Impact Assessment for the Rural Development Programme for England, 2014 to 2020

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Title:
Rural Development Programme for England, 2014 to 2020
IA No:
DEFRA1523

Lead department or agency:
Defra

Other departments or agencies:
Natural England
Rural Payments Agency

Impact Assessment (IA)

Date: 09/10/2013

Stage: Consultation

Source of intervention: Domestic

Type of measure: Other

Contact for enquiries:
Jonathan Capstick
David Legg

Summary: Intervention and Options

RPC Opinion: Not Applicable

Cost of Preferred (or more likely) Scenario				
Total Net Present Value	**Business Net Present Value**	**Net cost to business per year** (EANCB on 2009 prices)	**In scope of One-In, Two-Out?**	**Measure qualifies as**
£2,947m	£4,425m	£162m	No	NA

What is the problem under consideration? Why is government intervention necessary?

The Impact Assessment explores scenarios on how best to allocate spending under the new Rural Development Programme for England in order to: a) meet legal obligations; b) correct for market failures; and c) achieve wider government objectives. The overarching market failure is the presence of environmental externalities associated with land-based activities. The Rural Development Programme seeks to address these and other market failures by encouraging land managers to invest more in the provision of environmental (or ecosystem) services and by promoting investments in farm and forestry productivity and in growth of the rural economy.

What are the policy objectives and the intended effects?

The ambitions of the UK government for the new Rural Development Programme are to: a) promote strong rural economic growth; b) improve the environment: this includes helping to ensure that by 2021 the natural environment is improved as set out in the Natural Environment White Paper; and c) increase the productivity and efficiency of farm and forestry businesses, in order to improve their competitiveness and reduce the reliance of farmers and land managers on subsidies.

What policy options have been considered, including any alternatives to regulation? Please justify preferred option (further details in Evidence Base)

Option 0 is the baseline and represents the absolute minimum under current legal obligations. Scenarios 1 to 4 assume a 9% transfer from Pillar 1 to Pillar 2 of the Common Agricultural Policy (CAP) in England. Scenarios 5 to 8 assume a 15% transfer. The overall allocation of budget varies for each scenario at the given level of transfer including: a) same proportion as in the current programme; b) increased allocation to the environment; c) increased allocation to general rural growth (through the Growth Prgoramme); and d) increased allocation to farm and forestry productivity. There is no single preferred scenario at this stage. However, evidence in this Impact Assessment shows the 15% transfer allows a programme with greater scope and ability to address needs for intervention and deliver on desired policy objectives. In this front sheet we display results for scenario 5.

Will the policy be reviewed? It will not be reviewed. **If applicable, set review date:** NA

Does implementation go beyond minimum EU requirements?			NA		
Are any of these organisations in scope? If Micros not exempted set out reason in Evidence Base.	**Micro** Yes	**< 20** Yes	**Small** Yes	**Medium** Yes	**Large** Yes
What is the CO_2 equivalent change in greenhouse gas emissions? (Million tonnes CO_2 equivalent)			**Traded:**	**Non-traded:** 12.3m	

I have read the Impact Assessment and I am satisfied that, given the available evidence, it represents a reasonable view of the likely costs, benefits and impact of the leading options.

Signed by the responsible SELECT SIGNATORY: ..... Date: .....

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 1: Balance as now (9% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £777m	**High:** £3,614m	**Best Estimate:** £1,516m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£1,257m**

Description and scale of key monetised costs by 'main affected groups'

Includes costs incurred by the UK Exchequer and European funding in terms of grants and payments in the RDPE, as well as the administrative costs associated with delivering the programme. The analysis also includes costs incurred by business, such as those associated with applying for RDPE funding and complying with monitoring and inspection. We also include the contributions that beneficiaries make to the overall cost of funded projects (range between 20% to 60% of overall costs).

Other key non-monetised costs by 'main affected groups'

All direct costs incurred as a result of RDPE are estimated and monetised. There could perhaps be some second order impacts on private firms that could compete with RDPE interventions, such as banks competing on loans, training providers competing on skills development etc. However, RDPE interventions only address areas identified as in need so these types of costs are unlikely to be significant.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£2,034m**
High	Optional		Optional	**£4,872m**
Best Estimate				**£2,773m**

Description and scale of key monetised benefits by 'main affected groups'

For agri-environment and forestry interventions monetised benefits include carbon savings, air and water quality improvements and biodiversity and landscape benefits. A Social Return on Investment approach is used to monetise the economic, environmental and social benefits of investment in farm and forestry productivity. Growth Prgoramme impacts on productivity have also been monetised. For LEADER the impacts on business sales, local employment and tourism activity have been monetised.

Other key non-monetised benefits by 'main affected groups'

Contributions to meet statutory and international obligations on habitats and biodiversity. Improvement to the historical environment at archaeological sites. Broader windfalls for local economies of landscape interventions. Broader benefits from forestry activities (e.g. recreation, habitats connectivity, flood protection). Broader socio-economic benefits for local communities (e.g. improved access to services).

