



Scottish  
Wildlife  
Trust

# LAND STEWARDSHIP

A BLUEPRINT FOR GOVERNMENT POLICY





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We have a once-in-a-lifetime opportunity to create a healthier countryside where the production of quality food and other commodities from a quality environment becomes the new cultural norm in Scotland.

With profound changes in agriculture, forestry, and our natural environment now seeming inevitable in the coming years, we can wait for the change to happen or we can decide what the future should look like and how it might be supported by public money.

Along with climate and geology, the EU's Common Agricultural Policy (CAP) has moulded land use in Scotland over many decades. Of the £600 million of mostly EU-derived funds we spend each year in rural areas, 90% goes to farmers for growing crops and rearing livestock.

With Brexit, it is likely to be the Scottish Government that chooses how this money is spent, or indeed whether it spends £600 million at all.

Public finances have been under huge pressure for over a decade now. If our government is no longer obliged, as it is now, to ring-fence funds for farmers, it may choose to use this money for competing priorities.

We therefore need a new rationale for payments for responsible land stewardship.

By rewarding land managers for providing Scotland's people with high quality food, forest products, clean air and water, flood protection, healthy soils, pollution control, attractive landscapes, places for recreation, and thriving wildlife we can clearly link public money with public benefit.

This document sets out a clear blueprint for how we could do this. We are grateful to the many individuals and organisations that helped shape our thinking during a consultation which took place in March 2017. We look forward to continuing these constructive discussions in the years ahead.

Let's use this time of change to shape a healthier future for our rural environment, economy and communities.

**Jonathan Hughes**  
Chief Executive, Scottish Wildlife Trust



“Protecting and enhancing our stock of natural capital  
... is fundamental to a healthy and resilient economy.”

**First Minister Nicola Sturgeon MSP, speech to World Forum  
on Natural Capital, November 2015<sup>1</sup>**

## EXECUTIVE SUMMARY

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The term *Land Stewardship* encapsulates the idea that we should manage our land so that it can be used in perpetuity. It encompasses the full range of activities carried out on land and freshwater in Scotland, including the production of food and fibre, water usage, generating energy, mineral extraction, the enjoyment of land and freshwater through recreation and education, and the protection of land and freshwater for its nature conservation value. The natural capital<sup>2</sup> of some land has been damaged by past use, impacting upon its ability to provide us with the full range of ecosystem services on which we depend, but with better stewardship this capital can be restored.

This Land Stewardship Policy provides a set of solutions for safeguarding and enhancing the natural capital value of land in Scotland in order to address the challenges facing society, the environment and the rural economy: securing sustainable production of food and timber; better protecting and preserving our soils; reducing greenhouse gas emissions and adapting to a changing climate; and restoring wildlife habitats and reversing biodiversity loss.

This policy is therefore a practical mechanism for delivering Scotland’s National Outcomes and the outcomes of Scotland’s Land Use Strategy; and, so, improving the prosperity and well-being of the people of Scotland.

### **Policy structure**

The basis of this policy is a common framework for regulating and incentivising land stewardship. This

has four tiers (see Table I on p.6 and the example of agriculture below). Table I sets out the measures sector by sector in each tier.

## Agriculture

The following measures are specified:

- I. Public investment to support Scotland's farmers and crofters is linked to the provision of public goods which deliver enhanced natural capital stocks and ecosystem service flows, i.e. the benefits which accrue to society and the economy from a healthier, sustainably managed environment. Regulation and support of farming and crofting is through a four-tier structure.

**Regulations – retention and implementation of existing regulations, and, in addition, soil testing and soil conservation regulations.**

**Natural Capital Maintenance Payments – designed to ensure that we maintain, rather than deplete, our stocks of natural capital.** These are area-based payments for meeting mandatory criteria, which include providing wildlife habitat on at least 12% of the area of every farm.

**Natural Capital Enhancement Payments – designed to incentivise actions that will help build our natural capital.** These are non-competitive area-based payments available to all farms for carrying out additional optional actions. These include increasing wildlife habitat >12% of farm area; reducing livestock stocking densities on sensitive habitats; conservation grazing; wildlife-friendly cropping practices; mixed farming; and measures to encourage pollinators.

**Natural Capital Restoration Payments – designed to enable the delivery of a greater level of public benefits and address societal risks such as resilience to climate change.** These are competitive additional payments targeted at specific public-good priorities, including natural flood management, habitat and species conservation, and support for specific high nature value (HNV) farming systems.

## Forestry and woodland

The following measures are specified:

- I. Highest rates of grant support for the establishment of native woodland by planting and by natural regeneration, ensuring natural regeneration is an attractive option compared to planting.
- II. Grant support for the establishment and restocking of productive non-native plantations linked to UK Forestry Standard (UKFS) requirements.
- III. Annual woodland stewardship payments to support the management of existing native woodlands.
- IV. Payments to restore plantations on ancient woodland sites to native woodland.
- V. On the National Forest Estate diversification of tree species and stand structure will be increased year-on-year through restructuring and increased use of native species for restocking.

## Peatland

The following strategic intervention is specified:

- I. A discrete Challenge Fund<sup>3</sup> of at least £16 million per year for peatland restoration, to be maintained in real terms.

The following regulatory measure is specified:

- II. A prohibition on installing land drainage and burning on peat soils >50 cm depth.

## Deer

The following regulatory measures are specified:

- I. Land managers are required to agree forward cull plans with Scottish Natural Heritage. Cull plans are set to reduce deer impacts and improve condition of habitats.
- II. Where cull plans are not achieved, Scottish Natural Heritage is empowered to require culls are achieved by a third party.
- III. Deer management plans, deer count information, cull plans, and cull returns must be made publicly available.

Stewardship of land where deer stalking is the primary objective of management will be supported through grant support to create new native woodland, and through strategic interventions to fund peatland restoration; maintain, enhance and restore designated sites; control and eradicate invasive non-native species; and implement natural flood management techniques.

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## Grouse and moorland management

The following regulatory measures are specified:

I. Muirburn is restricted to land with >70% cover of heather and other dwarf shrubs, and on such land burning is prohibited on all blanket bog and other wetlands, montane heaths, steep slopes, thin soils, at the edges of woodland and scrub, and on sites used by specially protected birds for nesting.

II. A Moorland Management Code to be developed as soon as practicable. This will include the mandatory requirements specified in point I. The policy recommends that legislation is enacted to require grouse moor licensing as soon as possible. Once this is in place, compliance with the code will be a licence condition. Compliance with species protection legislation will also be a licence condition.

III. Muirburn on land with <70% cover of heather and other dwarf shrubs is allowed under licence where it is necessary to prepare sites for woodland expansion by natural regeneration or to manage designated moorland sites.

Stewardship of land where grouse shooting is the primary objective of management will be supported through grant support to create new native woodland, and through strategic interventions to fund peatland restoration; maintain, enhance and restore designated sites; control and eradicate invasive non-native species; and implement natural flood management techniques.

## Designated sites and nature conservation

The following strategic interventions are specified:

I. A discrete Challenge Fund of at least £4 million per year to fund work to maintain, enhance and restore designated sites, to be maintained in real terms.

II. A discrete Challenge Fund of at least £5 million per year to support invasive non-native species (INNS) control and eradication programmes throughout Scotland, to be maintained in real terms.

## Freshwater

The following measure is specified:

I. River Basin Management Plans are fully implemented to deliver Good Ecological Status (GES) for the vast majority of water bodies in Scotland by 2027.

The following strategic intervention is envisaged:

II. A discrete Challenge Fund of at least £10 million per year to fund works to achieve Good Ecological Status (GES) and implement natural flood management, to be maintained in real terms.

## National Ecological Network

This policy specifies measures which will contribute to a National Ecological Network. Measures on farms will create and restore habitats and incentivise collaboration between farmers to create connected habitats. Native woodland creation which delivers connectivity will be prioritised. Peatland restoration will enhance connectivity of this habitat. Implementation of River Basin Management Plans will achieve GES for the majority of water bodies.

In addition to these measures the following strategic intervention is specified:

I. An Environmental Co-operative Action Fund of at least £4 million per year will support collaboration between landholdings at the landscape scale, to be maintained in real terms.

