actually be grazed.

The expectation that all ineligible features will be accurately categorised, mapped and measured was reinforced by a presentation given by Christina Borchman to the MARS conference in November 2014 (Borchmann, 2014). This expectation appears to be driven by the European Court of Auditors. A presentation by a member of the Court of Auditors at the same conference (Walz, 2014) identified inaccurate data on land eligibility as one of three 'persistent causes of error'. He identified two separate sources of inaccuracy:

- Insufficient interpretation of orthoimages; and

- The use of incorrect eligibility criteria.

One of the examples used to illustrate the second of these types of inaccuracy is shown as Figure 4. The caption with it reads “Declaration of ineligible area - Woodland, shrubs, bracken etc. declared as Permanent pasture”.

Figure 4: Illustration used by Walz (2014) to illustrate ineligible land



Since the photograph appears to show a grazed lowland heath, albeit with some scrub, this suggests that Member States wishing to include as eligible those areas where ‘grasses and herbaceous forage are traditionally not predominant’ may still face difficulty with this approach.

3.3 The situation in other Member States

It has not proved easy to establish the level of concern over ineligible features in other Member States. In Germany, mapping of landscape features using orthophotos has been routine practice for some years. In the Land of Hesse much of the control is based on orthophotos and a third of these are new in each year. There has been 100 per cent geospatial application since 2005 (Vogel 2014).

Remote sensing is used for the majority of On The Spot Controls (OTSCs). In 2013, 1100 applications in Hesse were controlled by remote sensing, compared to 450 applications controlled by classical OTSC. The Geographical Information System (GIS) used in Hesse supports all aspects of the OTSC process, with the process of comparing the declared area with the OTSC measurements being largely automated. Orthophotos are used in the GIS to identify landscape features and to check maximum and minimum widths, length and mean width. If the situation in Hesse is typical of the rest of Germany then, with this kind of accurate mapping based on recent remote sensing data, it is unlikely that the new rules will throw up many new issues around ineligibility.

In the Netherlands also, there already appears to be comprehensive mapping of landscape features. The Netherlands has an open data system (van der Sande 2014) which provides free access to a national tree database, based on LIDAR data flown between 2007 and 2012.

This provides precise information on tree heights and crown area. Tree data is stored as points, lines and polygons. The existence of such comprehensive data also suggests that there are likely to be few new eligibility issues in the Netherlands.

However, the new rules on trees within eligible land appear to be causing some problems in Estonia (*pers. comm.*) and Spain³⁴. The difficulty and cost of accurately mapping tree cover led the Estonian Ministry of Agriculture to decide not to take advantage of the ability to include as eligible land areas with up to 100 trees per hectare. Instead the Ministry decided to retain a system of special reduction coefficients previously negotiated with the Commission for four Estonian counties with a high percentage of semi-natural habitat and to retain a 50 tree per hectare limit across the whole of Estonia. The Estonian Ministry of Agriculture recognises that this will leave some grasslands ineligible for Pillar 1 support and has partially compensated for this by offering higher levels of Rural Development Programme support for such habitats where they occur within protected areas. This kind of support will not be available outside protected areas, however, leaving an unknown area of grassland without support from either pillar. In Spain, it would appear that the eligibility of large areas of pastures with trees and/or shrubs that are under some form of agricultural activity has been restricted or removed. In some cases this is due to the reclassification of such land as forests. In other situations, where a proportion of non-forage trees and/or shrubby vegetation are permitted on the land, it seems that it has not been possible to distinguish forage from non-forage species, leading to the calculation exceeding the threshold and making many of these habitats ineligible for payments. These issues are currently being explored with the European Commission as concerns have been raised about the potentially detrimental environmental implications of excluding these habitats, many of which are of High Nature Value, from CAP payments. In some cases it may lead to land being abandoned and in others graziers may consider removing the trees and/or scrubby vegetation in order to ensure their land remains eligible.

3.4 Environmental implications of the new rules and the Commission guidance for issues of eligibility, with particular reference to the countries of the UK

The interpretation of the European Commission guidance in Northern Ireland over the eligibility of heather moorland does raise some concern about similar interpretations being applied in other countries or Member States.

It is therefore worth looking at the ecological implications of these eligibility standards, especially as the definition applied to the eligibility of heather moorland in Northern Ireland includes large areas of active blanket bog. These implications are more fully described in Annex A, but the most serious would seem to be the risk that farmers will conduct poorly controlled burns on areas of over-mature heather with a high fuel load. Such fires could be severe and cause long lasting damage, both to the vegetation and to the structure of the peat itself, reducing the ability of such moorlands to supply a range of ecosystem services.

³⁴ Letter from the Plataforma por la ganadería extensiva y el pastoralismo and the European Forum on Nature Conservation and Pastoralism to the Director General of Agriculture, Mr Jerzy Bogdan Plewa, 2 September 2015 (see: <http://www.efncp.org/download/EFNCPLettertoMrJerzyBogdanPlewa.pdf>)

There also seems to be evidence that the Welsh Government's approach to excluding areas under trees from eligible area is in line with existing practice in both Germany and the Netherlands. There are concerns about the ecological implications of excluding grassland with scattered trees in at least one other Member State. Within Estonia, for example, Pillar 2 funding is being used to compensate farmers for maintaining habitat condition within protected areas.

The English approach of including field and hedgerow trees within the cross-compliance regime should reduce the incentive to destroy such features. It is unlikely to reduce the Paying Agency's workload however, since the Commission is clear that the control of cross compliance also requires all relevant landscape features to be accurately mapped.

The much sharper definition of eligible area that the Commission now requires appears in some countries to be having the perverse effect of undoing the more inclusive approach to the definition of agricultural land that was intended by the adjustment of some of the criteria in Regulation 640/2014³⁵. In countries such as Northern Ireland and Wales where these definitions have been rigorously implemented, the effect is likely to be to sharpen the divide between farmed land and other areas of semi-natural habitat. Maintaining land in a condition that renders it eligible for Pillar 1 support is likely to mean that Pillar 2 payments will have to be adjusted to factor in any Pillar 1 support that has been forgone as a result of adopting the desired pattern of management. This is likely to increase the cost of conserving such areas at a time when Pillar 2 funding is very constrained. In particular, it could impact on areas of blanket bog and on some other ecological/habitat restoration projects.

³⁵ Commission Delegated Regulation (EU) No 640/2014 of 11 March 2014 supplementing Regulation (EU) No 1306/2013 of the European Parliament and of the Council with regard to the integrated administration and control system and conditions for refusal or withdrawal of payments and administrative penalties applicable to direct payments, rural development support and cross compliance

4 Defining minimum activity requirements for active farmers

4.1 The legislative framework

Under the previous direct payment rules, agricultural activity was defined as “the production, rearing or growing of agricultural products, including harvesting, milking, breeding animals, and keeping animals for farming purposes or maintaining the land in good agricultural and environmental condition as set out in the cross-compliance standards of Good Agricultural and Environmental Condition”³⁶. From 2015, this is no longer the case. Rather the definition of what constitutes agricultural activity has been set out under Article 4(1)(c) of the direct payments regulation³⁷ as follows:

- (i) production, rearing or growing of agricultural products, including harvesting, milking, breeding animals, and keeping animals for farming purposes,
- (ii) maintaining an agricultural area in a state which makes it suitable for grazing or cultivation without preparatory action going beyond usual agricultural methods and machineries, based on criteria established by Member States on the basis of a framework established by the Commission, or
- (iii) carrying out a minimum activity, defined by Member States, on agricultural areas naturally kept in a state suitable for grazing or cultivation;

Member States are required to define the minimum activity to be carried out on any agricultural areas naturally kept in a state suitable for grazing or cultivation (Article 4(2)(b)). In addition, Article 9 (1) makes it clear that ‘no direct payments shall be granted to natural or legal persons, or to groups of natural or legal persons, whose agricultural areas are mainly areas naturally kept in a state suitable for grazing or cultivation and who do not carry out on those areas the minimum activity defined by Member States in accordance with point (b) of Article 4(2)’.