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

Future inflation rate of 2%. All Rural Development Programme budget is able to be spent. No diminishing returns with respect to Rural Development Programme investment. There is limited availability of data on outcomes associated with farm and forestry productivity spending for RDPE. There is an implicit assumption that the new programme will be at least as effective as the present. Constant returns to scale are associated with the use of benefit to cost ratios in modelling benefit estimates.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OITO?	Measure qualifies as
Costs: £155m	**Benefits:** £262m	**Net:** £107m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 2: More environmental land management focus (9% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £906m	**High:** £3,512m	**Best Estimate:** £1,743m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£1,142m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£2,047m**
High	Optional		Optional	**£4,654m**
Best Estimate				**£2,885m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks — **Discount rate (%)** 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £140m	**Benefits:** £224m	**Net:** £84m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 3: More farm and forestry productivity focus (9% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £811m	**High:** £4,405m	**Best Estimate: £1,506m**

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£1,360m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£2,171m**
High	Optional		Optional	**£5,765m**
Best Estimate				**£2,866m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £169m	**Benefits:** £336m	**Net:** £167m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 4: More rural growth focus (9% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £627m	**High:** £3,366m	**Best Estimate:** £1,283m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£1,332m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£1,959m**
High	Optional		Optional	**£4,698m**
Best Estimate				**£2,615m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks — **Discount rate (%)** 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £165m	**Benefits:£269m**	**Net:** £104m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 5: Balance as now (15% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £1,549m	**High:** £6,141m	**Best Estimate:** £2,947m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£2,010m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£3,559m**
High	Optional		Optional	**£8,151m**
Best Estimate				**£4,956m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks — **Discount rate (%)** 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £247m	**Benefits:** £409m	**Net:** £162m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 6: More environmental land management focus (15% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £1,705m	**High:** £6,005m	**Best Estimate:** £3,222m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£1,867m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£3,572m**
High	Optional		Optional	**£7,872m**
Best Estimate				**£5,089m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £228m	**Benefits:** £362m	**Net:** £134m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 7: More farm and forestry productivity focus (15% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £1,595m	**High:** £7,134m	**Best Estimate:** £2,940m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£2,140m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£3,734m**
High	Optional		Optional	**£9,274m**
Best Estimate				**£5,080m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks

Discount rate (%) 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:				In scope of OIOO?	Measure qualifies as
Costs: £264	**Benefits:** £501m	**Net:**	£237m	No	NA

Summary: Analysis & Evidence

Policy Scenario

Description: Scenario 8: More rural growth focus (15% transfer)

FULL ECONOMIC ASSESSMENT

Price Base Year 2013	PV Base Year 2014	Time Period Years 7	Net Benefit (Present Value (PV)) (£m)		
			Low: £1,365m	**High:** £5,836m	**Best Estimate:** £2,661m

COSTS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Cost (Present Value)
Low	Optional		Optional	NA
High	Optional		Optional	NA
Best Estimate				**£2,102m**

Description and scale of key monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised costs by 'main affected groups'

As in policy scenario 1 sheet.

BENEFITS (£m)	Total Transition (Constant Price)	Years	Average Annual (excl. Transition) (Constant Price)	Total Benefit (Present Value)
Low	Optional		Optional	**£3,467m**
High	Optional		Optional	**£7,938m**
Best Estimate				**£4,762m**

Description and scale of key monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Other key non-monetised benefits by 'main affected groups'

As in policy scenario 1 sheet.

Key assumptions/sensitivities/risks **Discount rate (%)** 3.5

As in policy scenario 1 sheet.

BUSINESS ASSESSMENT (Scenario)

Direct impact on business (Equivalent Annual) £m:			In scope of OIOO?	Measure qualifies as
Costs: £259m	**Benefits:** £417m	**Net:** £158m	No	NA

Impact Assessment for the new Rural Development Programme, 2014 to 2020

1. Summary

This is a consultation stage Impact Assessment. It sets out at a high level the need for a new Rural Development Programme (RDP) (2014 to 2020) and assesses potential scenarios for the use of spend within the programme. It includes what we know about the potential impacts, costs and benefits of the scenarios at this stage. The overall impact of the new Rural Development Programme will depend on the amount of funding available and the use of that funding. The main variable determining the amount of funding at this stage will be the amount that Ministers decide to transfer from the budget for the direct payments part of the Common Agricultural Policy (CAP) (Pillar 1) to rural development (Pillar 2). Member States may transfer up to 15% of their Pillar 1 budget to Pillar 2. This assessment therefore examines the impact of a number of scenarios that combine different levels of transfers of Common Agricultural Policy funding to rural development and the uses of those funds.

The do minimum scenario is the baseline against which the additional costs and benefits of other scenarios are assessed. This baseline scenario involves the minimum that would need to be done in the new programme without legal challenge from recipients of funding who hold agreements extending into the new programme, or a serious risk of infraction proceedings from the European Commission. This involves a) meeting the contractual commitments from current agri-environment and forestry agreements that extend into the new programme period and b) the EU legal obligation to spend 5% of the EU rural development funding through the local LEADER approach.[1] Meeting the existing contractual commitments would also fulfil the legal obligation to have a new programme and to spend 30% of EU funds on environmental land management measures. This scenario requires a transfer of 1% from Pillar 1 to Pillar 2 in England, based on assumptions set out in Annex A.

This assessment examines eight scenarios. They consist of four different uses of the budgets that would result from transfers to Pillar 2 of 9% (the rate used in the current CAP) and 15% (the maximum allowed under the new CAP). The scenarios are:

9% transfer

- Balance as now (9%). The balance of spend across broad uses of funds would remain in the same proportions as the current programme: 83% environmental land management; 5% farm and forestry productivity; 8% general rural growth; and 4% LEADER.
- More environmental focus (9%). This increases the balance of spend on new environmental land management: 88% environmental land management; 3% farm and forestry productivity; 5% general rural growth; and 4% LEADER.
- More rural growth focus (9%). This increases the balance of spend on rural growth: 78% environmental land management; 3% farm and forestry productivity; 15% general rural growth; and 4% LEADER.
- More farm and forestry productivity focus (9%). This increases the balance of spend on farm and forestry productivity: 80% environmental land management; 8% farm and forestry productivity; 8% general rural growth; and 4% LEADER.