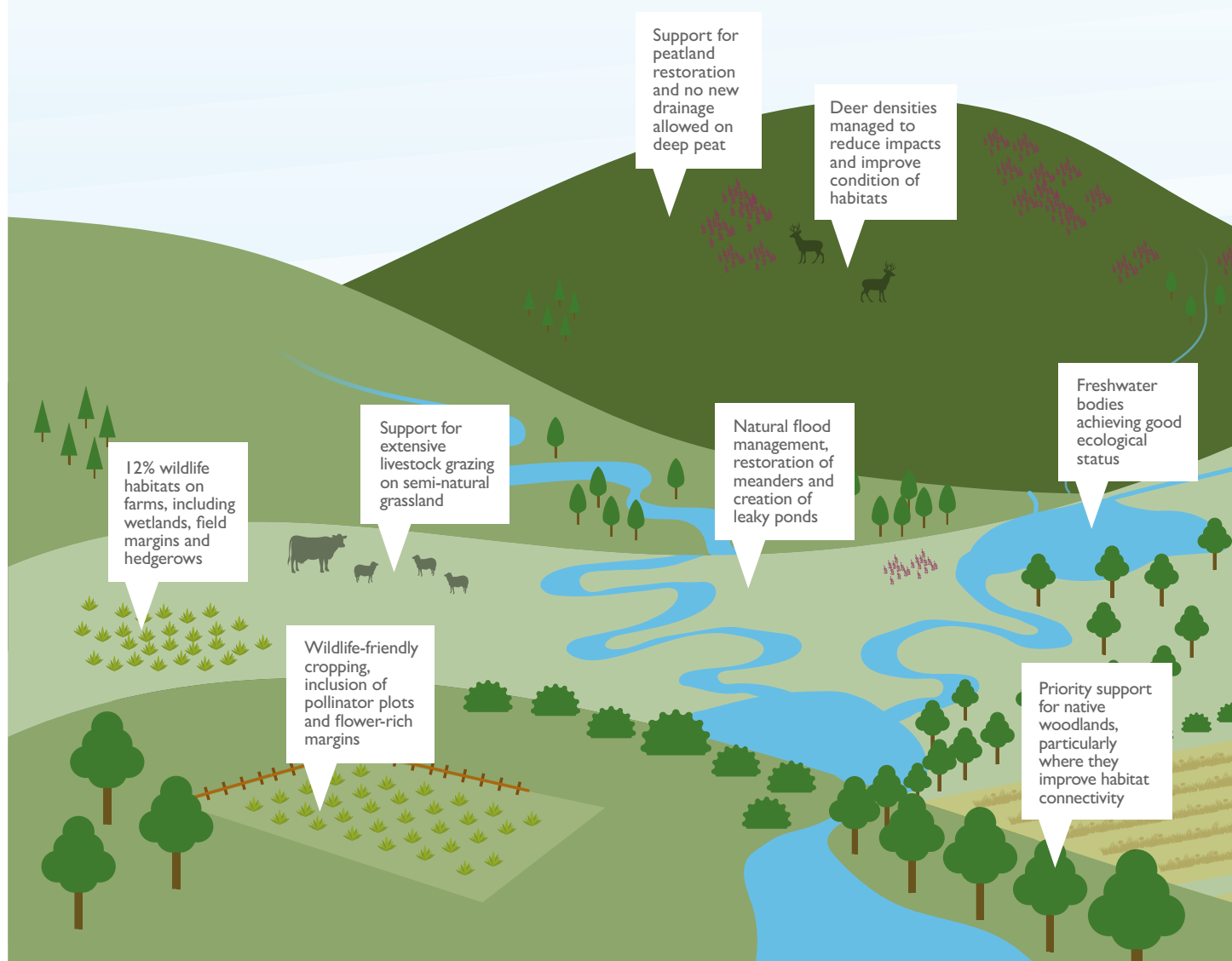
## Integrating stewardship of land and water

Regional land use partnerships will be aligned to river catchments. They will carry out catchment-wide appraisals of constraints and opportunities for land stewardship and develop catchment-wide land stewardship plans. Advisory support on land stewardship, and in particular integrating stewardship of land and water, will be extended to all landowners and land managers, funded with a budget of at least £10 million.

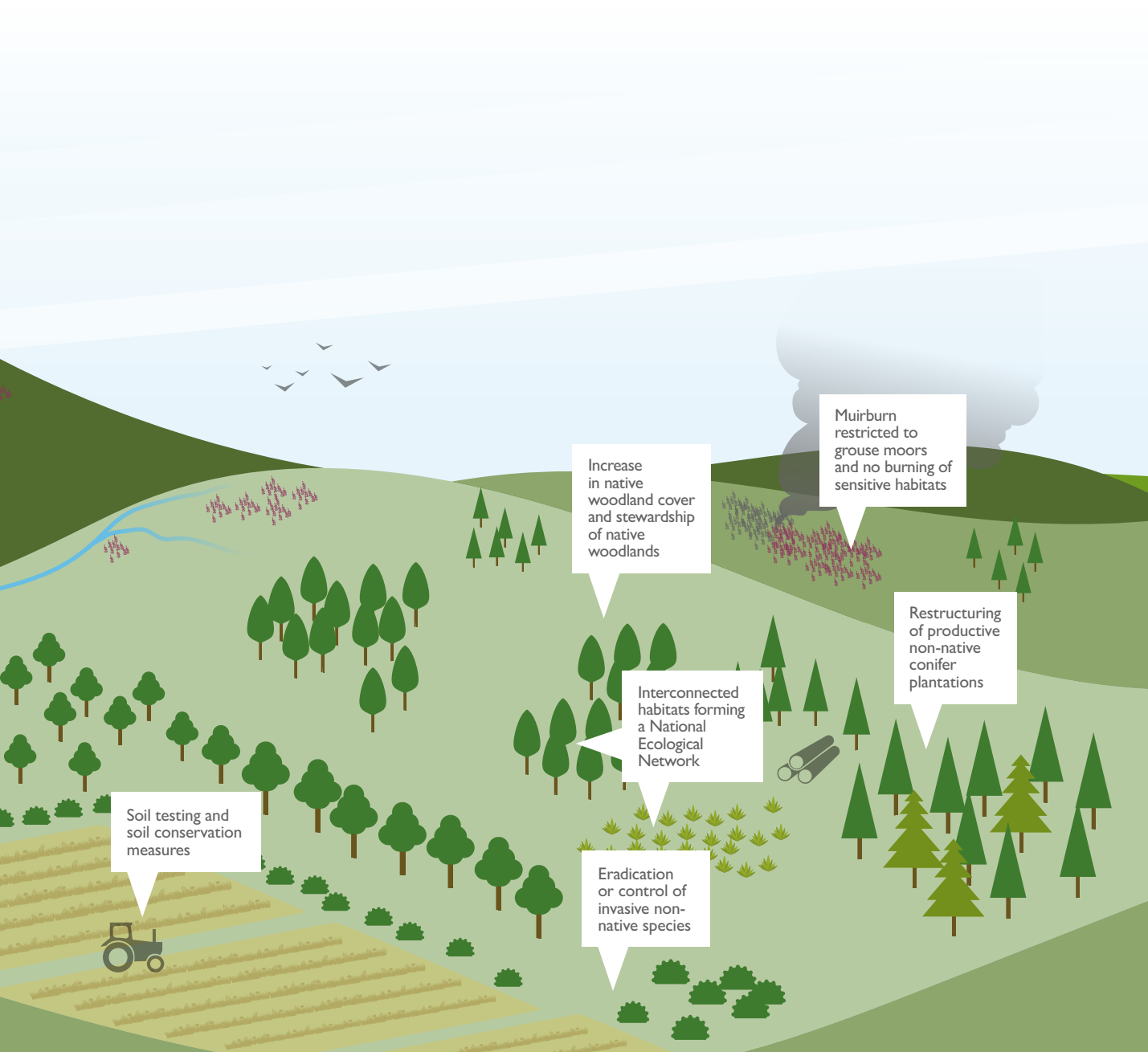
**Table 1: Framework for land stewardship measures and regulations**

TIER	AGRICULTURE	FORESTRY	DEER / GROUSE & MOORLAND	DESIGNATED SITES	FRESHWATER	INTEGRATED LAND USE
Natural Capital Restoration Payments	Land contributing to National Ecological Network					
	Creating native woodland			Restore condition of designated sites	Restoration of water bodies to GES	
	Control and eradication of INNS					
	Peatland restoration	Restoration of PAWS	Peatland restoration		Natural flood management	
	Support for HNV farming				Support for integrated catchment management through Environmental Cooperation Action Fund	
	Natural flood management					
Natural Capital Enhancement Payments	> 12% of farm managed as wildlife habitat	Grants for restocking in accordance with UKFS		Enhance condition of designated sites		
	Enhancement of semi-natural habitats					
Natural Capital Maintenance Payments	12% of farm area managed for wildlife	Woodland stewardship		Maintain condition of designated sites		
	Reducing fertiliser and pesticide use					
	Whole farm review					
	Cross compliance					
Regulation	Soil testing and soil conservation measures	Environmental Impact Assessment of planting	Moorland management code	Equivalent protection for Natura sites	Retain GES targets for water environment	
		Felling licence, requiring restocking	SNH approval of cull plans			
TIER	AGRICULTURE	FORESTRY	DEER / GROUSE & MOORLAND	DESIGNATED SITES	FRESHWATER	INTEGRATED LAND USE

## Payments and regulations in a landscape context







# I. INTRODUCTION AND OVERVIEW

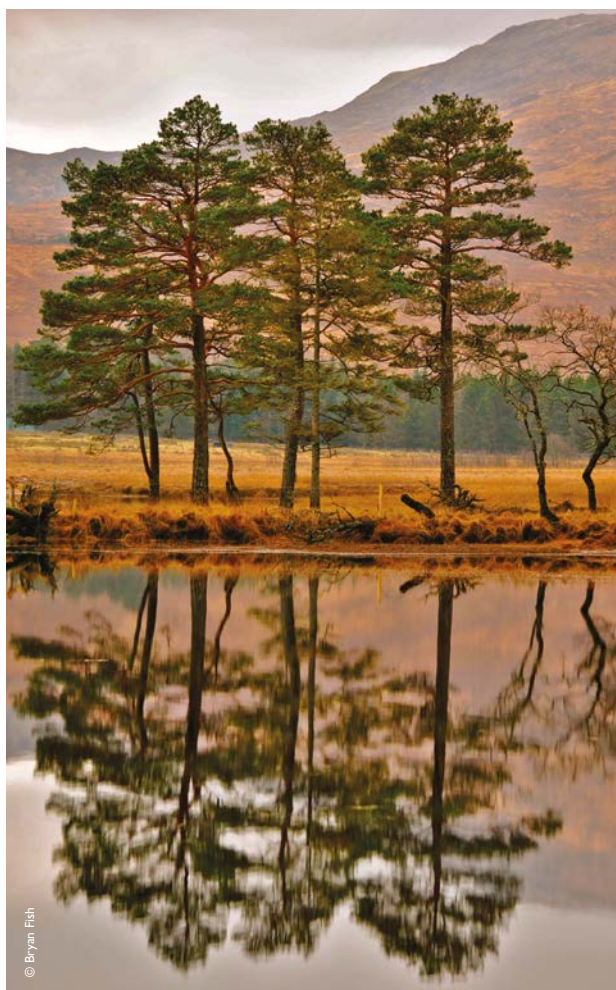
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## Purpose

The purpose of this policy is to set out a clear framework for ensuring land stewardship is linked to the provision of public goods and the maintenance, enhancement and restoration of natural capital. It specifies solutions to the challenges which policymakers and practitioners face, and makes recommendations for regulation, incentive payments, and institutional structures to deliver the policy.