Delegated Regulation 639/2014³⁸ provides more detail on how Member States should define areas under Article 4(1)(c)(ii) and (iii):

- The criteria that farmers are to meet in order to fulfil the obligation to maintain the agricultural area in a state suitable for grazing or cultivation without preparatory action going beyond usual agricultural methods and machineries can be set out in one of two ways:
 - At least one annual activity must be carried out by a farmer, although where justified for environmental reasons, activities that are carried out only every second year may also be stipulated; or

³⁶ Article 2c of Regulation 73/2009

³⁷ 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, OJ L 347, 20.12.2013, p. 608–670

³⁸ 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

- The characteristics to be met by an agricultural area to be deemed maintained in a state suitable for grazing or cultivation must be identified (Article 4 of Regulation 639/2014).
- The minimum activities on agricultural areas **naturally kept** in a state suitable for grazing or cultivation are to be defined as ‘at least one annual activity to be carried out by a farmer’. However, as above, ‘where justified for environmental reasons, Member States may decide to recognise also activities that are carried out only every second year’ (Article 5 of Regulation 639/2014).

4.2 Situation in the countries of the UK

4.2.1 *Minimum activities required to maintain the agricultural area in a state suitable for grazing or cultivation without preparatory action going beyond usual agricultural methods and machineries*

In Wales, if land is not being used for ‘the production, rearing or growing of agricultural products including harvesting, milking, breeding animals and keeping animals for farming purposes,’ then it must be managed to control non-native invasive weeds and scrub; and to ensure that area has stock proof boundaries and a water source for livestock³⁹.

In Scotland such land must be maintained actively in a state suitable for grazing or cultivation. This includes a number of actions (controlling injurious weeds, maintaining access to those areas, stock-proof boundaries and water sources in permanent grassland or preventing scrub encroachment on arable land⁴⁰.

In England the requirement for land that is not grazed or cropped is simply to keep land in a state suitable for grazing or cultivation (Rural Payments Agency, 2015). The Paying Agency has issued some specific guidance on particular vegetation types included within the definition of permanent pasture. This specifies the characteristics of the land, rather than the management required:

- Bracken must be managed so that grasses and other herbaceous forage remain predominant, and so that it is suitable for grazing;
- Heather must be managed so as to be in a state suitable for grazing;
- Salt marshes and reed beds must be managed so that grasses and other herbaceous forage remain predominant, and it is suitable for grazing.

All types of permanent pasture must be kept clear of any scrub that cannot be grazed (sometimes known as ‘dense scrub’).

In Northern Ireland there is guidance (DARDNI, 2015) to farmers on how inspectors will judge if land is being maintained in a state suitable for grazing or cultivation. This states that evidence of at least one of the following agricultural activities being carried out on all of the land being claimed must be available from its appearance:

³⁹ Welsh Statutory Instrument 2015 No. 1252 (W.84)

http://www.legislation.gov.uk/wsi/2015/1252/pdfs/wsi_20151252_mi.pdf

⁴⁰ <https://www.ruralpayments.org/publicsite/futures/topics/all-schemes/basic-payment-scheme/basic-payment-scheme-full-guidance/eligible-hectares-and-minimum-activity---bps/>

- Grazing for example paths made by animals, animal droppings;
- Growing and harvesting a crop;
- Management of the vegetation such as flailing or controlled burning of heather.

Guidance is also given on some activities that will not be regarded as evidence of an agricultural activity over the whole area:

- Wildfires or burning more than 20% of the heather area in one year. This is not considered controlled burning and is therefore not an agricultural activity.
- Evidence of agricultural activity on only part of a field, which means the remainder of the field will be ineligible.
- Placing small numbers of animals on large areas of bogland or heather. This is unlikely to make these areas eligible. Similarly, the presence of animals on these areas for a short period is unlikely to make them eligible. Land being claimed must be eligible for the entire calendar year.
- Action undertaken after an inspection has found the land to be ineligible. Such action can only make the land eligible for the next calendar year.

4.2.2 Minimum activities on land 'naturally kept in a state suitable for grazing or cultivation'

Two of the four UK countries, Wales and Scotland, have designated areas of land as being 'naturally kept'. In Wales, sand dunes and saltmarshes are classed in this way and in Scotland all land in Regions 2 and 3⁴¹ is so categorised.

For sand dunes and saltmarshes in Wales⁴², the minimum activity required is that the area is grazed to a minimum average annual stocking density of 0.01 to 0.05 livestock units per hectare and that non-native invasive weeds and scrub are controlled.

Land in Regions 2 and 3 in Scotland (Scottish Government, 2015a), must either be stocked for a period or periods totalling not less than 183 days in any calendar year (lower densities can be justified), in accordance with the minimum stocking density; or an environmental assessment of the land must be carried out in each calendar year which comprises:

- a map and description of the farm environment;
- surveys of breeding birds, mammals, butterflies and plant health; and
- monitoring of habitats.

4.3 Minimum Activity definitions in other Member States

Minimum activity definitions are not covered in the EU's summary of Member State implementation decisions (European Commission, 2015). It has however been possible to find out some details of the approach taken in two other Member States through contacts in those countries.

⁴¹ **Region 2** comprises better quality rough grazing designated as Less Favoured Areas (LFA) grazing categories B, C, D and non-LFA; **Region 3** comprises the poorest quality rough grazing designated as LFA grazing category A

⁴² Section 6 of Welsh Government Statutory Instrument 2015 No. 1252 (W. 84) http://www.legislation.gov.uk/wsi/2015/1252/pdfs/wsi_20151252_mi.pdf

Estonia has decided not to define any areas as ‘naturally kept’ due to the complexity of doing so (*pers. comm.*). The minimum activity requirement for permanent grassland remains cutting once a year or grazing as it was in previous years.

In Germany (*pers. comm.*), minimum activity needs only be carried out only every two years and/or with other measures as approved by the competent regional authority, such as measures under agri-environment (e.g. extensive grazing) or management plans for Natura 2000 sites.

There is also a certain amount of information available online about the situation in the Republic of Ireland. Here, land ‘naturally kept in a state suitable for grazing or cultivation’ seems to be equated to marginal land (Department for Agriculture, Food and the Marine, 2015), although there does not appear to be a precise definition at present.

The Government of the Republic of Ireland appears, from reports in the technical press, to have been considering the use of a minimum stocking rate of one ewe to 1.5 hectares as a criterion for minimum activity on commonages and other marginal land, with exceptions where lower stocking rates are required within Natura sites or under GLAS (Green, Low-Carbon, Agri-Environment Scheme) agreements. This approach was dropped, however, on the grounds that it would contravene WTO Green Box rules on subsidising production. More recent press reports suggest that the Republic of Ireland is yet to resolve the question of how to measure minimum activity. This is particularly complicated on commonages, where the challenge is to establish the minimum activity of each individual commoner, as well the activity level on the common as a whole.

4.4 Environmental implications of minimum activity requirements

Setting a minimum activity level for land that is marginal to agricultural production can have the effect of preventing land abandonment which may, in the case of High Nature Value farming systems, be environmentally beneficial. In other cases it may incentivise management that is unnecessary or which may even cause environmental damage. The guidance to farmers in Northern Ireland, for example, includes the controlled rotational burning of heather as one of the techniques that inspectors will use to judge whether land is being kept in a state suitable for grazing or cultivation. The guidance is careful to point out that wildfires and fires that burn a high percentage of the area at once will render land ineligible. As already discussed in the section on ineligible features, however, there is evidence that even controlled burning can be environmentally damaging in some circumstances, especially where the heather is growing on blanket bog.