[1] LEADER is a local delivery mechanism that promotes an integrated bottom-up approach for community-led delivery of funding. It represents 5% of EU funding. When national funding is taken into account it represents 4% of the total Rural Development Programme budget. See Box 2 on p18 for more detail.

15% transfer

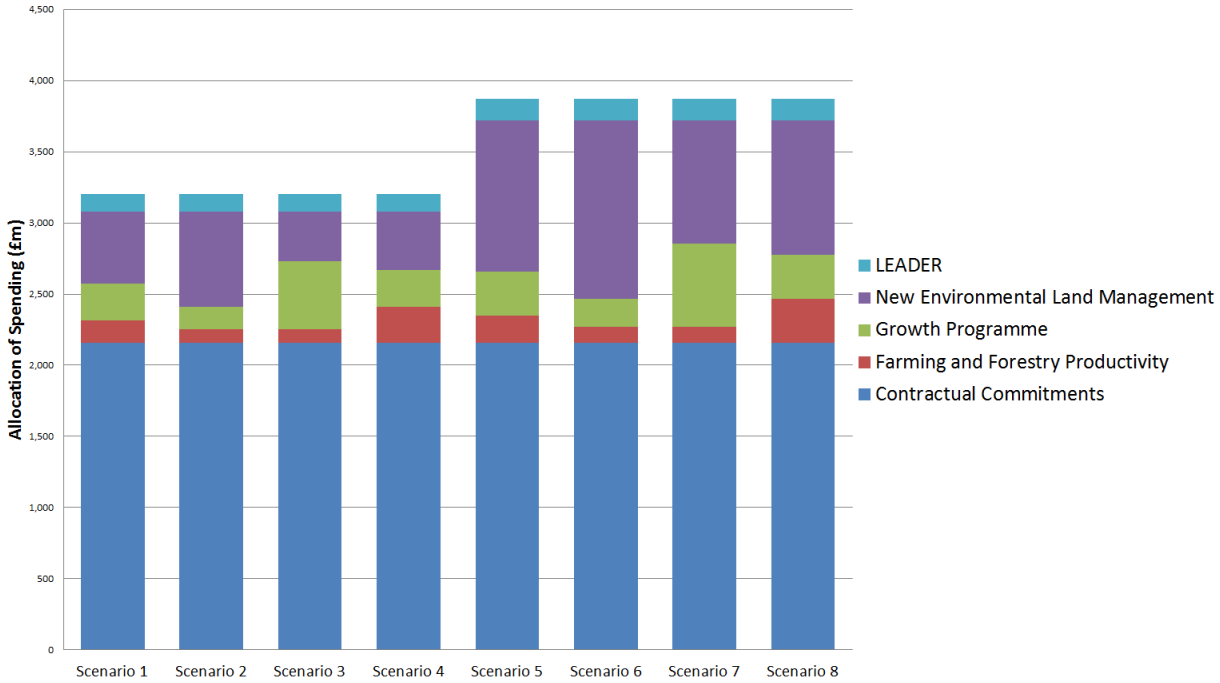
- Balance as now (15%). The balance of spend across broad uses of funds would remain in the same proportions as the current programme: 83% environmental land management; 5% farm and forestry productivity; 8% general rural growth; and 4% LEADER.
- More environmental focus (15%). This increases the balance of spend on new environmental land management schemes: 88% environmental land management; 3% farm and forestry productivity; 5% general rural growth; and 4% LEADER.
- More rural growth focus (15%). This increases the balance of spend on rural growth: 78% environmental land management; 3% farm and forestry productivity; 15% general rural growth; and 4% LEADER.
- More farm and forestry productivity focus (15%). This increases the balance of spend on farm and forestry productivity: 80% environmental land management; 8% farm and forestry productivity; 8% general rural growth; and 4% LEADER.

Table 1: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario Spending Allocations	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Chart 1 displays relative allocations of budget for each scenario analysed in this Impact Assessment. It demonstrates the increase in budget for 15% Pillar 1 to Pillar 2 transfer scenarios compared with the 9% Pillar 1 to Pillar 2 transfer scenarios.

Chart 1: Allocation of Spending Under All Scenarios



Conclusions

The cost benefit analysis in this assessment suggests that the baseline scenario and all the additional scenarios have positive net benefits. It is therefore worthwhile to have a Rural Development Programme and, indeed, to go beyond the minimum scenario. Table 2 shows the do minimum baseline scenario and the benefits and costs associated with it.

Table 2: Summary of Cost Benefit Analysis Baseline Option 0 (£m, 2012 prices)

Option	Option	PV Benefits	PV Costs	Benefit Cost Ratio	NPV
0	Do Minimum Option	7,341	2,193	3.35	5,148

Table 3 shows the benefits and costs of all eight scenarios that are incurred over and above the baseline scenario.[2] Thus scenario 5 has the benefits of £4,956 million in addition to the baseline £7,341 million of benefits from option 0.