## 2. SCOPE

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This policy is about the stewardship of Scotland's rural land. It considers the main land uses of agriculture (largely for food production), forestry, deer and grouse shooting, as well as designated sites, nature conservation, and the freshwater environment.

This policy is designed to integrate land management in a way which delivers multiple benefits, and frame how habitats within landscapes can be connected to form a National Ecological Network. It also considers the way land stewardship policy is developed, administered, and implemented through regulation and incentive.

The measures specified are designed to implement recommendations in existing Scottish Wildlife Trust policy. Particularly relevant policies are those on Sustainable Agriculture; Forestry and Woodland; Integrated Catchment Management; Living Landscapes in the Scottish Uplands; Local Biodiversity Sites; Muirburn; The Planning System; Wild Deer; Policy Futures 1 Living Landscapes; and Policy Futures 3 Climate Connections.<sup>4</sup>

## CONTEXT

### Why a Land Stewardship Policy?

As outlined above, the full range of activities carried out on land and freshwater in Scotland fall within the ambit of land stewardship: the production of energy, minerals, water, food and fibre; the production of food and fibre; water usage; generating energy; mineral extraction; the enjoyment of land and freshwater through recreation and education; and the protection of land and freshwater for its nature conservation value.

The classification of 85% of Scotland as a Less Favoured Area is recognition of the challenging soil and climate conditions faced by landowners and farmers seeking to produce marketable commodities from Scotland's land.<sup>5</sup> In addition to the production of commodities, Scotland's land and freshwaters also provide a range of non-market benefits. Combining, even optimising, commodity production and the delivery of non-market 'ecosystem services', in most cases, will be the most desirable outcome, although in some circumstances adopting one or the other end of the spectrum – intensive production or minimum intervention – may be the appropriate option.

The way we use land has in many places depleted its natural capital stocks, and this affects its ability to provide us with ecosystem services, including clean water, soil fertility, flood protection and carbon storage. This policy has been developed to address this natural capital depletion through setting out a clear framework of regulation and incentives to ensure better land stewardship throughout Scotland.

A land stewardship approach will deliver both the vision of the Land Use Strategy to "get the best from our land" and the principles of the Land Rights and Responsibilities Statement to deliver environmental

sustainability.<sup>6</sup> As previously stated, the term 'Land Stewardship' encapsulates the idea that we should manage our land so that it can be used in perpetuity. Effectively, this means living off the interest created by our natural capital stocks, rather than spending down the capital itself.

We know reversing natural capital depletion is possible from evidence elsewhere in Europe. One example is the transformation of the landscape of south-west Norway, an area with a similar climate and geology to the Highlands, and which was largely treeless at the turn of the last century. Over the last 50 years, following a reduction in grazing, there has been a rapid recovery of woodland and a concomitant increase in primary plant productivity. The uplands now produce for south-west Norway the same number of male deer per square kilometre for hunting as in Scotland, and the forests are sinks for carbon as well as producing timber, fuel wood, and berries. The woodlands are also used for grazing livestock at appropriate stocking densities.<sup>7</sup>

### The rural economy

Rural Scotland accounts for 98% of the land mass of Scotland and contains nearly a fifth of the population. In contrast to much of the last century, our rural population is growing, and grew at more than three times the rate of urban areas from 2001 to 2013 (12.5% compared to 3.7%).<sup>8</sup>

Employment is higher in rural areas than urban areas, and wages are comparable to those in towns and cities. Table 2 highlights some ways in which the pattern of employment in rural areas is different, with a higher proportion of jobs in small and medium-sized enterprises (SMEs), more self-employment and homeworking, and more people with second jobs.<sup>9</sup>

**Table 2: Unemployment, wages, and features of employment in rural Scotland 2015**

	Remote rural	Accessible rural	Rest of Scotland
Unemployment rate	5%	4%	8%
Median wages (residence based)	£27,663	£29,016	£26,660
Employment in SMEs	66%	59%	34%
Self-employed	23%	17%	10%
Homeworkers	22%	18%	9%
Second jobs	10%	5%	3%

Source: Scottish Government: Rural Scotland Key Facts 2015



Farming is a significant employer in rural communities, and while its contribution to national GDP is relatively small, it contributes to the food and drink and tourism sectors, which together make up around 7% of Scotland's economy. Agriculture, together with forestry, fishing, and aquaculture is the largest private sector employer in remote rural areas (16%) and second largest in accessible rural areas (12%).<sup>10</sup> The overall economic output of farming and forestry is small in a national context and, together with fishing and aquaculture, made up <1% of GDP in 2015.<sup>11</sup> Farming (and fishing) provide raw materials for Scotland's food and drink sector, which was responsible for 4% of Gross Value Added (GVA) in 2014.<sup>12</sup> Land stewardship also determines the landscape and wildlife which are prized by so many visitors to Scotland: sustainable tourism was responsible for 3% of GVA in 2014.<sup>13</sup> Other assessments have estimated that nature-based tourism is worth £1.4 billion a year to the Scottish economy (equivalent to the GVA of agriculture, fishing and forestry combined).<sup>14</sup>

Clearly, existing land stewardship activities make important contributions to the rural economy, both in their own right and by contributing to other economic sectors like food and drink and tourism. These sectors are important for many rural SMEs, but also make a

strategically important contribution to the national economy as a whole.

Building natural capital on farms, forests, and moorlands will create new economic opportunities through initiatives such as peatland restoration and natural flood management, for example. It will also secure the reputation for environmental quality which Scotland's food and drink industry trades on, and enhance the ability of our tourism sector to sell Scotland as a wild, exciting destination.

### Land Stewardship Policy budget

The budget below is based on 2017–18 Government spending plans,<sup>15</sup> which show a total planned investment in land stewardship and rural policy of approximately £640 million. A further £312 million is budgeted for the public bodies, agencies, and research providers whose work supports land stewardship.<sup>16</sup> The budget for the Land Stewardship Policy and allocations for each 'strategic intervention' is shown in Table 3 below.

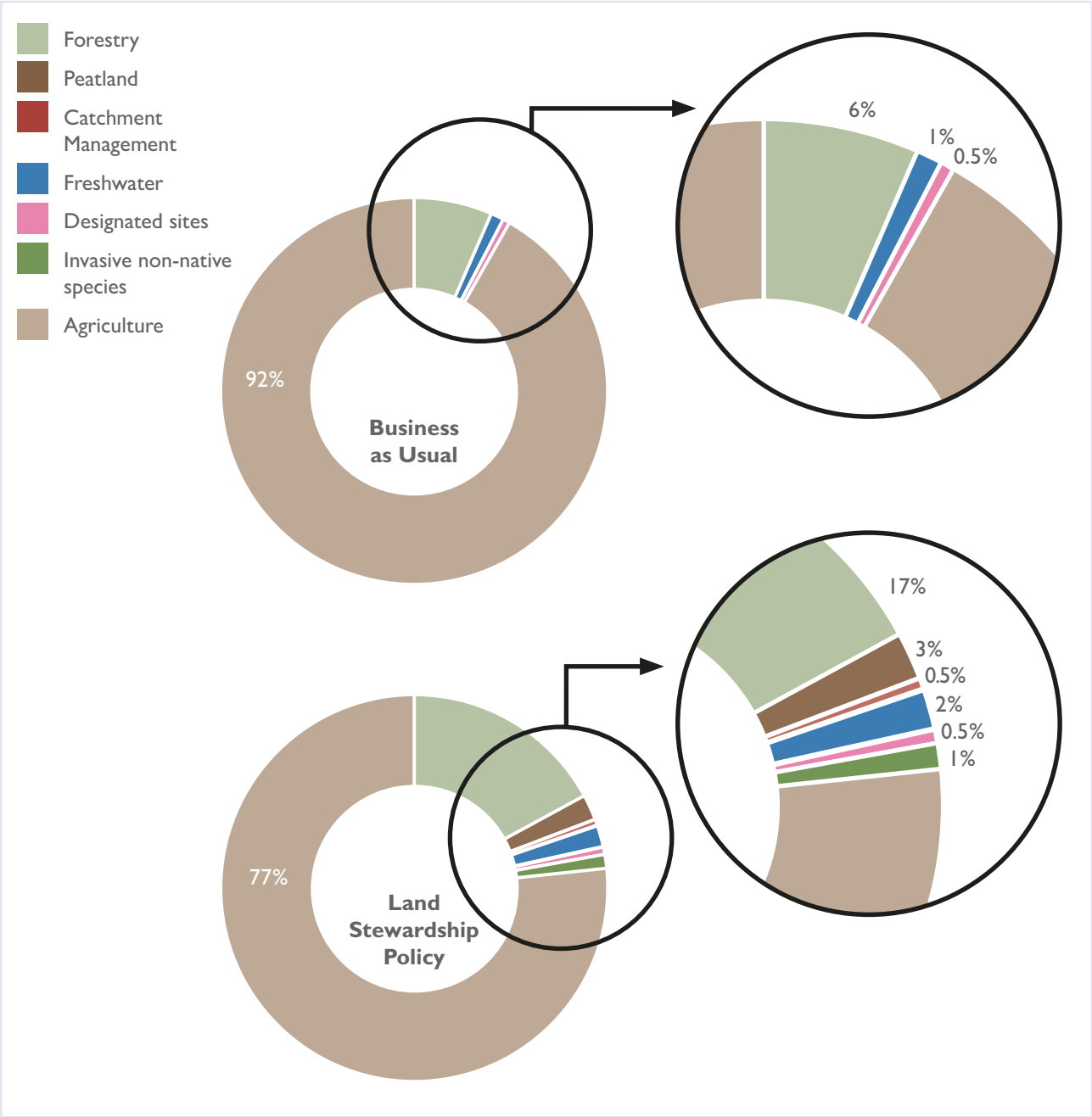
In the event that the budget available to support Land Stewardship is reduced, investments in peatland restoration, environmental cooperation and integrated catchment management, and native woodland creation will be prioritised.