Two different approaches illustrate the potential to overcome this problem. One is the approach adopted in England, where the condition in which the land must be kept is specified, rather than the management required to achieve this condition. The other is the option used in Scotland, which involves carrying out an environmental assessment of the land in each calendar year. This is labour intensive, but should allow a more bespoke approach to deciding what management, if any, is necessary to maintain eligibility of the land for the Basic Payment whilst also being compatible with the optimal environmental management of the habitats that it supports..

5 Summary and conclusions

There are a number of key points that emerge from this initial review of some of the aspects of implementation of Pillar 1 in different Member States. These are summarised below before drawing some conclusions.

5.1 Green Direct Payments

5.1.1 Ecological Focus Areas

Of the three greening measures, it is the EFA measure that has the potential to deliver the most for the environment in arable landscapes. Member States can select the EFA options which are suitable to help address specific environmental priorities within arable landscapes and to provide a solid foundation on which agri-environment-climate schemes under Pillar 2 can build. However, the overview of the EFA elements that have been chosen by Member States suggest that, rather than choosing to increase the environmental ambition on arable land, many Member States instead seem to have chosen elements that provide the majority of farmers with the option to fulfil their EFA obligations in a way that is likely to require very few changes in management. This relates not just to the number of possible EFA elements on offer, but the rules that are applied to their use. For example, for in-field crop options, many Member States have not placed any conditions on the use of fertilisers or pesticides unless this has been required in the regulations. In addition the choice of species that are permitted as both N-fixing crops and SRC, while including some that are environmentally beneficial, also include others that are more questionable in terms of their likely environmental impact. In relation to N-fixing crops, two Member States (Germany and Spain) were found to have placed explicit conditions on the management of the land after the harvesting of the crop and in Scotland there is a requirement that the crop area must have an adjacent EFA field margin. The majority of Member States do not however appear to have placed any conditions on the use of N-fixing crops to mitigate the risk of increased leaching of nitrogen.

It is still too early to assess the impacts in practice. The actual environmental effects of the EFA measure will depend on the options chosen by farmers and where they are located in the field. Anecdotal evidence suggests however that in some countries, the impact may be limited. First indications show that cover crops account for 68 per cent of the EFA in Germany, with a further 12 per cent sown to N-fixing crops⁴³ and a significant increase in the area of land cultivated with protein crops, particularly soy, has been seen in the most productive areas of the Po valley in Italy (*pers. comm.*). Many farmers are planting soy because it can count as EFA, count towards the crop diversification measure and can also

⁴³ German Ministry of Agriculture and Environment - Pressemitteilung Nr. 191 vom 08.10.15, http://www.bmel.de/SharedDocs/Pressemitteilungen/2015/191-SC-OekologischeVorrangflaechen.html?sessionId=C6D1D6F15555195147BDA07B6D31CDDE.1_cid382

receive coupled support. It is important to understand the potential impacts of this kind of interaction between seemingly disparate elements of the greening measures.

5.1.2 Environmentally Sensitive Permanent Grassland

The designation of environmentally sensitive permanent grassland (ESPG) under the maintenance of permanent grassland measure has also been investigated as part of this report. In broad terms, the designation of ESPG, both within and outside Natura 2000 areas is likely to be positive for biodiversity, carbon, soil and water. However, for the areas of ESPG within Natura 2000 areas the actual impact will depend on a number of factors. These include: the proportion of land designated; whether the penalties for non-compliance lead to greater adherence to the rules not to plough protected grasslands than those in place under the Birds and Habitats Directives; and where less than 100 per cent of Natura 2000 areas have been designated, the reasons for this. Some countries, for example Estonia and Portugal, have designated very low proportions of the permanent grassland within Natura 2000 areas as ESPG. In Estonia the reasons for this seem to be partly because there are insufficiently detailed maps as well as a lack of clarity about whether designation as ESPG would restrict what it was possible to fund under Pillar 2 schemes. In other countries, such as Scotland and Wales, the reasons for non-designation of certain habitats is more ecologically driven, based on the cultivation needs of different habitats. More work is needed to establish the different reasons for the non-designation of ESPG to understand if there are particular issues constraining designation where this would be of value. Where the designation of ESPG may be of even more value from an environmental perspective is outside Natura 2000 areas since this could help protect areas that would otherwise not necessarily be protected from ploughing in these countries. Banning the ploughing of these sensitive grasslands is likely also to contribute to the implementation of the Water Framework Directive. Only four countries have chosen to designate such land in 2015 (Czech Republic, Latvia, Luxemburg and UK (Wales)). Different approaches have been taken to deciding which areas to designate, from reinforcing the designation of land that is already protected via national law (e.g. the protection of nationally important Sites of Special Scientific Interest (SSSI) in Wales and those protected under the national Nature Conservation Act in Luxemburg) to protecting those that are important for other reasons such as soil or water resources (Luxemburg and Czech Republic). It will be interesting to see whether more Member States decide to designate ESPG outside Natura 2000 in the coming years and whether this adds value to the national protection measures already in place.

5.1.3 Equivalent practices

Equivalent practices to the standard three greening measures have been adopted in five Member States, of which four were reviewed as part of this report. The approaches adopted in Austria and the Netherlands look the most promising in terms of their added value for the environment:

- The Austrian equivalent practices are included within an agri-environment-climate measure under which entry is a prerequisite for participation in the other agri-environment-climate measures. This is an interesting approach which could increase the proportion of farmers adopting 'broad and shallow' environmental practices on arable land. It will be important to assess the impact that this measure has on the agri-environment budget and the implications for the availability of funding for the

uptake of other, more demanding and environmentally beneficial agri-environment-climate measures in arable areas.

- The certification schemes in the Netherlands cover all three greening measures, but provide equivalent practices for the EFA measure only. Both schemes look promising in terms of the opportunities offered to put in place management on arable land that is more focussed and tailored than is provided under the standard greening measures. It will be interesting to see the uptake and the impacts of these measures in practice.

These examples illustrate that equivalent measures can be used to increase the environmental potential of the basic greening measures. Each of the equivalence schemes adopted to date operates alongside the standard three greening measures, providing farmers with the choice of whether to meet their greening requirements by the default three measures **or** via the equivalent alternative. However, DG Agriculture has confirmed that the text of the basic regulations should be interpreted as providing Member States with the option of introducing equivalent practices via a certification scheme as the sole route for farmers to meet their greening obligations⁴⁴. This could be an interesting opportunity to explore as a way of increasing the environmental ambition of greening, by tailoring the requirements of the certification scheme to address nationally identified environmental needs via Pillar 1.

5.1.4 Mapping and inspection requirements on EFAs

Our examination of the rules surrounding the new mapping and inspection requirements for EFAs has shown that these require the use of advanced technology (i.e. the need for high resolution outputs and automated processing) as well as the ability of Member States to fund the new investments required if the systems are to be of the standard required by Paying Agencies for control and verification purposes. Even in those countries which had suitable systems and technology in place before 2015, increased workloads are anticipated. In those countries that are less well prepared, more investment in this area would seem to be an issue that cannot be avoided.

Even if the environmental effectiveness of the EFA measure can be significantly improved there is a strong case to look for ways of simplifying the control requirements. Given the indications described above that the implementation of the EFA measure may, in practice, lead to very few changes in management and hence to little environmental benefit, a crucial question arises about the cost-effectiveness of significant investments in such technology, particularly if its main purpose is to satisfy the control and verification requirements of Pillar 1 payments. However, it remains an open question whether it might be a more efficient use of public money to invest in systems that are suited to assessing activities funded via rural development policy. Nonetheless, what is clear is that investments in the systems required to enable effective monitoring and assessment of environmental management more generally remain essential.