Table 3: Summary of Cost Benefit Analysis All Scenarios (£m, 2012 prices)

Scenario	Scenario	PV Benefits	PV Costs	Benefit Cost Ratio	NPV
1	Balance as now (9% transfer)	2,773	1,257	2.2	1,516
2	More environmental focus (9% transfer)	2,885	1,142	2.5	1,743
3	More rural growth focus (9% transfer)	2,866	1,360	2.1	1,506
4	More farm and forestry productivity focus (9% transfer)	2,615	1,332	2.0	1,283
5	Balance as now (15% transfer)	4,956	2,010	2.5	2,947
6	More environmental focus[3] (15% transfer)	5,089	1,867	2.7	3,222
7	More rural growth focus (15% transfer)	5,080	2,140	2.4	2,940
8	More farm and forestry productivity focus (15% transfer)	4,762	2,102	2.3	2,661

Wherever possible, information about costs and benefits of all scenarios has been monetised in line with Impact Assessment and HM Treasury Green Book guidance, reflecting a combination of market and non-market values. However, the robustness of monetary estimates of benefits varies across different areas depending on the quality of the evidence available. Existing evidence was sufficient to produce

[2] The scenario estimates have each been adjusted to take account of the agriculture producer loss resulting from either a 9% transfer of funding from Pillar 1 to Pillar 2 (resulting in a £66 million present value cost) or 15% transfer of funding from Pillar 1 to Pillar 2 (£100 million present value cost). The baseline scenario assumes a zero per cent transfer for the purposes of the incremental analysis, which is consistent with the CAP reform consultation.

[3] Agri-environment schemes are estimated to deliver the highest benefits per pound of expenditure among the broad categories of interventions for which budget allocations are varied across scenarios. As a result, overall benefit cost ratios for the alternative scenarios tend to increase with the share of agri-environment expenditure as a percentage of total scenario costs. They therefore increase in the move from 9% to 15% transfer as well and in the more environmental focused scenarios.

reasonably good estimates of the possible benefits associated with a spread of specific interventions relevant to land management and agri-environment. At the other end of the spectrum, robust evidence of the impacts of RDPE on farm and forestry productivity and wider rural growth is particularly limited. We typically have data on jobs created, or number of individuals trained, which allow for limited appraisal of benefits of rural growth measures. However, the problem is more acute for farm and forestry productivity where measures aren't designed to create jobs. There are also gaps in the availability of monetised estimates of the full range of environmental, social and economic benefits of the programme. The main categories of non-monetised benefits we have identified include:

- wider benefits of agri-environment schemes in relation to helping meet statutory and international obligations on habitats and biodiversity, also possible benefits in relation to improvement to the historical environment at archaeological sites;

- possible windfall benefits for local economies of interventions aimed at maintaining and improving historical heritage and landscape character;

- broader benefits from woodland creation and woodland management beyond the monetised benefits of biodiversity/landscape improvement, carbon storage and employment. These broader benefits (e.g. recreational access, increased habitat connectivity; flood prevention) are contingent upon geographical location and are not captured in available stated preference surveys of the value of forestry in the UK, which focused on non-use value of biodiversity and landscape improvements; and:

- broader socio-economic benefits associated with socio-economic interventions targeting rural communities, for example in relation to improvement of basic services and community renewal.

Overall benefit to cost ratios will therefore generally underestimate the total benefit of the scenarios analysed in this Impact Assessment. Our key findings were as follows:

- the benefit to cost ratios for scenarios 1 to 8 are all positive, suggesting that there is a net benefit in having a Rural Development Programme and in going beyond the minimum;

- each of the 9% transfer scenarios has lower benefits and lower costs than their respective 15% transfer scenario. The benefits therefore increase the greater the level of transfer;

- all the potential areas of focus in the Rural Development Programme could deliver net benefits in principle, providing that activities are properly targeted and address clearly identified market failures;

- the benefit to cost ratios of the scenarios that have more focus on environmental land management come out highest. However, the evaluation evidence on the impacts of different Rural Development Programme activities, which underpins this Impact Assessment, is of variable quality and is particularly weak on the impacts of measures aimed at supporting farm and forestry productivity, while the potential differential impact of delivering rural growth funding through Local Enterprise Partnerships cannot be monetised at this stage; and

- these results (also in the light of sensitivity analysis) suggest that more weight should be placed on the overall findings about the benefits of different levels of expenditure on the programme, rather than on the findings about the relative merits of scenarios with a different focus. It is also worth noting that the broad objectives for the new Rural Development Programme could not be delivered by focusing the funding on one element, even if that had the highest benefit to cost ratio.

This is a consultation stage Impact Assessment, meaning that we welcome additional evidence that will help to inform and strengthen the evidence base for the final Impact Assessment. In particular, information on the benefits and costs of RDPE scheme components, or comments on the methodology adopted in this Impact Assessment, would be useful.

2. Problem under consideration

The EU Agricultural Council in June reached political agreement on the new Common Agricultural Policy Reform regulations for the period 2014 to 2020, following two years of negotiations. These include the basis for the new Rural Development Programme for England. Although these regulations need to be agreed formally within the European Parliament this autumn, the agreement provides more certainty on the regulatory framework underpinning the new programme.[4] The UK government will be obliged under the new Common Agricultural Policy to have a new Rural Development Programme in England up to 2020. The EU rules will allow flexibility to design and implement a programme to best suit the domestic needs and opportunities for rural England. The problem under consideration is to assess costs and benefits for the potential focus of the new programme and the size of the budget.

The new programme is a major opportunity for the UK government to invest in the rural economy and the environment in England. It will be integral to fulfilling important aims and commitments leading up to 2020, building on the achievements of the current programme in a more targeted way to secure optimum impact and long term strategic gains within the available budget. The government's ambitions for the new Rural Development Programme are:

a) promoting strong rural economic growth;

b) improving the environment: this includes helping to ensure that by 2021 the natural environment is improved as set out in the Natural Environment White Paper; and

c) increasing the productivity and efficiency of farm and forestry businesses, in order to improve their competitiveness and reduce the reliance of farmers and land managers on subsidies.

The size of the budget involves a decision on how much money to transfer from the direct payments budget to the rural development budget.

