CAP Greening Review – Summary

Collation of the key findings of the Parts 1 to 4 of the CAP Greening Review.

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THE CAP GREENING REVIEW

This review was commissioned by the Cabinet Secretary for Rural Affairs, Food and Environment as part of the policy development process for the Common Agricultural Policy (CAP) Greening measures to be implemented from 2015. The scope of the review was agreed within government with the review managed by the Natural Heritage Management Team within the Environment and Forestry Directorate and supported by analysts from the Rural and Environment Science and Analytical Services Division. The particular focus of the review was on the use of *equivalence* measures. These are the measures designed and implemented within member states as alternatives or supplements to the standard mandatory measures prescribed in the EU Regulations. The review was conducted by staff of the James Hutton Institute between February and May 2015 with interim results used by policy makers (and stakeholders) in decisions announced by the Minister in June 2015. Given the freedom for member states to revise and update Greening equivalence measures this document is intended to provide a record of the evidence base provided by the Greening Review and to contribute to subsequent phases of policy development and implementation. It reflects the state of play in June 2015 and does not consider later revisions to Greening.

The report of the Greening Review comes in four parts.

Part 1 is an Overview of the recent trends in key environmental indicators in Scotland, covering soils, biodiversity, water quality and climate change. In addition to outlining the state and trend of each component of the environment, Part 1 also identifies current and potential future pressures. Where any of these pressures are likely to stem from agricultural practices, they are specifically identified.

Part 2 is a Technical Report of the distribution of measures providing definitions of the standard and proposed equivalence measures as they stood when the review was commissioned. The report provides a sectoral and regional analysis of the distribution of businesses whose pattern of land use mean they would need to undertake one or more of the three Greening requirements. For these businesses, the report also identifies (as far as possible) if their pattern of land use already meets the criteria contained in the Greening measures. This analysis is based on business returns made through the Single Application Form (SAF) for 2014.

Part 3 is a series of Map Books that are a product of the analysis contained in the distribution of measures technical report. These define the spatial distribution of the greening requirements. National maps for each of the three standard greening requirements are followed by maps for each of the 14 agricultural regions. In addition, data currently collected allows an assessment of the degree to which the crop diversification requirement is currently being met.

Part 4 is an Expert Review of the three standard Greening measures, and where relevant the (then) proposed draft equivalence measures. This draws on research in five fields of study: agro-ecology; biodiversity and landscape ecology; climate change adaptation and mitigation; soils, and waters and catchments. Questions addressed within the Expert Review include: localised and landscape effects, trade-offs, the consequences of implementation factors not specified in the regulation; context specific factors that should be included in guidance to ensure the measure is effective and opportunities for cooperation between businesses and coordinating types and locations of measures.

Part 1 thus provides the wider context, Part 2 the numbers, types and locations of businesses affected and thus the potential scope for benefits or burdens, Part 3 the spatial distribution of the measures, and Part 4 assessments of the (then) proposed equivalence measures set against the counterfactual of the standard greening measures that would otherwise have been implemented.

PART 1 - TRENDS IN ENVIRONMENTAL INDICATORS

This overview has used Scotland's Environment website (SEweb) as the main source of information to conduct analysis of trends in environmental indicators. SEweb represents the outcome of the most comprehensive analysis and synthesis of knowledge available in a single source. Twelve environmental indicators have been summarised; six relate to water, five to land and one climate.

Key findings

- The water environment is mainly in good condition and improving. 80% of rivers and canals and 63% of lochs are in high or good condition;
- Nevertheless diffuse pollution from agriculture is recognised as a key pressure on water quality and 252 rivers and lochs are affected by diffuse pollution pressures;
- The land components are in poorer condition, some are in decline and farmland biodiversity is of particular concern;
- Between 1961 and 2011, the climate has warmed by at least 1 degree C, rainfall has increased by 27% with seasonal and spatial variation, snow cover has decreased;
- From 1990 to 2012, there has been a 26.7 % reduction in GHG emissions from the Agriculture and related land use sector. However, agriculture and related land uses still contribute almost a quarter of Scotland's GHG emissions. These falls are often associated with reduced production rather than increased efficiency.

Most CAP Greening measures apart from those applying to permanent grassland (including rough grazings) are relevant to a relatively small part of Scotland, namely that land used for arable cropping and improved grasslands; respectively these account for 11% and 24% of the total agricultural area of Scotland. Even for this area not all farmland is included within CAP Greening, only those businesses in receipt of CAP payments. In areas where these land cover types are predominant, a different picture emerges of the environmental indicators.