⁴⁴ Letter from the European Commission, Deputy Director General in charge of Directorates C, D and E, Directorate-General for Agriculture and Rural Development to IEEP, dated 5 January 2016, Ref: agri.ddg2.d.2/AB/mb/(2015)6312840

5.2 Eligibility issues in relation to the Basic Payment Scheme

Minimum agricultural activity requirements: The environmental implications of setting criteria to determine minimum agricultural activity very much depend on the circumstances. They can be a useful safeguard against land abandonment, but they can also impose inappropriate and environmentally damaging management on fragile semi-natural habitats. In practice, there may well be ways of avoiding conflict, but there remains a risk that these requirements will sharpen the distinction between land managed for the production of agricultural commodities and that managed for environmental reasons.

Eligibility of landscape features for the basic payment: The rules surrounding the eligibility of landscape features and habitats for the Basic Payment Scheme have been changed in ways intended to make them more flexible for Member States, but despite this eligibility problems persist. Examples are highlighted from Northern Ireland, Wales, Estonia and Spain. In all these areas, the issue relates to the eligibility criteria relating to permanent grassland or other habitats with trees or shrubby vegetation, which are leaving areas grazed at very low stocking densities and important for biodiversity ineligible for payments. Although attempts to overcome these issues have been sought in some of these countries, it would appear that still many of these areas are no longer deemed eligible for CAP payments, risking the removal of the vegetation to make them eligible, or the ceasing of agricultural activity.

Investigating this issue in more detail has highlighted the fact that this issue is in part due to strict interpretation of the rules in light of advice from EC auditors to avoid the risk of disallowance, but also serves to demonstrate the fundamental tensions within the CAP. These tensions manifest themselves most starkly in relation to the rules surrounding direct payments via the Basic Payment Scheme, which have been designed to focus solely on agricultural areas, where agricultural activity must be somehow evident. A significant gap appears to exist in some territories between the conditions required to make land eligible for the Basic Payment and the management practices that deliver and/or can be supported by payments for environmental objectives.

The issues of eligibility and minimum agricultural activity have the potential to lead to a situation in which Pillar 2 agri-environment-climate payments need to have an option to 'buy-out' the basic payment under Pillar 1 to encourage farmers to enter into agreements to manage their land environmentally, rather than destroy its environmental value in order to receive direct payments.

5.3 Conclusions

Looking only at the implementation choices made by Member States, the Pillar 1 greening measures do not appear to be on course to fulfil their potential as an environmental instrument. In most Member States, optimising the environmental benefits of greening, and of EFA in particular, appears to have been a lower priority than minimising the impact on farmers and ensuring that measures can be adequately controlled to avoid risks of disallowance. There are however examples of good practice, such as the designation of otherwise unprotected areas of Environmentally Sensitive Permanent Grassland, the use of more ambitious equivalent practices, particularly for EFAs, and the adoption of post-harvest

conditions on the management of nitrogen-fixing crops. Analysis of how farmers have chosen to implement greening in practice will be important to assess the actual impact on the ground.

Nonetheless, it is possible already to identify ways in which the environmental performance of green direct payments could be improved. These include:

- The designation of additional areas of ESPG outside Natura 2000 areas that are currently unprotected and whose protection from cultivation would benefit the conservation of soil carbon, the retention of biodiversity, the protection of the historic environment or other environmental benefits.
- The restriction of the use of nitrogen fixing crops to those that have proven environmental benefits (such as pasture legumes) and/or the application of other conditions to mitigate the potential for post-harvest or post-cultivation leaching of nitrogen..
- Restricting the options available to fulfil the EFA requirement to those which have been shown to have environmental benefits s.
- By greater use of equivalent practices that are specifically designed to address environmental issues in the territory to which they are applied. Ways would need to be found to persuade farmers to choose the equivalent practices in significant numbers. This could be achieved through making them a prerequisite to the receipt of AECM funding, as in Austria, but the possibility of making the equivalent practices the sole route to meeting the greening requirements, confirmed as being permitted in the regulations, also would be worth exploring.

The current control requirements in relation to the EFA layer present Paying Agencies with a very significant technical and logistical challenge. The scale of this challenge currently appears out of proportion to the likely environmental benefits. Even if the benefits could be increased there would seem to be a need to look for ways of simplifying the control requirements. This need for simplification has been recognised by the European Commission and by Member States. The Ecological Focus Area rules are one of the key areas identified by the Commission as requiring simplification.

If the control requirements could be simplified, it would be helpful if at least a proportion of the resources released could be redirected to developing more effective systems for monitoring and evaluating the environmental effectiveness of environmental instruments within the CAP.

The continued issues surrounding the eligibility of land grazed with very low stocking densities, but which is of High Nature Value, highlight some fundamental tensions within the objectives of the CAP. There is a danger that more precisely defining the limits of eligibility of land and its management for Pillar 1 payments will not resolve the issues, but rather lead to a situation where the optimal environmental management of significant areas of marginal land will render them ineligible for Pillar 1 payments. This could either lead to an inappropriate intensification of the management to render them eligible, or to increased costs in Pillar 2, as management payments for these areas would need to include compensation for the income foregone as a result of ineligibility for the Basic Payment.

The need to compensate under one part of the CAP a payment that is made under another part of the CAP would seem rather perverse and very inefficient and is reminiscent of previous decades when CAP subsidies were still production focussed. This issue is worth reflecting on further. The next reform process could be used to resolve these tensions and find a rationale for the CAP that can meet environmental, social and economic needs.

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Annex 1 Rules for the three greening measures

Crop diversification

The objective of the crop diversification measure is to achieve 'enhanced environmental benefit...in particular the improvement of **soil quality**' (Recital 41 of Regulation (EC) 1307/2013). The requirements of the measure are set out in Box 9.

Box 9: Crop diversification rules

The rules for the crop diversification measure are as follows:

- Where the arable area is 10-30 ha (and not entirely cultivated with crops under water for a significant part of the year, at least two different crops must be grown
- Where the arable area > 30ha at least three crops must be cultivated.
- For arable areas 10-30 ha: maximum area to be sown to main crop = 75%
- For arable areas > 30 ha - Maximum to be sown to a single crop is 75% and two crops = 95%
- Arable areas under 10 ha = exempt.

These rules do not apply to holdings:

- where > 75% of arable land is used for the production of grasses or other herbaceous forage, land laying fallow, or subject to a combination of these uses, provided the arable area not covered by these uses does not exceed 30 ha.
- Where > 75% of the eligible agricultural area is permanent grassland, used for the production of grasses or other herbaceous forage or crops under water or a combination of these uses, provided the arable area not covered by these uses does not exceed 30 ha.
- where > 50% areas under arable land declared were not declared by the farmer in his aid application of the previous year and, where based on a comparison of the geo-spatial aid applications, all arable land is being cultivated with a different crop compared to that of the previous calendar year
- that are situated in areas north of 62nd parallel or certain adjacent areas. In these areas, where the arable land is >10 ha, 2 crops are required to be cultivated. Neither of these can cover more than 75% of the arable areas with the exception of when the main crop is grass or other herbaceous forage or land laying fallow.

Source: Article 44 of Regulation (EU) 1307/2013

Maintaining permanent grassland

The overall objective of this measure is to ensure environmental benefits, in particular carbon sequestration (Recital 42). The objective for the protection of 'environmentally sensitive permanent grassland' is to protect species, land of high nature value, protect against soil erosion and protect water quality (Article 41 of Regulation (EU) 639/2014).

The requirements of the permanent grassland measure are set out in Box 10.

Box 10: Maintaining permanent pasture rules

There are two types of obligation that apply to this measure:

1. Farmers must not convert or plough permanent grassland in areas designated by Member States as being environmentally sensitive. Member States required to designate permanent grassland,

peatlands and wetlands deemed to be environmentally sensitive within Natura 2000 areas and have the option of designating further areas outside N2K areas, including permanent grassland on carbon rich soils.

2. Member States have to ensure that the ratio of the land under permanent grassland does not decrease by more than 5% at national, regional or sub-regional level (to be decided by member states) compared to the situation in 2015.