The new Rural Development Regulation outlines six priorities (with focus areas under them) for the EU on rural development, of which Member States must aim to meet at least four. The six priorities are:

1) fostering knowledge transfer and innovation in agriculture, forestry, and rural areas;

2) enhancing farm viability and competitiveness of all types of agriculture in all regions and promoting innovative farm technologies and sustainable management of forests;

3) promoting food chain organisation, including processing and marketing of agricultural products, animal welfare and risk management in agriculture;

4) restoring, preserving and enhancing ecosystems related to agriculture and forestry;

5) promoting resource efficiency and supporting the shift towards a low carbon and climate resilient economy in agriculture, food and forestry sectors; and

6) promoting social inclusion poverty reduction and economic development in rural areas.

Under the regulation Member States must also consider the cross-cutting objectives of climate change adaptation and mitigation, innovation and the environment.

Common Agricultural Policy uncertainties and assumptions

[4] A formalised deal depends on final agreement over the EU budget for 2014 to 2020 (the Multi-annual Financial Framework). The Multi-annual Financial Framework was provisionally agreed by the Prime Minister and other Heads of government in February 2013, with a further deal done at the end of June. The Multi-annual Financial Framework deal includes the flexibility to transfer up to 15% from Pillar 1 to Pillar 2 of the CAP, and no obligation to co-finance this transfer from national funds.

At this stage in developing the new programme for England, the Common Agricultural Policy budget is still to be confirmed. This means there are uncertainties around the amount that will be allocated to the UK and how this amount will be split between England, Scotland, Wales and Northern Ireland. For the purposes of modelling in this Impact Assessment, it is expected that the UK allocation for Pillar 1 and Pillar 2 will be £17.8 billion and £1.84 billion respectively over the new programme period. This assessment assumes that £1.216 billion Pillar 2 will be allocated to England and that a 15% transfer of Pillar 1 to Pillar 2 would amount to £1.889 billion. It does not prejudge the eventual decision on allocations. This Impact Assessment will be updated in line with the final decision on the allocation of CAP funds within the UK. Annex A sets out the key assumptions used in this analysis.

3. Proportionate analysis

This section outlines the evidence that has been drawn on in analysing the impact of the scenarios.

Basis of evidence

Costs and benefits are derived from evidence on the scale, duration and potential distributional impacts of the current Rural Development Programme for England (2007 to 2013). These costs and benefits have been monetised, as far as possible. Where this has not been possible, qualitative discussion and relevant indicators of costs and benefits have been included. The quantitative analysis used is in the form of benefit to cost ratio estimates: these come from the work of Defra economists as well as external consultants commissioned by the department.

The evidence base will be strengthened when the ex-post evaluation of the current Rural Development Programme for England is completed by 2014. In addition, a mid-term evaluation of the new Rural Development Programme is a requirement of the EU Commission and this will provide evidence to inform a post-implementation review.

The analysis of the monetised benefits of current RDPE projects is based on a number of evaluation sources. Primary sources include: administrative data held on the RDPE Online Database which has been used to derive estimates of gross value added from number of jobs created by different programmes; a mid-term evaluation report by ADAS-Hyder; an Impact Assessment of LEADER; and a body of evaluation evidence for agri-environment schemes. Details of how these sources have been used to derive benefit to cost ratios for each scenario are provided in Section 11.

Box 1: The current Rural Development Programme for England (RDPE) (2007 to 2013)

The current programme aims to safeguard and enhance the rural environment (with Environmental Stewardship – a scheme which pays farmers and other land managers to deliver effective environmental management on their land – a major component of the programme), improve the competitiveness of the agricultural and forestry sectors and foster competitive and sustainable rural businesses and thriving rural communities. It operates across three main Axes:

Axis 1 improving competitiveness of the agricultural and forestry sector;

Axis 2 improving the environment and the countryside; and

Axis 3 improving quality of life in rural areas and helping the diversification of the rural economy.

A small proportion is delivered through applying the LEADER approach which is a community development model for rural areas, which is often referred to as **Axis 4**.

The total budget for the current programme is £3.8 billion, which is made up of around £2.6 billion of EU funding and £1.2 billion of UK Exchequer funding. The balance of funding is calculated from the co-financing rates of the EU funds and the amount spent under each Axis. In England, 9% of Pillar 1 funds were voluntarily transferred to Pillar 2 for 2013. The rate of transfer during the current programme varied between 9% and 14%; on average, the rate of transfer over 2009-2013 was 12%.

An ex-post evaluation is due to be completed by 2014 which is expected to provide further evidence that will strengthen the final Impact Assessment.

Box 2: LEADER

The LEADER approach is a delivery mechanism under the Rural Development Programme. It uses local knowledge to promote an integrated "bottom up", community-led delivery of Rural Development Programme funding. In England it is being implemented by Local Action Groups and is targeted to rural areas with particular needs or priorities. The rationale for this is the belief that LEADER offers an added value compared with traditional top-down implementation. These benefits accrue through mobilisation of local potential, identification of local problems and increased responsiveness.

Gaps in evidence

There are some gaps in evidence on the current programme. The most substantial gap occurs in understanding the impacts of investment spent on Axis 1 and Axis 3 funding (socio-economic). The latter relates to priority 6 in the new EU Rural Development Regulation.

This gap in reliable evidence has been influenced by certain factors in the implementation and delivery of the current programme. It began delivering late and the European Commission requirement to conduct a mid-term evaluation in 2010 meant that socio-economic activities had not begun to take effect by the time evaluations were carried out. Another contributing factor was the disbandment of the Regional Development Agencies in 2011 and transfer of delivery to Defra's RDPE Delivery Team, along with the development of a new range of nationally consistent schemes as part of the rural economic growth review. This significant change in delivery has meant there has not been one consistent programme to evaluate since 2007.