**Table 3: Land Stewardship Policy budget**

Strategic Interventions	Business as usual (£m / year)	Land Stewardship policy plans (£m / year)
Native woodland creation, stewardship & restocking	40	108
Peatland restoration <sup>17</sup>	0	16
Environmental cooperation action fund & integrated catchment management	0	4
Good ecological status of freshwater bodies & natural flood management	5	10
Restore designated sites to favourable condition	3	4
Control and eradication of INNS <sup>18</sup>	0	5
Environmentally friendly farming	187	492
<i>Of which</i>		
Natural Capital Restoration Payments		123
Natural Capital Enhancement Payments		148
Natural Capital Maintenance Payments		221
Other farm support	403.5	0
Total farm support	590.5	492
<b>Total</b>	<b>639</b>	<b>639</b>

Existing and future spending allocations are summarised and compared in Figure 1 below.

**Figure 1: Business-as-usual spending plans compared to Land Stewardship Policy**





**CHALLENGES AND SOLUTIONS**

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### 3. AGRICULTURE

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“Current farming practices are essentially mining natural capital as though it was a depleting resource rather than husbanding it for the long-term future. We have to think broadly about the relationship between current food production and future food production. We do not want to do our grandchildren down.”

**Lord Krebs, Chair of the Adaptation Sub-Committee of the UK Climate Change Committee to Scottish Parliament Environment Climate Change and Land Reform Committee, September 2016<sup>19</sup>**

#### Challenges

Scottish farm businesses are highly reliant on subsidies, and many would struggle to be profitable without public support as the cost of producing food is often higher than income from sales. If Scotland wants a viable agricultural sector across the country it is highly likely public monies will need to continue to subsidise farming for years to come. However, these same subsidies have sometimes in the past led to environmental degradation, bringing additional costs. In the 21st century, such degradation linked to subsidy is less common, but, nevertheless, income support payments have done little to mitigate the environmental impacts of farming practices. The hidden costs – so called ‘externalities’ – of environmentally insensitive farming practices are not always accounted for in traditional economics but, nevertheless, have financial costs for society. The environmental impacts which existing policy is not sufficiently addressing are:

- I. soil degradation and erosion – the fundamental public and private asset on which future productivity and profit depends;
- II. the generation of substantial greenhouse gas emissions;
- III. biodiversity loss through habitat loss and simplification and inappropriate use of pesticides and fertilisers;
- IV. water pollution.

The transition to a new system of farm support in Scotland between 2015 and 2019 caused significant administrative difficulties that were both costly to resolve and significantly delayed the processing of payments to farmers. However, transitional arrangements help businesses adapt to change.



#### Solutions

This policy establishes a new basis for long-term public support to ensure the viability of sustainable, high-quality food production by Scotland's farmers and crofters. It sets out a four-tier hierarchy of regulation and support payments for natural capital maintenance, enhancement, and restoration (see Table 1).

The four tiers, and examples of the measures that will be included in each tier, are shown in the box overleaf.<sup>20</sup> The figure on p.17 shows how the budget for payments is shared between payments for natural capital maintenance, enhancement, and restoration.

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### **Tier 1: Regulation**

All farmers must comply, irrespective of whether they choose to apply for support payments. This will include retention and implementation of existing regulations, and, in addition, soil testing and soil conservation regulations will be introduced.

### **Tier 2: Natural Capital Maintenance Payments**

This is an area-based payment available to all farmers (owner-occupiers and tenants<sup>21</sup>) for meeting mandatory criteria. These include:

- I. complying with all existing regulatory requirements in Tier 1, including requirements to comply with regulations on species protection;<sup>22</sup>
- II. keeping land in Good Agricultural and Environmental Condition (GAEC) (see Appendix I);
- III. providing at least 12% of land area on all farms as wildlife habitat;
- IV. undertaking whole-farm reviews that include financial performance and efficiency, soil, water, energy, greenhouse gas emissions and biodiversity.

### **Tier 3: Natural Capital Enhancement Payments**

This is a non-competitive additional area-based payment available to all farms for additional actions to provide public goods. Applicants can choose from a range of options, each of which attracts different point scores towards a target total to trigger the payment. Measures include:

- I. increasing wildlife habitat above >12% of farm area on a graduated scale;<sup>23</sup>
- II. reducing stocking densities on sensitive habitats, or allowing woodland and scrub regeneration;
- III. optimising fertiliser and pesticide use;
- IV. conservation grazing of species-rich grasslands and wetlands;
- V. wildlife-friendly cropping;
- VI. reintroduction of mixed farming and/or a greater diversity of crops;
- VII. encouraging pollinators.

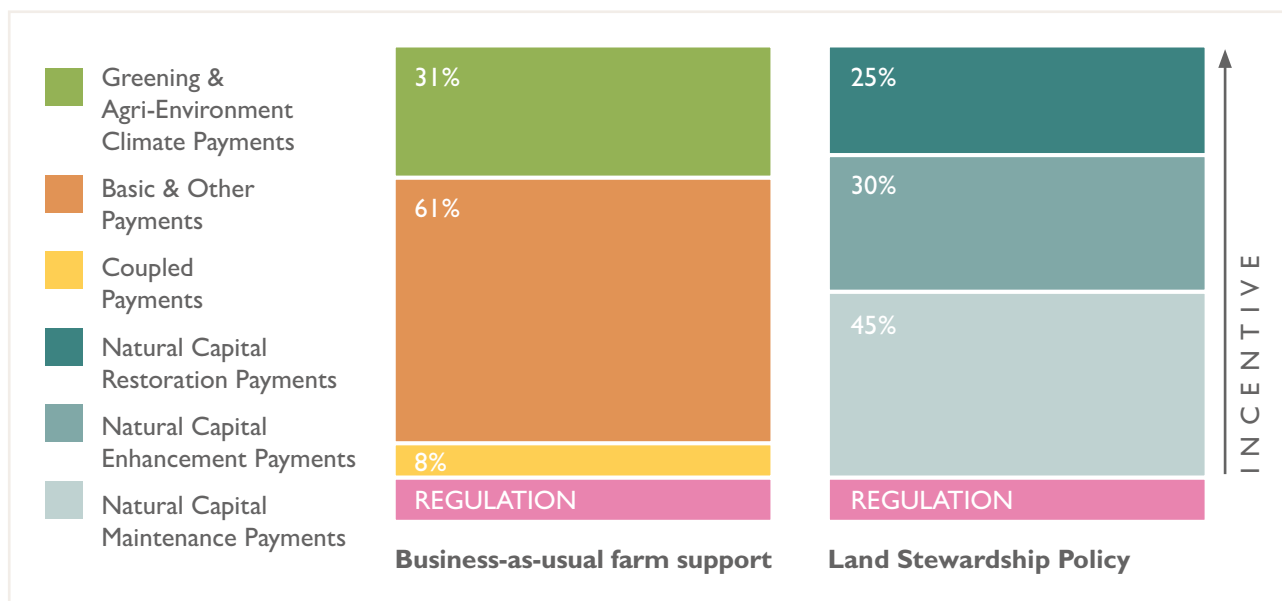
### **Tier 4: Natural Capital Restoration Payments**

This is a competitive additional payment designed to deliver specific public-good priorities. Measures include:

- I. natural flood management;
- II. interventions targeted at particular farmland types; e.g. machair, wood pasture, upland hay meadows;
- III. interventions targeted at particular species; e.g. brown hare, black grouse, farmland waders and passerines;
- IV. support for targeted livestock grazing on qualifying High Nature Value farmland;
- V. creating and restoring non-woodland habitats to contribute to a National Ecological Network.

Priority non-woodland habitats will be identified at local level as part of the process of catchment-scale opportunity mapping.

**Figure 2: Business-as-usual farm support and farm support under Land Stewardship Policy**



### Distribution between land types

The new Natural Capital Maintenance and Natural Capital Enhancement Payments will be area-based payments available to all farms set on a per hectare basis for two land types:

Region 1 – arable land, temporary and permanent grassland

Region 2 – rough grazing

The budget for Natural Capital Maintenance and Enhancement Payments will be split 70:30 between Region 1 and Region 2 land. The implications of this for indicative payment rates are shown in Table 4 below. The ability of upland farms to provide substantial public benefits such as natural flood management, carbon sequestration and wildlife habitats is recognised in this policy, as are the challenges that upland farms face in generating returns from the market, by increasing the proportion of support devoted to Region 2 land (compared to business as usual).

**Table 4: Indicative payment rates per hectare**

	Region 1 - arable land, and temporary and permanent grass land	Region 2 - rough grazing
Natural Capital Maintenance Payments	£86	£22
Natural Capital Enhancement Payments	£58	£15
<b>Total</b>	<b>£144</b>	<b>£37</b>





## OTHER MEASURES

### Involve farmers and advisors in developing measures

This policy proposes to closely involve farmers and advisors in the design of measures which will apply post 2020. Instead of specifying the means, measures could be outcome led, leaving it to farmers to decide how to achieve the specified outcome.

### Transition to new system

This policy substantially changes the way farming is supported in Scotland post 2020. If there is judged to be a significant risk of administrative difficulties with transitioning to a new system, the existing system should be kept in place for a period before this policy comes into effect. This will give farm businesses time to plan. A transitional period where existing arrangements remain in place of between 3–5 years beyond 2020 may be appropriate.

### Advisory and monitoring

Central to the new approach advocated in this policy is the provision of high-quality advice to farmers. The whole-farm reviews recommended as a requirement for Natural Capital Maintenance Payments will establish a baseline against which progress can be measured, and which will inform future policy development.

## Benefits

The benefits of these measures will be:

- I. Scotland will have one of the most sustainable agriculture policies of any country in the world, providing high-quality products for the food and drink industry, which trades on Scotland's reputation for environmental quality.
- II. A much greater alignment of the incentives provided by support payments and public policy objectives to safeguard and restore stocks of natural capital and reduce greenhouse gas emissions from agriculture.
- III. The new system will reward farmers who have retained the natural capital of their land and will provide a clear incentive for its maintenance, enhancement, and restoration. This will lead to a farming sector better able to continue to provide the quality raw materials for our food and drink industry and the landscapes for our tourism sector, underpinning our rural economy and rural communities, and better prepared to face the challenge of climate change.
- IV. Ongoing support for Scotland's traditional farming systems and their natural and cultural heritage.