In the case of (2), if the ratio decreases by more than 5% Member States must require land to be converted back to permanent pasture through placing obligations on farmers to do so. The exception to this is where the decrease below the threshold results from afforestation, provided such afforestation is compatible with the environment and does not include plantations of short rotation coppice Christmas trees or fast growing trees for energy production.

Source: Article 45 of Regulation (EU) 1307/2013

Ecological Focus Areas (EFA)

The overarching objective for the establishment of EFAs is 'to safeguard and improve biodiversity on farms' (Recital 44). Many of the measures have the potential also to have benefits for other ecosystem services

The requirements of the EFA measure are set out in Box 11.

Box 11: Ecological Focus Area rules

The rules for EFAs are set out below:

- 'Ecological Focus Areas' (EFAs) to cover 5% of the arable area from in 2015, rising to 7% from 2018 if deemed necessary subject to a review in 2017
- Up to half of EFA requirement may be met at the regional level by pooling commitments among groups of farmers - Member States would need to designate the areas and the obligations for farmers participating. The aim of the designation and obligations shall be to underpin the implementation of Union policies on the environment, climate and biodiversity.
- Only applies to arable areas > 15 ha
- The EFA can comprise (NB: weighting factors are proposed – to be developed by the Commission):
 - land laying fallow;
 - terraces;
 - landscape features, including those adjacent to eligible agricultural areas covered by arable land;
 - buffer strips including those covered by permanent grassland;
 - agro-forestry as supported under EAFRD;
 - strips of land along forest edges without cultivation;
 - short rotation coppice;
 - areas afforested under EAFRD;
 - areas with catch crops or green cover established by the planting and germination of seeds;
 - nitrogen fixing crops.

The obligations do not apply to the following:

- holdings where >75% of the eligible agricultural area is permanent grassland, used for the production of grasses or other herbaceous forage or cultivated with crops either under water for a significant part of the year or for a significant part of the crop cycle or a combination of those uses, provided the arable area not covered by these uses does not exceed 30 ha.
- holdings where >75% eligible area is entirely used for production of grass or other herbaceous forage, land laying fallow, cultivated with leguminous crops, or subject to a combination of these uses,

provided the arable area not covered by these uses does not exceed 30 ha.
In addition, Member States where over 50% of the land area is covered by forests, may choose not to apply the greening measures in Areas of Natural Constraint as defined under the rules set out in rural development policy provided certain conditions are met in relation to the rate of forest land to agricultural land in the ANC unit.

Source: Article 46 of Regulation (EU) 1307/2013

Annex 2 Member State EFA implementation choices

Table 6: Member States choice on elements to qualify towards the EFA obligation

MS or region	a. Land lying fallow	b. Terraces	c. Landscape features		d. Buffer strips		e. Ha of agro-forestry	f. Strips eligible ha along forest edges - NO PROD.		f. Strips eligible ha along forest edges - WITH PROD.		g. Areas with short rotation coppice	h. Afforested areas	i. Areas with catch crops or green cover	j. Areas with nitrogen fixing crops	EFA /MS or region (*)						
			C	W	C	W		C	W	C	W											
BE-FL	Yes	No	-	-	5	2 N.A.	All	Yes	6	1,5	Yes	Yes	Yes	Yes	Yes	Yes	14					
BE-WA	Yes	No	-	-	7	All	All	Yes	N.A	1,5	Yes	Yes	N.A	1,5	No	-	-	Yes	No	Yes	Yes	14
BG	Yes	Yes	2	1	7	All	All	Yes	6	1,5	No	Yes	6	1,5	No	-	-	Yes	No	Yes	Yes	14
CZ	Yes	Yes	N.A	N.A	5	None	All	No	-	-	No	No	-	-	No	-	-	Yes	Yes	Yes	Yes	11
DK	Yes	No	-	-	2	None	None	Yes	N.A	1,5	No	No	-	-	No	-	-	Yes	No	Yes	No	6
DE	Yes	Yes	2	1	8	5 N.A	1 N.A	Yes	N.A	1,5	Yes	Yes	N.A	1,5	No	-	-	Yes	Yes	Yes	Yes	17
EE	Yes	No	-	-	5	None	None	No	-	-	No	No	-	-	No	-	-	Yes	No	No	Yes	8
IE	Yes	No	-	-	5	All	All	Yes	6	1,5	No	No	-	-	No	-	-	Yes	Yes	Yes	Yes	11
EL	Yes	No	-	-	3	All	All	Yes	6	1,5	No	No	-	-	No	-	-	No	No	No	Yes	6
ES	Yes	No	-	-	0	None	None	No	-	-	Yes	No	-	-	No	-	-	No	Yes	No	Yes	4
FR	Yes	Yes	2	1	8	All	All	Yes	6	1,5	Yes	Yes	6	1,5	Yes	6	0,3	Yes	Yes	Yes	Yes	18
HR	Yes	No	-	-	7	All	All	Yes	6	1,5	No	Yes	6	1,5	No	-	-	Yes	No	Yes	Yes	13
IT	Yes	Yes	2	1	9	All	All	Yes	6	1,5	Yes	Yes	6	1,5	Yes	N.A	0,3	Yes	Yes	No	Yes	18
CY	Yes	No	-	-	0	None	None	Yes	6	1,5	Yes	No	-	-	No	-	-	Yes	No	No	Yes	5
LV	Yes	No	-	-	4	All	All	Yes	6	1,5	No	No	-	-	No	-	-	No	No	Yes	Yes	8
LT	Yes	No	-	-	0	None	None	No	-	-	No	No	-	-	No	-	-	No	No	No	Yes	2
LU	Yes	No	-	-	6	1 N.A	All	Yes	N.A	1,5	Yes	Yes	6	1,5	Yes	6	0,3	Yes	Yes	Yes	Yes	15
HU	Yes	Yes	2	1	8	3 N.A	All	Yes	N.A	1,5	Yes	Yes	N.A	1,5	Yes	N.A	0,3	Yes	Yes	Yes	Yes	18
MT	Yes	No	-	-	5	None	All	No	-	-	No	No	-	-	No	-	-	No	No	No	Yes	7
NL	No	No	-	-	1	None	None	No	-	-	No	No	-	-	No	-	-	Yes	No	Yes	Yes	4
	Yes	No	-	-	4	None	None	No	-	-	No	No	-	-	No	-	-	Yes	No	Yes	Yes	8
PL	Yes	No	-	-	7	All	All	Yes	6	1,5	No	Yes	6	1,5	Yes	6	0,3	Yes	Yes	Yes	Yes	15
PT	Yes	No	-	-	1	All	All	No	-	-	Yes	No	-	-	No	-	-	No	Yes	No	Yes	5
RO	No	Yes	2	1	7	All	All	Yes	6	1,5	No	No	-	-	No	-	-	Yes	Yes	Yes	Yes	13
SI	Yes	No	-	-	0	None	None	No	-	-	No	No	-	-	No	-	-	No	No	Yes	Yes	3
SK	Yes	Yes	N.A	N.A	4	None	All	Yes	N.A	1,5	No	No	-	-	No	-	-	Yes	No	Yes	Yes	10
FI	Yes	No	-	-	1	None	None	No	-	-	No	No	-	-	No	-	-	Yes	No	No	Yes	4
SE	Yes	No	-	-	1	All	All	No	-	-	Yes	No	-	-	No	-	-	Yes	No	Yes	Yes	6
UK-EN	Yes	No	-	-	1	None	None	Yes	6	1,5	No	No	-	-	No	-	-	No	No	Yes	Yes	6
UK-NI	Yes	No	-	-	4	All	All	No	-	-	Yes	No	-	-	No	-	-	Yes	Yes	No	Yes	9
UK-SC	Yes	No	-	-	1	None	All	Yes	N.A	1,5	No	No	-	-	No	-	-	No	No	Yes	Yes	5
UK-WA	Yes	No	-	-	2	All	All	No	-	-	No	No	-	-	No	-	-	Yes	Yes	No	Yes	6
MS/ EFA	26	8						17			11	9			6			20	14	19	27	