The RDPE Online Database focuses on monitoring spend on outputs rather than collecting information on wider socio-economic impacts. A study by the Countryside and Community Research Institute (CCRI) was commissioned to develop a new method of valuing the outputs from the RDPE Online Database to derive an overall Social Return on Investment (SROI) estimate of RDPE measures. A draft final report has been received and has been used in part to estimate the benefit to cost ratios of Axis 1 in this Impact Assessment. However, the methodology is experimental and based on four case study regions. We are currently commissioning a new nationally representative survey of RDPE beneficiaries, which will develop this method further and is expected to report in summer 2014. The CCRI report has also provided qualitative process evaluation to inform how programme delivery can be improved.

Targets for the new programme have not been established to date so the analysis has relied on information relating to the current programme as the best available.

4. Rationale for intervention

Introduction

This section sets out the rationale for government intervention that underpins the new Rural Development Programme for England (2014 to 2020) looking in turn at legal obligations, market failures, and wider government objectives.

Legal obligations

Article 7 of the new Rural Development Regulation outlines the legal requirement for England to have a new Rural Development Programme up to 2020. The regulation sets out the broad priorities, cross-cutting themes and the measures to be used in the programme. It requires Member States to spend at least 30% of their EU rural development funding on environmental land management measures and at least 5% on LEADER projects. The government is thus required to have at least this level of programme.

In addition to the legal obligation to have a minimum Rural Development Programme, contractual obligations from existing multi-annual agreements (agri-environment and forestry) entered into during the current programme (or transition period up until 2015) also need to be met. These existing obligations will consume £2.16 billion of the budget from the new programme. This will amount to around 67% and 56% of the total possible budget under the 9% and 15% transfer scenarios respectively. Managing these agreements to completion will require continued resources from Natural England.

Various other government legal obligations, such as the Birds, Habitats and Water Framework Directives can also be supported through interventions in the new Rural Development Programme. Many of the obligations are inter-connected, for example meeting water quality standards has positive impacts on biodiversity, benefiting birds as well as habitats. Other obligations include the Ramsar Convention, Wildlife and Countryside Act (Sites of Special Scientific Interest, SSSIs) and Convention on Biological Diversity.

Market failures

There are a wide range of market failures in the rural economy which limit private sector investment in environmental services and infrastructure. A market failure occurs when the market does not allocate resources to generate the greatest social welfare. Common forms of market failure include externalities and the presence of public goods (i.e., of goods which are non-excludable and non-rival). [5] These will typically introduce a gap between the optimal provision of relevant goods and services and what the market is prepared to deliver at prevailing market prices.

In the case of the Rural Development Programme the overarching market failure is the presence of environmental externalities (both positive and negative) associated with land-based activities. However, market failures can also hamper take up of new technologies, the development of skills and generally hold back the performance of the rural economy. The Rural Development Programme seeks to address these market failures by encouraging land managers to invest more in the provision of environmental (or ecosystem) services and by promoting investments in technology, skills and infrastructure. These actions in turn often have spill over benefits on wider sectors that are important for the rural economy, such as tourism.

The following sub-sections look at relevant market failures as they relate to the environment, farm and forestry productivity and rural growth objectives of the new Rural Development Programme.

[5] In an economic sense public goods are goods that are non-excludable and non-rival. A good is non-rival if the consumption by one person does not diminish the ability of others to consume it. A good is non-excludable if a person cannot be excluded from consuming that good. Public goods that exhibit both characteristics (e.g. a pleasant rural landscape) are pure public goods.

Environment

There are two principal categories of market failures which can be addressed through agri-environment and forestry schemes within the new Rural Development Programme: the provision of public goods and the mitigation of negative externalities associated with land management activities (farm and forestry).

Since the 1940's agricultural mechanisation and intensification has led to a 40% increase in the area of land under crops in England. However, the emphasis on agricultural production to meet human needs for food and fibre (all of which are rewarded in the market) has compromised other aspects of the countryside and services that are not rewarded by the market, particularly those related to biodiversity and air, soil and water quality. These long-term trends have been highlighted by the National Ecosystem Assessment, which also notes that over 40% of priority habitats and 30% of priority species are in decline.[6]

Well managed forests can also provide a wide range of non-market benefits in addition to wood timber: from carbon storage to flood alleviation to opportunities for outdoor recreation. The importance of these benefits has been highlighted by the National Ecosystem Assessment (and more recently, the report by the Independent Panel on Forestry).

Finally, land based activity also produces negative externalities. For example the application of fertiliser to increase farm yields also has second-order negative environmental and economic impacts. Fertiliser can run-off into watercourses, increasing the treatment costs to water companies and negatively impacting on the wider ecosystem. Agricultural activities also produce greenhouse gases through cropping and the rearing of livestock.

Agri-environment schemes and measures to incentivise creation of new forests or bring forests into management can help tackle negative externalities and realise the broader non-market benefits of environmentally focused farm and forestry activities.

Farm and forestry productivity

The Rural Development Programme provides a solution to addressing a range of market failures in the farm and forestry sectors, specifically in relation to investment in new technology, skills, infrastructure, information and advice.

Innovation is one of the key drivers of productivity growth in agricultural businesses, alongside the adoption of new technologies and cost reductions as a result of economies of scale.[7] Due to 'spill over effects' whereby the full benefits of research and development expenditures cannot be appropriated by individual private investors, there is a role for government in funding public research and development programmes. In the agricultural sector, UK productivity has been in decline relative to its major competitors for the past three decades, and there is evidence that a lack of expenditure on public research and development is one of the causes for this.[8] The UK Agricultural Technologies Strategy aims to address this, through an additional £160 million match funded spend on applied and translational research and infrastructure, amongst other measures.