## 4. FORESTS AND WOODLAND

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Conditions over much of the Scottish uplands are suitable for trees and shrubs to grow. Grazing and burning suppress natural regeneration over much of this area. Releasing this regeneration requires three actions: a large reduction in the number of deer, a reduction in the number of sheep ... and a large reduction in the area of land that is burned.

**Forest Policy Group**<sup>24</sup>



### Challenges

After declining to around 5% around the turn of the 20th century, forest cover in Scotland increased to 18% during the last 100 years. This is still low in relation to our European neighbours, and Scotland's forests are also unusual in that they are dominated by a non-native species – Sitka spruce. Challenges for our forest policy are:

I. Native woodland makes up a very small proportion of the total woodland area (<25%). Of that area, ancient semi-natural woodland makes up just 4.6% of the total woodland (just over 0.5% of total land area), and is declining in extent and condition in the uplands. Some of our most important native woodlands for biodiversity are impacted upon by invasive non-native species and overgrazing.<sup>25</sup>

II. Planting targets in recent years have not been met, and by the middle of the century timber production from Scottish forests is expected to decline. Softwood production from Scotland's

conifer plantations has risen sharply since the 1970s. Total planting of conifers has fallen continuously over the same period. This reduction in the area planted means softwood timber production will peak by 2030, and decline thereafter. With an average rotation for Sitka spruce of around 40 years, it is clear that this decline in production could not be met from current new plantings until the 2040s and 2050s.

III. Productive forests in Scotland are dominated by a single species – Sitka spruce. Stands dominated by Sitka spruce tend to be of lower biodiversity value than mixed and native-species stands. There are also potential risks from pests and/or diseases of Sitka spruce should these become established in Scotland. Less than 20% of the National Forest Estate is made up of native species.

IV. Woodlands are currently not fulfilling their full potential for helping Scotland adapt to climate change. More connected riparian woodlands, for example, could prevent flooding; reduce erosion; improve water quality; and allow wildlife to move through the landscape. Woodlands are also important carbon sinks and therefore help mitigate climate change.



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## Solutions

The following measures are specified to address the challenges identified above:

I. Highest rates of grant support for the establishment of native woodland by planting and by natural regeneration, ensuring natural regeneration is an attractive option compared to planting.<sup>26</sup> Priority areas for woodland creation will be identified at local level by Regional Land Use Partnerships, and taking account of Indicative Forestry Strategies as part of the process of catchment scale opportunity mapping.

II. Grant support for the establishment and restocking of productive non-native plantations remains linked to UK Forestry Standard requirements, i.e. no more than 75% of the area restocked composed of a single species; 10% of the restocked area left open-space; 10% managed for biodiversity; and 5% native broadleaves. Rates to be set at a level which ensures stable future supply of softwood timber.

III. Annual woodland stewardship payments to support the management of existing native woodlands to address overgrazing by deer, control of invasive non-native species (INNS), introduction of continuous-cover silviculture, and measures to improve the long-term value of hardwood timber.

IV. Payments to restore plantations on ancient woodland sites (PAWS) to native woodland.

V. On the National Forest Estate, diversification of tree species and stand structure will be increased year on year through restructuring, repositioning and increased use of native species for restocking.

## Benefits

The focus on creating new native woodland and restructuring existing woodland specified by this policy will be a significant change, bringing about more diverse and resilient woodlands. The resulting change will be better for biodiversity; help to adapt to and mitigate against climate change; and provide timber, fuelwood, shelter for livestock, and space for recreation.



## 5. PEATLANDS

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### Challenges

Peatlands cover around 20% of land in Scotland or around 1.7 million hectares. Intact, functioning peatlands are an important store of carbon (sink). However, it is currently estimated that over 600,000 hectares of Scotland's peatlands are in a degraded condition primarily due to drainage, overgrazing, burning and afforestation.<sup>27</sup>

Active restoration of 21,000 hectares of degraded peatland per year is considered to be feasible.<sup>28</sup> The Scottish Government has committed to restore 300,000 hectares of peatland by 2032–33.<sup>29</sup> We estimate that this will cost an average of £16 million per year.<sup>30</sup>

Many peatlands have been drained with moor grips. This dries out the peat and favours the growth of grasses or heather over Sphagnum mosses. Where these drains exist, restoration involves blocking them to raise the water table which prevents the peat from oxidising and can restore Sphagnum mosses. Outside designated sites there is no restriction on putting in new drains on peatland.

### Solutions

This policy mandates dedicated long-term funding support for peatland restoration. This is key to building momentum in the delivery of peatland restoration. Assured funding into the long term will allow the direct economic benefits of peatland restoration to be realised through employment of contractors and purchase of machinery, and the training and upskilling of peatland consultants. In addition, this will encourage the private sector to invest in funding in peatlands through mechanisms such as the Peatland Code.<sup>31</sup>

The following strategic intervention is specified:

- I. A discrete Challenge Fund of at least £16 million per year for peatland restoration, to be maintained in real terms. Applicants for restoration funding should demonstrate how the causes of peatland degradation will be addressed and will be managed in future, to ensure that the benefits from restoration works are secured.



The following regulatory measure is specified:

- II. A prohibition on installing land drainage and burning on peat soils >50 cm depth.

### Benefits

The benefits of peatland restoration are that:

- I. The carbon stored in 300,000 hectares of peatland is protected, preventing future emissions. The value of this area as wildlife habitat will be improved; water quality will be improved; and with increased water storage and slower run-off help to reduce flood risk.
- II. Restoration works will create new economic opportunities and employment in rural communities. Growing experience and capacity to carry out restoration will also create confidence for private investment in peatland restoration under the Peatland Code,<sup>32</sup> which will further increase the economic impact.



## 6. DEER

### Challenges

Deer exert a significant influence on the vegetation of Scotland, with profound consequences for ecological processes and biodiversity. For instance, natural regeneration of woodland without fencing is unlikely when deer densities are above 5 per km<sup>2</sup>.<sup>33</sup>

Red deer on the open hill also impact on other habitats through grazing and trampling; for example, on blanket bogs, flushes, and montane scrub. Roe deer have also increased their numbers and range in both the uplands and lowlands.

Challenges for deer policy are:

- I. Voluntary approaches to deer management have failed to sustain and improve the natural heritage.<sup>34</sup>
- II. Evidence from the 2016 review of Deer Management in Scotland showed that if deer densities were lower across Scotland the benefits could be maintained and costs reduced. Other evidence shows that deer numbers could be significantly reduced without reducing the number of male deer available for hunting.<sup>35</sup>
- III. In 2016 only three out of 11 voluntary Control Agreements had met habitat targets. Scottish Natural Heritage had not used its powers to follow up with compulsory Control Schemes. Scottish Natural Heritage's powers are limited to preventing damage, not restoring degraded habitats.
- IV. Since the 1990s the emphasis of action and debate has tended to be on red deer and designated sites. Widespread impacts of all four species in the rest of the country have largely been neglected.
- V. Detailed habitat monitoring of the impacts of deer and other herbivores across much of the open hill range and most of the lowlands is lacking. Information on the condition of deer, for example, carcass weight, can be used to manage deer, and is much less expensive and time-consuming than counting.<sup>36</sup>

### Solutions

The following regulatory measures are specified to address the challenges identified above:

- I. Land managers are required to agree forward cull plans with Scottish Natural Heritage. Cull plans are set at levels intended to reduce deer impacts and improve condition of habitats, informed by standardised habitat monitoring. Information such as larger weights and fecundity must be collected



for all species and made available to Scottish Natural Heritage along with cull returns.

II. Where cull plans are not achieved, Scottish Natural Heritage is empowered to require that culls are achieved by a third party.

III. Deer management plans, deer count information, cull plans, and cull returns must be made publicly available.

### Benefits

The benefits of these measures will be:

- I. Reduced grazing and browsing impacts, improving the condition of native woodlands, peatlands and other wetlands, and allowing expansion of native woodlands and montane scrub. This in turn will improve the capacity of land to provide a fuller range of ecosystem services, including water regulation and carbon storage and sequestration.
- II. Larger, healthier deer, and continued economic activity from deerstalking.
- III. A better benefit-to-cost balance from deer management by reducing the costs of deer impacts, thereby retaining the economic benefits from deerstalking and securing additional benefits e.g., from improving the condition of habitats.
- IV. Greater accountability, clarity, and transparency in relation to deer management.

## 7. GROUSE AND MOORLAND MANAGEMENT

### Challenges

Evidence suggests the area of moorland burnt and the frequency of burning is increasing, with increasing burning of deep peat and within designated sites.<sup>37</sup>

The area of moorland managed for grouse shooting in Scotland is estimated at around 1 million hectares.<sup>38</sup> The main form of land management on grouse moors is 'muirburn' of vegetation. Muirburn is also carried out in other areas with the intention of producing fresh grazing for sheep and deer.

Burning of vegetation leads to a number of environmental problems, including:

- I. prevention of woodland and montane scrub regeneration;
- II. damage to peatland habitats, particularly the deeper peats found on blanket bogs;
- III. impacts on water quality and freshwater ecology;<sup>39</sup>
- IV. carbon losses and reduced capacity of moorland and peatland habitats to sequester carbon;

V. burning out with grouse moors resulting in extensive damage to sometimes sensitive habitats (while such burning can produce an initial flush of growth for grazers, in the long term it can lead to moorland and rough grasslands being dominated by rank unpalatable grasses like purple moor-grass, mat grass, and deer grass).<sup>40</sup>

VI. burning on short-rotations leading to a loss of long heather, which is used for nesting by moorland birds, like merlins and hen harriers.

The 2016 version of the Muirburn Code<sup>41</sup> recommends avoiding burning on sensitive habitats such as deep peats, montane heaths, steep slopes, and close to woodland and scrub. However, these recommendations are only advisory. Nor is there a mandatory requirement for land managers to demonstrate compliance with the code, or to keep records to allow compliance to be monitored.