Source: European Commission, 2015

Yes: EFA Activated	No: EFA not activated	For conversion (C) and weighting factors:	N.A: 'Factor not activated'	For landscape features: None=no factors activated / 2N.A – no of LF where factors not activated / ALL: MS activated all factors for the LF chosen
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Table 7: Member State choices for nitrogen fixing crops (as part of the EFA obligation)

Common name	Botanical name	AT	BE FL	BE Wa	BG	CR	CY	CZ	EST	FI	FR	DE	GR	HU	IE	IT	LV	LT	LU	MT	NL	PL	PT	RO	SK	SI	ES	SE	UK EN	UK NI	UK SC	UK WA	MS /NFC		
Kidney vetch	<i>Anthyllis</i>							X																										1	
Pinut	<i>Arachis</i>				X						X					X							X											4	
Crown vetch	<i>Coronilla varia</i>													X																				1	
Chickpea	<i>Cicer</i>	X			X	X	X	X			X		X	X		X			X	X		X	X	X			X	X	X		X	X		17	
Dolichos	<i>Dolichos iala</i>															X																		1	
Galega (Goat's rue)	<i>Galega</i>																X																	1	
Soybean	<i>Glycine</i>	X	X	X	X	X		X		X	X	X				X						X		X	X	X		X	X				X		15
Liquorice	<i>Glycyrrhiza glabra</i>															X																		1	
French honeysuckle	<i>Headsarum coronarium</i>															X				X							X								3
Vetchlings	<i>Lathyrus</i>					X	X				X			X		X						X				X	X								8
Lentil	<i>Lens</i>	X			X	X	X	X			X	X	X	X		X		X	X			X		X	X		X				X	X			17
Birds foot-trefoil	<i>Lotus</i>				X	X		X	X		X	X	X	X		X	X	X		X	X	X							X		X	X			15
Lupin	<i>Lupinus</i>	X	X	X	X	X		X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	24
Alfalfa	<i>Medicago</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	26
Sweet Clover	<i>Melilotus</i>							X	X	X	X	X		X			X	X				X							X				X	10	
Sainfoin	<i>Onobrychis</i>				X			X	X		X	X		X		X	X	X			X	X		X			X		X				X	14	
Bird's-foot	<i>Ornithopus</i>										X	X						X				X												4	
Bean	<i>Phaseolus</i>				X	X	X	X	X	X	X	X	X	X	X	X			X		X	X	X	X	X	X		X	X	X	X	X	X	X	20
Pea	<i>Pisum</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X	X	X	X	X	X	X	26
Clover	<i>Trifolium</i>	X	X		X	X	X	X	X	X	X	X	X	X	X	X	X	X	X		X	X		X	X	X		X	X		X	X			24
Fenugreek	<i>Trigonella</i>										X					X											X		X					4	
Vetch (exc. Faba bean)	<i>Vicia (except Vicia faba)</i>	X	X		X	X	X	X	X	X	X	X	X	X		X	X	X	X	X	X				X	X	X	X		X	X	X	X	23	
Faba bean	<i>Vicia faba</i>	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	X	27
Bean	<i>Vigna spp.</i>				X	X	X		X		X		X		X	X			X					X					X	X	X	X		11	
NFC / MS or region		9	6	5	14	13	10	14	10	9	18	13	11	14	7	19	10	11	8	8	7	14	4	11	9	8	12	9	14	6	11	14	-		

Source: European Commission, 2015

Table 8: Member State choices for catch crops/green cover (as part of the EFA obligation)

MS or reg.	No of species	Undersowing, if specified	SMR 1 and other areas, if specified	Period for the sowing		Conditions on production methods, if specified
				Start date	End date	
BE FL	16 species			after harvesting the main crop	31-Aug (polders); 30-Sept (other regions)	Presence in the field: from 1-Sep till 15-Oct (polders); from 1-Oct till 1-Dec (loam regions); from 1-Oct till 1-Feb (other regions) Input restrictions: pesticides not allowed with exceptions; Mixture conditions: Minimal seed density
BE WA	24 species (grouped in 4 families)	Yes	Yes	01-Jun (undersowing) 01-Jul (others)	01-Oct	Presence in the field: Min 3 months; for vulnerable areas: until at least 15-Nov Input restrictions: mineral fertilisers and pesticides not allowed Mixture conditions: 1) Min 2 of different families 2) One component of significant presence 3) Max % thresholds for vulnerable areas (weight & area) Other conditions: prohibition of coated seeds; destruction only by mechanical means or freezing
BG	24 species (grouped in 2 families)			01-Sep	30-Sep	
CZ	28 species			20-Jun	20-Sep	
DK	4 families	Yes		01-Jan (undersowing)	31-May (undersowing); 30-Jun (undersowing in maize); 20-Aug (others)	Presence in the field: at the latest by 20-Oct
DE	84 species	Yes	Yes	16-Jul	01-Oct	Input restrictions: mineral fertilisers and pesticides not allowed Mixture conditions: Max % threshold (of seeds content) Other conditions: Only grazing allowed with sheep and goats
IE	14 species		Yes	15-Jul	15-Sep	Presence in the field: Min 10 weeks; must remain in place until 1-Dec
FR	42 species			01-Jul	01-Oct	
HR	26 species (grouped in 5 families)			01-Jun	15-Aug	
LV	1 crop family	Yes		15-Jun	15-Sep	
LU	31 species (+other non-listed crops)	Yes		01-Jul (catch crops); No requirement (undersowing)	01-Oct	Presence in the field: at least until 1-Jan Mixture conditions: Min % threshold (weight) for the listed component
HU	15 species			01-Jul	01-Oct	
NL	23 species (grouped in two categories)		Yes	15-Jul	01-Oct	Presence in the field: at least 10 weeks with exceptions Input restrictions: plant protection products not allowed with exceptions Other conditions: CC sown after growing maize on sand or loess solid not count as EFA
AT	Bee mixture: 28 species as examples Others: 2 groups [frost (& non-)resistant] species (examples)			A: 31-Jul, B: 20-Aug, C: 31-Aug, D:20-Sep (See conditions)	A: 15-Oct, B: 15-Nov, C: 15-Feb N+1, D: 01-Mar N+1	Presence in the field: A: at least until 15-Oct Mixture conditions: A. min 5 (bee mixture) OR min 3; B. min 3; C. 3; D. min 2 (for each type of mixture different period of sowing applies)
PL	5 crop families			01-Jul	20-Aug or 01-Oct	Presence in the field: at least until 1-Oct(stubble intercrops); at least until 15-Feb (winter intercrops)
RO	Only green cover	Yes	Yes	01-Aug	15-Oct	
SI	9 species			01-Jun	01-Sep	Presence in the field: during 15-Sep and 16-Oct
SK	2 crop families			15-May	30-Sep	
SE	Only undersowing	Yes		Information not provided	15-Jun	
UK -EN	7 species	Yes		01-Jul	01-Oct	Presence in the field: Catch Crops must be visible by 31-Aug and retained until 1-Oct; Cover Crops: visible by 1-Oct and retained until 15-Jan N+1
UK- SC	7 species	Yes		01-Aug	01-Oct	Presence in the field: Until 31 -De Other conditions: when CC established, farmers must comply with SMR1 requirements

Source: European Commission, 2015

Table 9: Member State choices for short rotation coppice (as part of the EFA obligation)