There may be further market failures which prevent the spread of innovation from 'early adopters' through the industry. These could include lack of information about the benefits of new technologies and processes, and network externalities whereby farmers' isolation from other innovative businesses prevents them from taking up collaborative opportunities. This provides a rationale for government intervention to provide or subsidise 'club goods' such as discussion groups, cooperatives, meeting

[6] Available at: http://uknea.unep-wcmc.org/

[7] *Fostering Competitiveness and Innovation in Agriculture*, OECD, 2011

[8] *Causes and constraints,* Thirtle and Holding, 2004

infrastructure or networking opportunities in order to stimulate the spread of innovation. However, it should be noted that there is also 'government failure' in this area, whereby existing subsidies retain low performing businesses in the market, blunting the incentive for these farmers to adopt the successful innovations of the top performers.

Due to spill overs of knowledge and skills around the economy, it is unlikely that the full benefits of investing in education and training are captured by the individual or firm. There is also evidence that improved skills levels enable firms to generate and adopt new innovations.[9] This provides a rationale for government support to improve the level of human capital in the economy, including the skills and education of farmers. However, as elsewhere, this must be weighed against the risk of 'crowding out' private sector activity in the market for knowledge.

Rural growth

Businesses in rural areas make a substantial contribution to the national economy. Gross valued added from predominantly rural areas was £211 billion in 2010 (19% of the total for England) and rural areas provide around 20% of England's employment. Recent population trends suggest that the importance of rural areas to national growth will continue to grow.

Despite their strong economic performance, the Rural Economy Growth Review identified a remaining gap in productivity between rural and urban areas.[10] One of the fundamental differences is that rural areas tend to be more distant from concentrated economic activity and the associated productivity benefits (or agglomeration economies) for businesses. These benefits include knowledge transfer, thick labour markets, and access to supplier and customer markets. A consequence of being at distance from agglomeration is that knowledge transfer is weaker, labour and skills are more sparsely spread, and upstream and downstream markets are more difficult to access.

Investment in infrastructure (such as accessibility to broadband internet connection) can increase agglomeration economies for rural businesses to a level that is comparable to that enjoyed by businesses located in more densely populated areas. However, positive externalities from agglomeration are not factored into market decision, so there is a case in principle for government support.

Specific market failures can also act as barriers to growth in other sectors of rural development such as tourism. A Deloitte report suggests the 'free rider' problem inhibits growth in the visitor economy.[11] Individual businesses such as hotels in a rural town may consider other accommodation providers as competitors for business, rather than as complementary suppliers to a global market for tourism. As a result, individual accommodation providers are unlikely to invest in marketing a destination (town, region or country) as opposed to their own business within that place and there is little incentive for individual businesses to join-up and market the area for the common good if others can benefit for free from their actions. By contrast, support from destination management organisations can enable better coordination of marketing activity to advertise what the region offers on the whole and attract more visitors, bringing benefits to the wider sector

Defra policy aims and commitments

Defra priorities are growing the rural economy, improving the environment and safeguarding animal and plant health. The government has made a number of policy commitments that Rural Development Programme funding can potentially be used to help meet. These include: Biodiversity 2020; Natural Environment White Paper (NEWP); the Lawton Report; government Forestry and Woodlands Policy

[9] UK Commission's Employer Skills Survey, 2011

[10] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/86100/Rural_Economy_Growth_Review.pdf

[11] The Economic Case for the Visitor Economy. Deloitte, 2008

Statement, January 2013; The Forestry Skills Action Plan; European Landscape Convention; Uplands Policy Review, 2011; Farm Regulation Task Force, 2011; Water White Paper; and the National Ecosystem Assessment. The Rural Development Programme can also play a role in supporting the government's statement on the Historic Environment for England.

Other government policy objectives

The government has committed to put a proportion of rural development funding via the EU Structural and Investment Funds Growth Programme to support general rural growth that enables thriving rural communities. This will incorporate the European Regional Development Fund (ERDF), the European Social Fund (ESF) and some funds from the Rural Development Programme. Further information on the EU Structural and Investment Funds Growth Programme is available in Defra's status report on the new Rural Development Programme of 12 August 2013[12] and guidance issued to Local Enterprise Partnerships.[13]

Needs assessment of rural England

The various drivers outlined above provide rationale for developing some kind of Rural Development Programme, but further evidence about what should (and what should not) fall in scope has been considered. Opportunities to achieve public goods, address specific market failure issues and tackle barriers to growth only where it falls to the government to intervene are identified in the Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis and the needs assessment of rural England. A summary of interim findings from our ongoing SWOT analysis is provided in the CAP Consultation Document and will be published as part of the Programme Document. Key points are provided in the Box 3.

[12] Status report available at: https://www.gov.uk/Government/publications/cap-reform-in-england-status-report-on-the-new-rural-development-programme.

[13] Local Enterprise Partnership guidance available at: https://www.gov.uk/Government/publications/european-structural-and-investment-funds-strategies-supplementary-guidance-to-local-enterprise-partnerships

Box 3: Key findings from the SWOT analysis of rural England: opportunities for the new Rural Development Programme

Restoring, preserving and enhancing the rural environment

Interventions through previous programmes have had some success in reversing declines in some habitats, limiting the decline in some species and in maintaining important landscapes and rural cultural heritage. In 2013, 96% of Sites of Special Scientific Interest (SSSIs) were considered to be in favourable or recovering condition compared with 72% in 2007, largely thanks to using agri-environment as a remedy. Research has also shown positive impacts on key farmland bird species, particularly through the provision of winter food.[14]

Despite this much remains to be done. Most farmland species have failed to recover from many decades of decline and there remain ongoing diffuse and point source air and water pollution issues. The England Biodiversity indicators show that 4 out of 12 of the indicators are declining, whilst 2 are increasing and 5 are stable.[15] In addition, 93% of habitat specialist butterflies and 76% of all butterflies have declined since the 1970's[16] because of habitat deterioration resulting from a combination of neglect and intensification.[17] 60% of England's flowering plants, predominantly species of nutrient-poor areas, are also declining, with 29% decreasing strongly.