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## Solutions

The full introduction of mandatory measures proposed below depend on legislation introducing licensing of grouse moor management,<sup>42</sup> which would allow compliance with a Moorland Management Code to be a licence condition. This policy recommends that such legislation is enacted as soon as practicable. Pending the development and implementation of this legislation, some of the measures below can only be implemented on a voluntary basis.

Using the powers available in existing legislation, the following measures are specified to address the challenges identified above:

I. Powers under the Hill Farming Act 1946<sup>43</sup> should be used to restrict muirburn to land with >70% cover of heather and other dwarf shrubs, and on such land to prevent burning on all blanket bog and other wetlands, montane heaths, steep slopes, thin soils, at the edges of woodland and scrub, and on sites used by specially protected birds for nesting.

II. A Moorland Management Code to be developed as soon as practicable. This will include the mandatory requirements specified in point I.<sup>44</sup> Once grouse moor licensing is in place, compliance with the code will be a licence condition. The Code will also require the production of a muirburn plan which identifies sensitive habitats and record keeping of the dates and areas burnt. Compliance with species protection legislation will also be a licence condition.

III. Licensing powers under the Hill Farming Act 1946 will allow muirburn on land with <70% cover of heather and other dwarf shrubs, where it is necessary to prepare sites for woodland expansion by natural regeneration or to manage designated moorland sites.

## Benefits

The benefits of these measures will be:

I. protecting the carbon stored in peatlands and improving their condition as a wildlife habitat;

II. improving water quality, which can reduce treatment costs, and improving the water storage capacity of peatlands, which can help mitigate flooding;

III. sequestration of carbon and provision of habitat for woodland edge species like the black grouse in woodland and scrub on the moorland margins;

IV. reducing upland soil erosion by preventing burning on steep slopes.





## 8. DESIGNATED SITES AND NATURE CONSERVATION

### Challenges

Protected places are especially valuable providers of ecosystem services because the ecosystems within them are in the best condition. They integrate conservation with people's enjoyment of nature, provide jobs, particularly in rural Scotland, and offer many other public benefits to health, education, employment, environmental justice and tourism.

### Scottish Government, 2020 Challenge for Scotland's Biodiversity, 2013<sup>45</sup>

The challenges for management of designated sites and nature conservation in Scotland are:

I. Maintaining the high levels of protection currently afforded by the Natura 2000 designations post-Brexit. Nearly 1.2 million hectares of Scotland have been cumulatively designated under the Habitats and Birds Directives as Special Areas of Conservation (SAC) and Special Protection Areas (SPA). They provide the highest level of protection of any form of designation and have been instrumental in ensuring that sites have been protected from inappropriate development.

II. Continuing to improve the condition of designated sites, particularly in the context of climate change.

III. Meeting the Aichi target to control and eradicate invasive non-native species (INNS).<sup>46</sup> These are the most commonly recorded pressure on designated sites and have a total estimated annual cost to Scotland's economy of £125 million.<sup>47, 48</sup>

IV. Improving the connectivity of designated sites (see section on National Ecological Network later in this document).

### Solutions

The following strategic interventions are specified:

I. Work to maintain, enhance, and restore designated sites through a discrete Challenge Fund of at least £4 million per year, to be maintained in real terms. This will include developing solutions for those sites where there is no on-site remedy.



II. A discrete Challenge Fund of at least £5 million per year for INNS control and eradication programmes throughout Scotland, to be maintained in real terms. Priorities for control and eradication will be identified at local level as part of the process of catchment-scale opportunity mapping.

### Benefits

The benefits of the approach advocated are:

I. Continued improvements in the quality of Scotland's designated sites. Many of these sites are a focus for nature-based tourism, which is worth over £1.4 billion to the economy annually.

II. Meeting our international biodiversity commitment to control and eradicate INNS, which will also create economic opportunities and employment in carrying out the control and eradication work.



## 9. FRESHWATER

### Challenges

Scotland is renowned worldwide for the environmental quality of its rivers, lochs, wetlands and seas. They are some of the country's greatest natural assets; attracting visitors, contributing to the health and well-being of its people, supporting a rich diversity of wildlife and providing for the sustainable growth of its economy.

**Scottish Government, The river basin management plan for the Scotland river basin district: 2015–2027<sup>49</sup>**

The challenges for management of freshwater in Scotland are:

I. Ensuring that the vast majority of water bodies in Scotland (rivers, lochs, wetlands, groundwater, estuaries, and coastal waters) achieve Good Ecological Status (GES). The Water Framework Directive and its implementation in Scotland have been pivotal for the water environment. While good progress has been made in some areas, such as reducing diffuse agricultural pollution, progress in achieving the good ecological status required by the directive has been slower than planned. The main barriers to achieving GES are barriers to fish migration and other physical modifications to water bodies, and rural diffuse pollution.

II. Managing increased risk of river flooding. Climate change is predicted to increase rainfall intensity. This makes river catchments “flashier” and more prone to flooding. Flood events are predicted to become more frequent. Natural Flood Management measures work by slowing the flow of water through catchments, and reducing the peak flow of flood events.<sup>50</sup> Implementation of these techniques is demonstrating their effectiveness; e.g. the Eddleston Water project near Peebles.

### Solutions

The following measures are specified to address the challenges identified above:

I. The target to achieve Good Ecological Status for the vast majority of water bodies in Scotland will be retained, together with the current approach to achieving it through River Basin Management Planning (RBMP).<sup>50</sup>

II. The following measures specified elsewhere in this policy will contribute to Natural Flood Management in the following ways:

- a. Natural Capital Restoration Payments will include the use of farmland for restoration of meanders and creation of ‘leaky ponds’ into which water is diverted at times of peak flow.
- b. Wildlife habitats created on farms under Natural Capital Maintenance and Enhancement Payments

will include restoration of wetlands, ponds, and wet meadows which hold water.

c. The creation of native woodland and scrub will allow water to infiltrate deep into the soil much faster than on farmland, slowing the rate of run-off.

d. Creation of riparian woodland will be prioritised.

e. Peatland restoration will be incentivised through the strategic intervention of a discrete Challenge Fund. Raising the water table is key to peatland restoration, so restoration allows more water to be held in peat. Improving the capacity of catchments to store water in peatlands can reduce peak river flows which cause flooding.

In addition to the above measures, the following strategic intervention is envisaged:

III. A discrete Challenge Fund of at least £10 million per year to fund works to achieve GES and implement natural flood management, to be maintained in real terms. On natural flood management, this fund will support measures by landowners other than farmers and will provide funding for techniques including installing flow restrictors in the river channel.<sup>52</sup> Note that support for natural flood management by farmers will be available under Natural Capital Restoration Payments.

### Benefits

The benefits of the approach advocated are:

I. The majority of water bodies in Scotland achieving Good Ecological Status. Removing barriers to fish migration, restoring rivers to their natural course, and reducing diffuse pollution will create economic opportunities directly. It will also have benefits for fisheries, which provide economic benefits and employment.

II. Land stewardship helping to adapt to climate change through natural flood management techniques, resulting in better protection of homes and businesses from flooding.

## 10. NATIONAL ECOLOGICAL NETWORK

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### Challenges

To allow species to move across the landscape semi-natural habitats need to be better linked. Developing such linkages through a National Ecological Network (NEN) will decrease the likelihood of extinctions, increase genetic exchange and improve ecosystem resilience in the face of climate change.



### Solutions

The following measures specified elsewhere in this policy will contribute to a National Ecological Network:

- I. Natural Capital Maintenance and Enhancement Payments will increase the area of wildlife habitat on farms. Collective actions by groups of farmers working together to create interconnected wildlife habitat are incentivised.
- II. Natural Capital Restoration Payments will incentivise habitat creation on farmland identified at local level as part of the process of catchment-scale opportunity mapping.

III. Applications for native woodland creation which deliver connectivity will be prioritised.

IV. Restructuring existing productive forests to include a greater species mix will enhance their suitability for a wider range of wildlife.

V. A strategic intervention will fund the restoration of 300,000 hectares of peatland, which will improve the connectivity of this habitat.

VI. Implementation of the second River Basin Management Plan, supported by a discrete Challenge Fund, will achieve Good Ecological Status for the majority of water bodies by 2027.

In addition to these measures the following strategic intervention is specified:

VII. An Environmental Co-operative Action Fund of at least £4 million per year will support collaboration between landholdings at the landscape scale to deliver integrated catchment management and create a National Ecological Network. Funding to be maintained in real terms.

### Benefits

The benefits of creating a National Ecological Network are to improve ecosystem health and increase resilience to environmental change. This network will also increase opportunities for tourism, recreational access, and walking and cycling routes.

## II. INTEGRATING STEWARDSHIP OF LAND AND WATER

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The Scottish Government intends to build on river basin management planning as the basis of more integrated land and water use planning across whole catchments. This will provide a means of integrating public policy objectives in order to tackle issues such as diffuse pollution, flood risk, soil protection, peatland restoration and an expansion of woodland cover.

**Scottish Government (2013), 2020 Challenge for Scotland's Biodiversity<sup>53</sup>**

### The Challenge

The challenges for integrating currently largely distinct land uses are:

I. Integrating the planning and delivery of land stewardship. Responsibility for planning and delivering public policy on land stewardship is divided between an array of public and private bodies, working at different geographies. This makes coordination and delivery through integrated catchment management, which is the objective of Government Policy, challenging (see Appendix 2).

II. The roll out of a new land stewardship policy focussed on provision of public goods will require enhanced support for landowners and land managers in the form of advice and training.