- Lochs and rivers are predominantly in moderate condition with some poor; there has been a recent decline particularly in the Central Belt. 23% of rivers and canals (5753 sq km) and 11% of lochs (109 sq km) are in poor and bad condition; these are found primarily in the more intensively managed land.
- Agricultural nutrient, livestock and soil management, and the resultant diffuse pollution, is identified as one of the key pressures on water quality; there are programmes of measures in place to reduce their impacts but their effectiveness is variable and context specific.
- The more intensively managed land has more artificial fertilisers applied, more land is ploughed on an annual basis and livestock production is more intensive; these activities all release GHGs to the atmosphere.
- Farmland biodiversity has shown serious declines in habitat diversity and species numbers; many of these changes are a result of changes in arable and grassland management including the use of pesticides, change from spring to autumn sown cereals, timing of grass cutting, loss of diversity of crops and the overall frequency of agricultural operations.
- Wetlands on the lower ground, although small, are important biodiversity components of the farmed landscape, and are at risk from diffuse pollution.

Overall, the trends in condition of the environment reflect contrasts in intensity of management, with higher intensity systems in many cases having poorer and in some cases declining condition. The CAP Greening requirements will therefore apply, in the main, within those areas where the environment is in poorer or declining condition.

PART 2 – DISTRIBUTION OF MEASURES

This document contains an analysis of the distribution of the three 'standard' CAP Greening requirements in Scotland. These are:

- Permanent Grassland Requirement
- Crop Diversification Requirement
- Ecological Focus Area Requirement

This analysis is based on all Single Application Form (SAF) returns for 2014 made by 21,649 businesses since it was not known which businesses would apply under the new scheme[1]. For the Crop Diversification Requirement, an assessment of the degree to which this requirement would have been met in 2014 is presented. Note the analysis used the rules as they stood in 2015 and these have been subsequently amended.

Key Findings

- The proportion of improved permanent grassland would need to drop by around 29% of its current (SAF 2014) area in order for government intervention to be triggered under the Permanent Grassland Requirement. It is highly unlikely this will occur.
- Of the businesses submitting a Single Application Form in 2014, 16,740 (or 77%) are exempt from both the Crop Diversification Requirement and Ecological Focus Area Requirement.
- Of the 4,909 businesses subject to either the Crop Diversification Requirement or the Ecological Focus Area Requirement, 4,744 businesses (97%) are subject to both.
- The Crop Diversification Requirement applies to 23% of businesses and 76% of the arable area. 94% of the arable area subject to the requirement (752,784Ha) falls under the 3 crop rule. North East Scotland has 35% of the arable area subject to the requirement (259,983Ha), Tayside 19% (139,821Ha) and Scottish Borders 12% (93,120Ha). In terms of Farm Type, Mixed Holdings, Specialist Cereals, and General Cropping businesses account for 77% (576,489Ha) of the arable area subject to the requirement.
- For the Crop Diversification Requirement, of the 4,274 businesses subject to the 3-crop rule, 3,030 (71%) already pass the requirement. In terms of arable area, those already passing make up 81% or 571,397Ha of 705,642Ha. Of those businesses which fail, the majority fail due to the absence or the limited extent (<5% arable area) of a third crop. A smaller number fail due to the size of the main crop exceeding the 75% arable area threshold.
- For the Ecological Focus Area requirement, 78% of businesses are exempt from the requirement, but 77% of all arable area is included in the requirement. At the national level, 3.83% of arable area or 37,680Ha (or equivalent) must be declared as an EFA.
- Since nearly all businesses must meet both the Crop Diversification and EFA requirements, it is likely that options that can help deliver both may be favoured (i.e. areas of fallow or nitrogen fixing crops).

PART 3 – MAPS

This part of the Greening Review contains maps of the areas subject to each of the three standard Greening requirements. For each Greening measure a map book has been created containing a national map followed by maps for each of the 14 agricultural regions. In addition, the data collected for the Crop Diversification Requirement allows the mapping of where that Greening measure requirement is already being met. The maps are built using land parcel boundary data together with claims data from the Integrated Administration and Control System (IACS) collected from Single Application Form (SAF) returns for 2014. Note that in all cases the mapping reflects the

[1] In the event, 18,340 businesses received Greening payments in 2015.

situation that pertained in the 2014 returns; the maps are thus indicative and intended to inform debate on broad patterns at national and regional scales.