MS / Species	Maple	Alder	Birch	Sweet chestnut	Hornbeam	Hazel	Ash	Walnut	Mulberry	Poplar	Wild cherry	Plane	Black locust	Oak	Willow	Rowan	Lime	Elm	Requirements for mineral fertilisers and plant protection products		
	Acer	Alnus	Betula	Castanea sativa	Carpinus	Corylus spp.	Fraxinus spp.	Juglans nigra	Morus	Populus	Prunus avium	Platanus	Robinia	Quercus	Salix	Sorbus aucuparia	Tilia	Ulmus	SRC / MS or region	Mineral fertilisers	Plant Protection Products
BE-FL	X	X				X	X			X					X			X	7	Not allowed	Pesticides not allowed
BE-WA	X	X	X		X	X				X	X				X	X	X		10	Not allowed	Pesticides not allowed. Herbicides allowed 1st year
BG		X				X			X	X		X			X		X	X	8	Allowed	PPP allowed only for poplars and willow up to 2y of age.
CZ		X				X	X			X					X				5	Not allowed	Not allowed
DK	X	X	X		X	X	X			X				X	X			X	10	Allowed	Not allowed
DE		X	X				X			X				X	X				6	Not allowed	Pesticides not allowed
EE															X				1	Not allowed	Not allowed
IE	X	X	X	X		X	X			X				X	X		X		10	Not allowed	Herbicides and insecticides not allowed for 2 years with exceptions
FR	X	X	X	X	X		X			X	X				X				9	Not allowed	Not allowed
HR		X	X	X	X		X			X					X				7	Not allowed	Pesticides not allowed
IT		X								X		X			X			X	6	Not allowed	Not allowed, except bio insecticides
LU	X	X	X							X					X				5	Not allowed	Pesticides not allowed. Herbicide allowed in 1 st year
HU	X	X					X	X		X				X	X				7	Not allowed	Pesticides not allowed
NL															X				1	Not allowed	Allowed
AT		X	X				X			X					X				5	No information	Allowed with conditions
PL			X							X					X				3	Allowed with limits	Not allowed
RO										X			X		X				3	Allowed with limits	Allowed with limits
SK		X	X	X	X		X			X	X				X				8	Not allowed	Not allowed
FI										X					X				2	Not allowed	Pesticides not allowed. Herbicides allowed in year 1 and after 31/08 in last year
SE															X				1	Allowed only in 1st year	Pesticides allowed in 1st year
UK-NI	X	X	X	X		X				X					X		X		8	Not allowed	Allowed until end of 2 year
UK-WA	X	X	X	X		X	X			X					X		X		9	Not allowed	Allowed
MS /SRC	7	14	11	5	5	6	11	1	1	17	3	2	1	4	20	1	4	4			

Source: European Commission, 2015

Annex 3 Comparison of the management of blanket bog for conservation and the management needed to maintain eligibility for Direct Payments according to DARD guidance

Definition of blanket bog

The Joint Nature Conservation Committee⁴⁵ defines this habitat as “extensive peatlands that have formed in areas where there is a climate of high rainfall and a low level of evapotranspiration, allowing peat to develop not only in wet hollows but over large expanses of undulating ground.’ Peat depth is very variable, with an average of 0.5-3m being fairly typical. There is no generally agreed minimum depth.

Active blanket bogs are defined as those ‘supporting a significant area of vegetation that is normally peat-forming. Typical species include the important peat-forming species, such as bog-mosses (*Sphagnum spp.*) and cottongrasses (*Eriophorum spp.*), or purple moor-grass (*Molinia caerulea*) in certain circumstances, together with heather (*Calluna vulgaris*) and other ericaceous species.’ Active blanket bog is a Habitats Directive priority habitat.

The definition of blanket bog also includes areas where the vegetation has been modified to the extent that peat formation has ceased. These are sometimes called degraded blanket bogs (Shepherd et al. 2013).

One source of confusion in approaches to moorland management and conservation is that areas fitting the definition of blanket bog are often described as heather moorland. Upland habitats, such as blanket bog, wet heath, dry heath and grassland, will often be present as a mosaic of habitats. Heather is a natural component of the vegetation of active blanket bog, and it can increase in dominance under certain management regimes, especially rotational burning (Worrall et al 2013). It can however also dominate vegetation on shallow peat and mineral soils in moorland areas, forming vegetation that lies outside the normally accepted definition of blanket bog

Background

Blanket bog is an extremely important habitat across the EU and particularly in the UK. The UK has between 9 and 15 per cent of Europe’s peatland area (46,000-77,000 km²) and about 13 per cent of the world’s blanket bog, which is one of the world’s rarest habitats (IUCN 2011). Blanket bog is a European Priority Habitat.

Blanket bog and other peatlands are important for their biodiversity (many are included in the Natura 2000 network) but also for other ecosystem services. The IUCN commission of Inquiry on peatlands listed the following (IUCN 2011):

- Blanket and raised bog peatlands are estimated to be storing at least 3.2 billion tonnes of carbon. A loss of only five per cent of UK peatland carbon would equate to the total annual UK anthropogenic greenhouse gas emissions.

⁴⁵ Habitat account - Raised bogs and mires and fens - 7130 Blanket bogs
<http://jncc.defra.gov.uk/protectedsites/sacselection/habitat.asp?FeatureIntCode=h7130>

- In the UK, 70% of all drinking water is derived from surface water that comes mainly from upland catchments, which are generally peat dominated.
- As waterlogged soils, peat deposits provide a rich archive of cultural and environmental change stretching back over 10,000 years.

Management of these habitats is also known to have a significant impact on flood management. They are also used for extensive grazing and in some parts of the UK they may be intensively managed for red grouse rearing.

There has been a lot of research and debate in recent years about the management required to maintain and restore blanket bog and raised bog and whether this conflicts with the management required for grazing and for grouse management. Much of the evidence put forward has been contested, and this has resulted in a number of systematic reviews of the available evidence (Stewart *et al.* 2004, Worrall *et al.* 2010, Shepherd *et al.* 2013) in an attempt to find an agreed evidence base on which to make decisions on the future management of these habitats.

In parallel, there has been an increased focus, particularly in Northern Ireland on whether or not blanket bog can be classified as agricultural land, and so whether or not it can be eligible for the Basic Payments Scheme. In recent years a 100% penalty has been applied to a significant number of claims due to the inclusion of bogland and areas covered with heather which, on inspection, have been ruled to be ineligible (DARD 2015).

Eligibility requirements for the Basic Payments Scheme

The guidance from the Department for Agriculture and Rural Development (DARD, 2015), states that heather is considered eligible if it is:

- accessible to grazing livestock, and
- has significant forage value, and
- is used for agricultural purposes, that is, grazed by livestock and/or management of heather such as flailing or controlled burning has been carried out.

DARD state that heather more than 50 centimetres high is considered not to meet these requirements, though it may still be eligible for AECM payments. They concede where less than 20 per cent of the heather area exceeds 50 centimetres in height the whole stand may still be considered eligible. The guidance also encourages controlled burning or flailing of heather on a 20 year rotation, ideally with 5 per cent burnt each year, though it is permissible to burn up to 20 per cent in a single year.

For blanket bog subject to agri-environment agreement it recommends grazing at the maximum level allowed (0.075 Livestock Units (LU) per hectare during the period 1 March - 31 October only) to maintain eligibility. This is roughly equivalent to grazing 0.5 to 0.6 sheep per hectare during this period and is roughly equivalent to 0.037 LU per hectare per year. It does not suggest any exceptions from the guidance on burning for this habitat and says that mowing or flailing may be acceptable instead of grazing.

DARD recognises that these management requirements may sometimes conflict with optimal conservation management. The guidance (DARD 2015) states that land which no longer meets the usual eligibility requirements for the Basic Payment Scheme because of the implementation of EU legislation on the conservation of wild birds (the Wild Birds Directive), natural habitats and of wild fauna and flora (the Habitats Directive), or, the Water Framework Directive may still be used for the Basic Payment Scheme provided it met the Single Farm Payment eligibility requirements and formed part of the area determined as eligible for payment in 2008.