### Solutions

The following measures are specified to address the challenges identified above:

I. Regional land use partnerships will be aligned to river catchments.<sup>54</sup> They will carry out catchment-wide appraisals of opportunities and constraints for land stewardship and develop catchment-wide land stewardship plans.<sup>55</sup> These will aid land stewardship decision-making in relation to where to prioritise funding for Natural Capital Restoration Payments

such as peatland restoration; the creation of native woodland; the creation of wildlife habitat for connectivity; and the implementation of natural flood management techniques. Plans will also be a locus for optimising and developing the provisioning services of food and timber production; identifying opportunities for local rural development; and developing recreational opportunities and tourism. One possible approach could be to expand the remit and membership of Fisheries Trusts to take on a wider role in planning land management at a catchment level, as is already occurring in some areas.

II. The Scottish Government and other public bodies will align their policy delivery functions to the regional land-use partnerships.

III. Advisory support on land stewardship, and in particular integrating stewardship of land and water, will be extended to all landowners and land managers, funded with a budget of at least £10 million.

### Benefits

The benefit of the approach advocated will be to better enable public bodies and land managers to deliver integrated catchment management which optimises the way land is managed for social, economic and environmental benefits, and obtains better value for money for public support from the taxpayer.







## 12. GLOSSARY

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**CAP** – Common Agricultural Policy.

**Ecosystem services** – essential services provided by natural capital which make human life possible. Obvious ecosystem services include the food and water we eat and drink, or the plant materials we use for fuel, building materials, and medicines. There are also many less visible ecosystem services such as the climate regulation, flood defences provided by natural vegetation, the billions of tonnes of carbon stored by peatlands and forests, and the pollination of crops by insects.

**Externality** – an effect of a good or service on a third party. Can be positive where provision of the good or service benefits others, or negative where the provision of the good or service imposes costs on others.

**GDP** – Gross domestic product.

**GES** – Good ecological status.

**GVA** – Gross value added.

**HNV** – High Nature Value. High nature value farming (HNV farming) refers to agricultural systems that are important for environmental benefits they provide, such as soil biodiversity, or supporting populations of threatened species.

**INNS** – Invasive non-native species.

**Less Favoured Areas** – a long standing designation under the Common Agricultural Policy, they are classified as such due to natural impediments to agriculture such as steep slopes, difficult climatic conditions, or low soil productivity. Currently 84% of farmland in Scotland is designated as LFA.

**Market failure** – occurs when there is an inefficient allocation of resources in a free-market. A common cause of market failure can be when the cost of a negative externality is not reflected in the price of a product; e.g. the cost of greenhouse gas emission from food production is not fully reflected in the prices we pay for food.

**Natural capital** – the world's stocks of natural assets, which includes geological resources, soil, air, water, and all living things.

**PAWS** – Planted ancient woodland sites.

**Public goods** – commodities or services that are provided without profit to all members of a society, either by the government or by a private individual or organisation.

**SME** – Small and medium-sized enterprises.

**UKFS** – United Kingdom Forestry Standard.

## APPENDIX I

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### NATURAL CAPITAL MAINTENANCE, ENHANCEMENT, AND RESTORATION – DETAIL OF PROPOSED MEASURES

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#### Natural Capital Maintenance Payments – mandatory measures

Comply with Statutory Management Requirements under the Basic Payment Scheme for 2017,<sup>56</sup> with addition of:

Compliance with species protection requirements of Birds and Habitats Directives, and the Habitats Regulations 1994 (as amended in Scotland); Wildlife and Countryside Act 1981 (as amended); Part 2 of the Animal Health and Welfare (Scotland) Act 2006, and with codes made under the Act; Controlled Activities Regulations; and the Sludge (Use in Agriculture) Regulations 1989.

Comply with regulations on soil conservation.

Comply with Good Agricultural and Environmental Condition (GAEC) requirements under the Basic Payment Scheme for 2017.<sup>57</sup> Amend GAEC 1 on buffer strips to state the uncultivated area must be at least 6 m wide. Add requirement to GAEC 4 on minimum

soil cover that winter stubbles must be left unsprayed, to improve value for wildlife.

Reinstate GAEC requirements to prevent wind erosion and soil capping; use break crops in arable rotations; manage use of manures and slurries to meet crop needs; use machinery on land appropriately (e.g. not when water standing on surface or soil saturated); avoid overgrazing and overburning; and no liming of rough grazing of semi-natural habitats.

Comply with the Prevention of Environmental Pollution from Agricultural Activity (PEPFAA) Code<sup>58</sup> and the Code of Practice on the Use of Plant Protection Products.<sup>59</sup>

A minimum of 12% of the farm to provide wildlife habitat.<sup>60</sup>

Whole-farm reviews to include: financial performance and efficiency; soil; water; energy; greenhouse gas emissions; and biodiversity.

#### Natural Capital Enhancement Payments – regional options

Measures to optimise fertiliser & pesticide use.

Reducing stocking densities on sensitive habitats, e.g. to prevent heather loss.

Maximum stocking densities for improved and unimproved grasslands and rough grazing.

Increasing wildlife habitat above >12% of farm area on a graduated scale.

Reintroduction of mixed farming (cropping on livestock farms and livestock on currently all arable farms), and reintroduction of a greater range of crop types (e.g. use of legumes and protein crops in arable rotations).

Allow colonisation of native woodland and scrub onto rough grazings.

Creation of varied swards (e.g. areas where plants are allowed to flower and seed; leaving small areas unmown), and reinstate hay production on proportion of conserved forage area.

Wildlife-friendly cropping and mowing techniques.

Measures to encourage pollinators; e.g. increasing legume content of temporary and permanent grassland mixes.

Leaving hedgerows uncut (e.g. on a 3-year rotation rather than every year, and not cutting hedgerow trees).

Conversion to organic farming.

Improving public access, e.g. stiles, gates, footpaths, parking areas, signage, facilities.

#### Natural Capital Restoration Payments

Natural flood management measures.<sup>61</sup>

Measures targeted at particular farmland types; e.g. machair, wood pasture, upland hay meadows.

Measures targeted at particular species; e.g. brown hare, black grouse, farmland waders, and passerines.

Support for targeted livestock grazing on qualifying High Nature Value farmland.

Measures to create and restore non-woodland habitats to contribute to a National Ecological Network. Priority non-woodland habitats will be identified at local level as part of the process of catchment-scale opportunity mapping.

## APPENDIX 2

### LAND STEWARDSHIP: POLICY DEVELOPMENT, DELIVERY, AND IMPLEMENTATION

The table highlights the range of public and private bodies involved in land stewardship in Scotland.

**Table 1: Responsibilities for policy development, delivery and implementation of Land Stewardship in Scotland**

Type of stewardship / policy area	Lead policy responsibility	Public policy delivery	Geography	Implementation
Land use strategy	Scottish Government	All public bodies	Regional land use partnerships	All with an interest in land and freshwater
Farming	Scottish Government Rural Payments and Inspections Directorate (SGRPID) (no national spatial strategy)	Administration by SGRPID local offices (no local delivery strategy)	Area offices	Farmers and landowners
Scotland Rural Development Programme	SGRPID (no spatial strategy)	SGRPID, Forestry Commission, Local Action Groups (LEADER)	Area offices, Forest Conservancies, Local Action Group Areas	Farmers, landowners and land managers
Forestry	Forestry Commission	Forestry Commission / Local authorities (indicative forestry strategies)	Forest conservancy / district / Local authority	Forest Enterprise (Forest and Land Agency), private forest owners / managers
Deer management	SNH	SNH wildlife management officers / Deer management groups / Lowland deer network	Deer management groups / Lowland deer network	Landowners (public and private), deer managers
Grouse moor management	Scottish Government / SNH	none	none	Landowners, gamekeepers
Nature conservation: designated sites and species	SNH	SNH area offices	SNH area office areas	Landowners
Local biodiversity sites	Local authorities	Local development plans	Local authorities	Landowners
Nature conservation: biodiversity strategy	Scottish Government	All public bodies	River catchments	Farmers, landowners, Forest enterprise, private forest owners, gamekeepers, deer managers, riparian owners
Water environment	SEPA	SEPA	Scotland River Basin District / Solway Tweed River Basin District	Farmers, landowners, Forest enterprise, private forest owners, gamekeepers, deer managers
Flood management	SEPA	Local Authorities	Local Flood Risk Plan Districts	Local authorities, landowners, homeowners
Freshwater Fisheries	Scottish Government (Marine Scotland)	District Salmon Fishery Boards & Fishery Trusts	Salmon Fishery Districts	Riparian owners, anglers
Renewable energy	Scottish Government	Scottish Government / Local Authorities	Local Authority	Energy companies and developers