PART 4 – EXPERT PANEL REVIEW

As part of the CAP Greening Review conducted by the James Hutton Institute, a group of senior researchers with experience across a number of research domains was convened and asked to evaluate the possible effect of both the 'standard' greening measures and of the proposed 'equivalence' measures. Those domains and the researchers contributing are as shown in Table 1.

Table 1: Domains and lead experts involved in the CAP Greening Review

Domain	Lead expert(s)
Agro-ecology	Geoff Squire, Cathy Hawes
Biodiversity and landscape ecology	Robin Pakeman, Rob Brooker
Climate change adaptation and mitigation	Iain Brown
Soils	Willie Towers, Jason Owen
Catchment Water Quality	Andy Vinten, Kit MacLeod

Key Findings

Permanent Grassland

- The threshold for change that would trigger action by the Scottish Government would be 196,962 ha of permanent pasture (assuming that total agricultural area remained the same). As unimproved semi-natural areas are protected by the *Environmental Impact Assessment (Agriculture) (Scotland) Regulations 2006* then significant losses in improved grasslands could occur (c. 22 %) before the threshold was reached.
- The measure does not enhance the protection of carbon sequestered under permanent grasslands, locally significant areas of grassland in arable mosaics, or specify the management of grasslands that may be required to maintain or enhance biodiversity.
- Improvement in soil nutrient management would be highly desirable from both diffuse water pollution and greenhouse gas emissions mitigation perspectives.
- Soil testing (considered here as an equivalence option for permanent grasslands) could start a process of positive engagement with the issues. Improvements in nutrient management can potentially offset the upfront costs of testing to land managers.
- Since there are potentially substantial societal benefits from investing in a comprehensive soils monitoring programme consideration on the balance of burden sharing/funding should be undertaken with Greening measures integrated with other initiatives such as the Scottish Soils Monitoring Strategy.
- A full consideration of a soils testing regime should be conducted but was beyond the scope of the Greening Review.

Diversification

- Having a greater diversity of crops in a field or farm in a given year or over time can in principle bring some benefit to arable land.
- Diversification defined by number and proportion of crops would, however, only have the required effects if the existing system consisted of mainly one high-intensity crop. Diversification in terms of adding low intensity crops would then be beneficial.
- Any changes in cropping are more likely to be to other similar rather than functionally different crops so the potential benefits of diversification are unlikely to be realised.

- Assessing the consequences of diversification requires intensity measures that should consider fertiliser and pesticide application rates, soil condition, presence of weeds and invertebrates and carbon footprint.
- In the Scottish context, replacement of spring by winter-sown cereals would meet the requirements for diversification but would in most cases have detrimental outcomes (both environmentally and potentially in terms of business resilience if higher-risk crops were grown).
- Given the potential for negative outcomes the provision of equivalence measures is desirable and winter soil cover and catch crops would both deliver benefits (particularly avoidance of erosion and associated diffuse pollution in a climate with likely more extreme rainfall events).

Ecological Focus Areas

- All the EFA measures proposed have the potential to result in positive outcomes and these outcomes go beyond the primary biodiversity objectives (climate, soils and waters).
- The EFA requirement does not apply to areas that, while having lower intensity production, can still have environmental issues (particularly with diffuse water pollution).
- EFA measures deliver less benefit than would the equivalent spend through more specific and targeted measures (e.g. in hotspots of diffuse pollution within priority catchments).
- For all measures, maximising the benefits (or at a minimum avoiding negative side effects) means needing to support their implementation with advice on good practice in terms of measures chosen, their location on farm and their management (without necessarily increasing their cost).
- Advice on the benefits for production/financial outcomes of appropriately managed EFA measures should be provided.
- Greater flexibility in the adaptive use of weightings within EFA measures would be desirable to ensure that the measures are appropriate to Scotland's circumstances and objectives (potentially including regional/spatial targeting).
- Not all nitrogen-fixing crops have the same potential to deliver biodiversity enhancement. Flexibility in the appropriate use of weightings would be desirable to ensure that those crops that are most beneficial for biodiversity are taken up and the intended outcomes of the EFA are achieved.
- Maintaining EFAs over time in the same location is likely to enhance their benefits.
- Benefits from some EFA measures would be enhanced by coordination between land managers in terms of the types and spatial arrangements of EFA measures (e.g. corridors or mosaics).
- EFA equivalence options should be considered if the uptake of standard EFA measures does not lead to the balance of outcomes sought by Scottish Government.

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