Causes of degradation of blanket and raised bog

Much of the UK's stock of blanket and raised bog is degraded to some extent. The main causes of this have been identified as afforestation, drainage, atmospheric pollution, changes in semi-natural vegetation, gullying and haggling and erosion of bare peat (Shepherd et al. 2013). Changes in semi-natural vegetation are in turn often related to grazing, drainage and burning.

Potential areas of conflict between management to maintain eligibility for the Basic Payment Scheme and management needed to maintain or restore blanket and raised bog

There would appear to be two areas where there is the potential for direct conflict, grazing and burning. There also appears to be a relationship between burning and drainage.

Grazing

There have been a number of studies on the impact of grazing on blanket bog. These have focused on the impact on *Calluna* and it is often not clear whether they refer to actively growing blanket bog or to drier blanket bog with no active peat formation. A study in Argyllshire, south-west Scotland (Grant *et al.* 1985) showed clear damage to blanket bog vegetation from stocking rates in excess of one ewe per hectare over a ten year period. (equivalent to 0.12 LU per ha per year). A 30 year study of blanket bog vegetation at Moorhouse in north-west England (Garnett *et al.*, 2000) which did look at actively growing blanket bog, showed no measurable impact on carbon accumulation of grazing levels of between 0.02 and 0.2 sheep per hectare (0.002 to 0.024 LU per hectare per year). Guidance from the Scottish Agricultural Colleges (SAC, 2007) suggests a grazing rate of up to 0.06 LU per hectare per year for blanket bog in Scotland (equivalent to a grazing rate of up to 0.12 LU or 1 sheep per hectare from May to October). Grazing rates will need to be adjusted on a site basis

A study by ADAS aimed at determining environmentally sustainable and economically viable grazing systems for the restoration and maintenance of heather moorland (much of which is on blanket bog) in England and Wales (Critchley *et al.* 2007) highlighted the benefits of mixed grazing. It presented evidence showing that on *Molinia* heathland, mixed cattle and sheep grazing created suitable conditions for heathland restoration, whereas *Molinia* increased at the expense of *Calluna* in sheep-only paddocks. The grazing rates used were between 1.0 and 1.5 sheep per hectare and 0.5 and 0.75 cows per hectare for two months in summer. The study report did however warn that cattle can be damaging to blanket bog due to their greater weight.

The evidence for the impact of different levels of grazing on upland vegetation in general was reviewed by Cumulus Consultants in a report for the RSPB (Silcock et al. 2012). This concluded that the impact depended on many things including the mix of cattle and sheep, the traits of the animals used, the level of shepherding, the timing of grazing and whether animals are out wintered. The review also highlighted interesting interactions with burning. The Cumulus review concluded that the reductions in grazing pressure experienced in the UK uplands following the end of coupled support have led to a recovery of upland habitats, which has been broadly positive for biodiversity.

The impact of a given level of grazing will vary considerably according to geographical location, aspect, altitude, water table and the nature of the vegetation. Because of this, grazing levels for moorland areas were set on a site-by site basis under the English Higher Level Stewardship Scheme.

However, generalising on the basis of the available information, the grazing levels specified by DARD (0.075LU/ha during the period 1 March - 31 October) seem to be below the threshold at which adverse effects have been reported for heather moorland. It is also helpful that summer grazing is specified, as wintering stock on this habitat can be damaging to the heather. There is less information available on optimal grazing for actively growing, wet blanket bog with a high percentage of cover by peat forming mosses, but the DARD limit is below the maximum level recommended for blanket bog in Scotland and close to the level at which no damage was observed at Moorhouse, although it cannot be excluded that lower levels may be required in certain circumstances.

Burning

Managed, rotational burning of heather is widely practised, especially in areas of upland that are managed for red grouse. The evidence for the impact of burning on blanket bog suggests a complex relationship, which may partly explain why it has been vigorously contested between environmental and commercial interests. However it is a recognised recommendation, or requirement in some cases, that the burning of blanket bog areas should be avoided (see for example the Scottish Muirburn Code (Scottish Government, 2011)).

A systematic review by the Centre for Evidence-Based Conservation (Stewart *et al.* 2004) concluded that 'The weight of available evidence suggests that burning either degrades blanket bog or is contradictory in effect. If quality of evidence is used to discriminate among studies then the evidence for degradation becomes stronger.' The authors did however point out that there was a shortage of studies looking at the impact of managed, rotational burning.

A review commissioned by the IUCN UK's Peatland Programme (Worrall *et al.* 2010) covered the impact of burning on the survival and growth of Sphagnum mosses, which are the key peat-forming species. The review quoted studies that have shown Sphagnum able to survive low-intensity fires and studies showing that it can be completely eliminated in severe wildfires. The authors pointed out that one argument against stopping rotational burning was the risk of a severe wildfire resulting from the accumulation of fuel, though they also

pointed out that this risk was probably lower for actively growing Sphagnum, where the moss tends to grow over the older *Calluna*, limiting the available fuel.

This review does however clearly state that through burning, vegetation composition can be altered, leading to the dominance of particular species such as *Molinia caerulea* or *Calluna vulgaris*. By shifting vegetation to *Calluna*-dominated communities hydrological properties can be altered. The review found evidence that *Calluna* was associated with higher frequencies of soil piping. The rooting system of *Calluna* (and other woody plants) helps to preferentially channel flow in the upper layers of the peat. The review concludes that there is a link between peat piping and loss of Dissolved Organic Carbon (DOC). The review also concluded that there was good evidence from landscape scale studies that blanket bog managed by rotational burning produces higher levels of DOC, a conclusion also reached by a review carried out by Natural England (Shepherd *et al.* 2013). The Moorhouse experiment (Garnett *et al.* 2000) found that, over a 30 year period, decadal burning did reduce carbon accumulation in blanket bog.

The Natural England review found good evidence for the adverse impacts of drainage on catchment flows and on erosion and pointed out that peat piping can cause blanket bog to drain more rapidly.

It seems clear there could be some conflict between the optimal management of blanket bog to maintain important ecosystem services such as drinking water supply and carbon storage and DARD advice that areas of heather moorland, many of which will be on blanket bog, should be rotationally burnt. In areas already subject to well-managed rotational burning, this conflict may be limited, especially as DARD have specified a 25 year burning rotation.

However, the DARD advice is aimed at areas of moorland that are at risk of disallowance. These are unlikely to have been managed by rotational burning in the recent past, and are also unlikely to have been grazed sufficiently to remove an accumulation of vegetation growth. Many of these areas are therefore likely to have a high fuel load. Some may also be managed by farmers with little recent experience of controlled burning. If the burns are not carefully controlled, the fires could be severe and cause long lasting damage, both to the vegetation and to the structure of the peat itself.

Potential areas of synergy between management to maintain eligibility for the Basic Payment Scheme and management needed to maintain or restore blanket and raised bog

The main potential area of synergy seems to be the requirement to control scrub and tree growth. The Natural England review (Shepherd *et al.* 2013) found evidence from studies in Scotland and Ireland to show that felling trees can encourage blanket bog vegetation to recover, though these studies do relate to coniferous plantations.

Conclusions

There are two potential areas of conflict between the DARD guidance on the management needed to maintain the eligibility of blanket bog and heather moorland and the management required to conserve these habitats in optimal condition.

The most serious of these is the risk that the guidelines will lead to the poorly managed burning of areas of moorland where a high fuel load has accumulated, which may damage peat forming species, lead to short term increases in Dissolved Organic Carbon and cause longer term vegetational and hydrological changes.

In relation to the guidance on grazing the recommendation that all moorland is grazed to a uniform level at the top of the range specified for agri-environment schemes does carry the risk that some areas with particularly low carrying capacity may end up being over grazed. The need to keep semi-natural habitats, including moorland clear of trees and shrubs to maximise eligibility may benefit blanket bog, which can be damaged by tree growth, but it may reduce the variety of habitat across moorland areas as a whole.

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