# REFERENCES

- <sup>1</sup> <http://naturalcapitalforum.com/news/article/plenary-speech-by-nicola-sturgeon/>
- <sup>2</sup> Natural Capital can be defined as the world's stocks of natural assets, which encompasses geological resources, soil, air, water, and all living things.
- <sup>3</sup> i.e. a discretionary fund with a competitive applications process.
- <sup>4</sup> Copies of all Scottish Wildlife Trust Policies are available from our website here: <https://scottishwildlifetrust.org.uk/our-work/our-advocacy/policies-and-positions/> Policy Futures publications are available here: <https://scottishwildlifetrust.org.uk/about-us/our-publications/>
- <sup>5</sup> Less Favoured Area Support Scheme in Scotland: Review of the Evidence and Appraisal of Options for the Scheme Post 2010. Available at: <http://www.gov.scot/Publications/2007/03/21143353/0>
- <sup>6</sup> Scottish Government (2016) A Land Use Strategy for Scotland 2016–21: <http://www.gov.scot/Resource/0050/00505253.pdf>; Scottish Government (2016) A consultation on the Land Rights and Responsibilities Statement: <http://www.gov.scot/Publications/2016/12/6806/0>
- <sup>7</sup> Scottish Parliament Environment Climate Change and Land Reform Committee, evidence on Deer Management in Scotland, 17 January 2017: <http://www.parliament.scot/parliamentarybusiness/report.aspx?r=10741> and Written Submission from Duncan Halley: [http://www.parliament.scot/S5\\_Environment/General%20Documents/\(020\)\\_20161208\\_Duncan\\_Halley.pdf](http://www.parliament.scot/S5_Environment/General%20Documents/(020)_20161208_Duncan_Halley.pdf)
- <sup>8</sup> <http://www.gov.scot/Publications/2015/03/54111/0>
- <sup>9</sup> <http://www.gov.scot/Publications/2015/03/54111/0>
- <sup>10</sup> Ibid. Accessible rural areas are within 30 minutes' drive of a town with population >10,000. Remote rural areas have a >30-minute drive time.
- <sup>11</sup> Calculated for 2015 from Table 3 in <http://www.gov.scot/Resource/0050/00509544.xls>
- <sup>12</sup> Ibid and GVA statistics for food and drink sector from <http://www.gov.scot/Topics/Statistics/Browse/Business/Publications/GrowthSectors/Briefings>. Gross value added (GVA) is the measure of the value of goods and services produced in an area, industry, or sector of an economy.
- <sup>13</sup> Ibid
- <sup>14</sup> <http://www.snh.gov.uk/docs/B720765.pdf>
- <sup>15</sup> Scottish Government Draft Budget 2017-18, Level 4 spending plans, available at: [http://www.parliament.scot/FinancialScrutiny/2017-18\\_Budget\\_level\\_4.xlsx](http://www.parliament.scot/FinancialScrutiny/2017-18_Budget_level_4.xlsx)
- <sup>16</sup> SGRPID; SNH; SEPA; Crofting Commission; Forestry Commission Scotland; Forest Enterprise; National Park Authorities; and the Main Research Providers.
- <sup>17</sup> Funds for peatland restoration are available under the Agri-environment Climate Scheme, shown as environmentally friendly farming in this presentation.
- <sup>18</sup> Funds for controlling invasive non-native species are available under the Agri-Environment Climate Scheme, shown as environmentally friendly farming in this presentation.
- <sup>19</sup> <http://www.scottish.parliament.uk/parliamentarybusiness/report.aspx?r=10552>
- <sup>20</sup> See Appendix I for further examples of measures
- <sup>21</sup> In contract farming arrangements provision will be made to ensure criteria were met by the contractor carrying out the farming, where they were not the party receiving subsidy under the agreement.
- <sup>22</sup> Currently expressed as Statutory Management Requirements under the CAP. The requirement to comply with species protection requirements of the Natura Directives was removed in the most recent CAP reform and should be reintroduced.
- <sup>23</sup> The 12% area will be calculated as a proportion of the whole-farm area. As with Ecological Focus Areas, different coefficients will apply to different habitat types. Habitats which deliver connectivity beyond the landholding will have a coefficient >1. Habitats such as retained winter stubbles will be eligible but will have a coefficient <1. Semi-natural grasslands and grazed wet meadows will qualify as wildlife habitats.
- <sup>24</sup> <http://www.forestpolicygroup.org/wp-content/uploads/2015/05/The-Benefits-of-Woodland-Part-I.pdf>
- <sup>25</sup> <http://www.forestpolicygroup.org/wp-content/uploads/2015/05/The-Benefits-of-Woodland-Part-I.pdf>
- <sup>26</sup> Woodland establishment by natural regeneration was eligible for support under the 2007-13 Scotland Rural Development Programme. The option proved less popular than native woodland planting, with only one-twelfth the number of applications and only one-fortieth of funding awarded, suggesting grant rates should be increased relative to that for planting. <http://www.gov.scot/Topics/farmingrural/SRDP/RuralPriorities/Options/WoodlandCreation/NaturalRegen> and <http://www.gov.scot/Resource/0044/00449780.pdf>
- <sup>27</sup> [http://www.climateexchange.org.uk/files/1913/7339/0087/Research\\_summary\\_Potential\\_Abatement\\_from\\_Peatland\\_Restoration.pdf](http://www.climateexchange.org.uk/files/1913/7339/0087/Research_summary_Potential_Abatement_from_Peatland_Restoration.pdf)
- <sup>28</sup> <http://www.gov.scot/Resource/0042/00426134.pdf>
- <sup>29</sup> Scottish Government. (2017) Draft Climate Change Plan: 3rd Report on Policies and Proposals 2017-32 available at: <http://www.gov.scot/Publications/2017/01/2768>
- <sup>30</sup> Average restoration costs under the Peatland Action Programme were £800/ha, which equates to £16 million to restore 20,000 hectares.



<sup>31</sup> IUCN UK Peatland Programme. The Peatland Code: <http://www.iucn-uk-peatlandprogramme.org/peatland-code>

<sup>32</sup> <http://www.iucn-uk-peatlandprogramme.org/peatland-code>

<sup>33</sup> Putman et al. (2011) Identifying threshold densities for wild deer in the UK above which negative impacts may occur. *Mammal Review* 41(3), pp175-96.

<sup>34</sup> Scottish Natural Heritage (2016) Deer Management in Scotland: Report to the Scottish Government: <http://www.snh.gov.uk/publications-data-and-research/publications/search-the-catalogue/publication-detail/?id=2449>

<sup>35</sup> Halley, D (2017) Written evidence to the Scottish Parliament Environment Land Use and Climate Change Committee, citing Buckland et al. (1996). Available at: [http://www.parliament.scot/S5\\_Environment/Inquiries/20170112\\_Duncan\\_Halley\\_Written\\_Evidence.pdf](http://www.parliament.scot/S5_Environment/Inquiries/20170112_Duncan_Halley_Written_Evidence.pdf)

<sup>36</sup> Evidence from Dr Duncan Halley to Scottish Parliament Environment Climate Change and Land Reform Committee, 17 January 2017. Available at: <http://www.parliament.scot/parliamentarybusiness/report.aspx?r=10741>

<sup>37</sup> Douglas et al. (2015) Vegetation burning for game management in the UK uplands is increasing and overlaps spatially with soil carbon and protected areas. *Biological Conservation*. Volume 191, pp243–250: <http://www.sciencedirect.com/science/article/pii/S0006320715002372>

<sup>38</sup> [http://www.scottishlandandestates.co.uk/index.php?option=com\\_attachments&task=download&id=1299](http://www.scottishlandandestates.co.uk/index.php?option=com_attachments&task=download&id=1299)

<sup>39</sup> See the results of the Effects of Moorland Burning on the Ecohydrology of River Basins project: [https://www.leeds.ac.uk/news/article/3597/grouse\\_moor\\_burning\\_causes\\_widespread\\_environmental\\_changes](https://www.leeds.ac.uk/news/article/3597/grouse_moor_burning_causes_widespread_environmental_changes)

<sup>40</sup> *Mollinia caerulea*, *Nardus stricta* and *Tricophorum germanicum*.

<sup>41</sup> <http://www.gov.scot/Publications/2011/08/09125203/0>

<sup>42</sup> The proposed definition of a grouse moor is land where the principal aim of management practice is the production of grouse for shooting. Land licensed as a grouse moor will be identified on a map.

<sup>43</sup> Section 23A(1A)(a) of the Hill Farming Act 1946 allows Scottish Ministers to specify the types of land where muirburn is permitted during the muirburn season, if they consider it necessary in relation to climate change or for the purposes of conserving, restoring, enhancing, or managing the natural environment.

<sup>44</sup> This work will build on the work of the Moorland Forum to develop Principles of Moorland Management

<sup>45</sup> <http://www.gov.scot/Publications/2013/06/5538/0>

<sup>46</sup> <http://www.snh.gov.uk/docs/A2101704.pdf>

<sup>47</sup> <http://www.snh.gov.uk/docs/A1959320.pdf>

<sup>48</sup> <http://www.snh.gov.uk/docs/A2101704.pdf>

<sup>49</sup> <http://www.sepa.org.uk/media/163445/the-river-basin-management-plan-for-the-scotland-river-basin-district-2015-2027.pdf>

<sup>50</sup> <http://www.tweedforum.org/projects/current-projects/eddeleston>

<sup>51</sup> Future reporting on the River Basin Management Plan and the ecological status of water bodies must allow progress to be measured. The measures needed to implement the RBMP must be costed, so that judgements can be made about funding requirements.

<sup>52</sup> These can be used to encourage out-of-bank flow at strategically chosen locations and are usually formed of woody debris or engineered logjams using locally derived timber.

<sup>53</sup> <http://www.gov.scot/Publications/2013/06/5538/3>

<sup>54</sup> The river catchment will be the fundamental geography of land stewardship policy and delivery. For some large catchments it may be appropriate to work at a sub-catchment level; in other cases, it will be appropriate to work across several similar adjoining catchments.

<sup>55</sup> Regional land-use partnerships in the Scottish Borders and Aberdeenshire have taken the first steps towards this in Scotland. Both partnerships developed variants on an approach to constraint and opportunity mapping; e.g. identifying where woodland creation should be sited to optimise additional benefits such as flood prevention and improve water quality.

<sup>56</sup> Statutory Management Rules for the Basic Payment Scheme 2017 are listed here: <https://www.ruralpayments.org/publicsite/futures/topics/inspections/all-inspections/cross-compliance/detailed-guidance/statutory-management-requirements/>

<sup>57</sup> Good Agricultural and Environmental Condition requirements for the 2017 Basic Payment Scheme are listed here: <https://www.ruralpayments.org/publicsite/futures/topics/inspections/all-inspections/cross-compliance/detailed-guidance/good-agricultural-and-environmental-conditions/> previous requirements are listed here: <http://www.gov.scot/Publications/2005/12/0990918/09207#smr3>

<sup>58</sup> <http://www.gov.scot/Topics/farmingrural/Agriculture/Environment/PEPFAA/Overview>

<sup>59</sup> <http://www.hse.gov.uk/pesticides/topics/using-pesticides/codes-of-practice/code-of-practice-for-using-plant-protection-products.htm>

<sup>60</sup> Eligible land will include the features currently eligible for Ecological Focus Area, with additional features added to reflect the extension of this requirement to all farm types. Collective applications from neighbouring farms will receive higher point weightings. Creation of linked habitats, e.g. hedgerows for nesting cover and winter stubbles and sacrificial cereal plots for feeding for farmland birds, will also be incentivised.

<sup>61</sup> E.g. restoring meanders to watercourses.

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