Clean water is vital to securing economic benefits for agriculture and other sectors, meeting human health needs, maintaining viable ecosystems, and providing societal benefits, such as the recreational, visual amenity, and cultural values society attaches to water systems.[18] There is good evidence that farmers are using fertilisers and manures more efficiently and effectively, particularly on grasslands (arable remains little changed), with average nitrogen application rates of nitrogen falling from 147kg/ha in 1987 to 95kg/ha in 2008. Average phosphate use reduced by half to 20kg/ha between 1983 and 2008. However, problems remain. According to Environment Agency figures in late 2011, pollution from agriculture is cited as the likely cause in 33% of known failures (nutrients, BOD/ammonia, sediment, morphology) to achieve good ecological status for water bodies in England. There are 154 Sites of Special Scientific Interest (16440.14ha) with a diffuse water pollution remedy required.

Soil degradation in England (in the form of erosion, compaction and loss of soil organic matter) was estimated to cost £1.2 billion in Defra commissioned research using an ecosystem services approach. Land managers do not always have the knowledge or expertise required to identify soil degradation, understand what action to take, or how to implement it. Soil is an important store of carbon which, if released (as a result of poor soil management or otherwise), would have a seriously detrimental impact on the UK's greenhouse gas emissions. Recent evidence has suggested that average soil organic matter content has declined across all land uses in England and Wales.[19] By restoring some habitats such as woodland, grasslands or bogs, or promoting active accretion of sediments in intertidal systems, land and marine managers can help mitigate the causes of climate change by directly reducing greenhouse gas emissions, safeguarding carbon stores and in some cases re-starting sequestration.

[14] Landscape-scale responses of birds to agri-environment management: a test of the English Environmental Stewardship scheme, *Journal of Applied Ecology*, Baker et al., 2012

[15] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/86545/England_Biodiversity_indicators_2012_FINALv2.pdf

[16] Thomas, J. A. (2010) 'Butterflies'. In Maclean, N. (Ed.). *Silent Summer: the state of wildlife in Britain and Ireland.* (pp. 430 - 447).

[17] Fox, R., Brereton, T. M., Asher, J., Botham, M. S., Middlebrook, I., Roy, D. B., & Warren, M. S. (2011). *The State of the UK's Butterflies.* Butterfly Conservation and the Centre for Ecology & Hydrology, Wareham, Dorset.

[18] Sustainable management of water quality in agriculture: OECD trade and agriculture directorate environment directorate, August 2011.

[19] Bellamy P. H., Loveland P. J., Bradley R. I., Lark R. M., & Kirk G. J. D. (2005) Carbon losses from all soils across England and Wales 1978–2003, *Nature*, 437, 245-248

Productive and competitive food, farming and forestry

The Rural Development Programme provides an opportunity to accelerate the 'diffusion' of innovation through the agricultural sector through cooperative activities such as training, discussion groups and demonstration activities, as well as by giving farmers the opportunity to influence the research agenda. Better trained, more highly qualified farmers tend also to be more innovative and receptive to innovations.

There is also an opportunity to improve the 'churn' of farmers currently dampened by farm subsidies, by working with farmers to support effective succession of businesses and the success of new entrants in building their businesses in the early years. Improving farmers' levels of risk management would further encourage long term thinking, and reduce the reliance of the sector on the government to compensate for adverse natural events such as disease outbreaks. These interventions could also contribute to improved resource efficiency, which could bring both environmental and economic gains.

Rural growth and rural quality of life

The rural population in England performs relatively well on many socio-economic indicators, including lower levels of unemployment and poverty. Businesses in rural areas make a substantial contribution to the national economy. In England they generate around 22% of employment and 19% of gross value added.[20] However, rural areas face some specific barriers to growth, including lack of access to high speed internet connection, lack of access to skilled workforce and distance to markets. Rural populations face disadvantages including higher average house prices and higher levels of fuel poverty in comparison to urban areas, and a lack of access to key services and local amenities.[21] The new Rural Development Programme can play a key role in addressing these barriers to ensure rural areas can continue to contribute to national growth.

[20] Statistical Digest for Rural England, Defra, 2013.
[21] See above.

5. Scope of new programme

Ministers have yet to decide on exactly how the Rural Development Programme funds will be used or the detailed design of schemes that make up the new programme. In developing the scenarios for the proportional balance of spend, we have made some assumptions about what might be funded. The broad areas are: environmental land management; farm and forestry productivity; rural growth; and the LEADER approach. Additional areas that cut across these are: innovation; skills and advice; and water.

Environmental land management

The environmental land management measures in the new Rural Development Programme will be the primary source of government funding over the next 7 years to help secure delivery of environmental objectives on agricultural land, including the England Biodiversity Strategy 2020 targets, delivering the Lawton vision of better, bigger and more connected habitats and engaging people with the natural environment. Compared with the current Environment Stewardship schemes, it is likely that an increased level of priority will also need to be given to the soil and water agendas, in particular meeting our obligations under the Water Framework Directive. There is opportunity, in addition to biodiversity and water, to take account of landscape, historic environment, educational access and genetic conservation interests.

Farm and forestry productivity

Farm and forestry productivity activities could support businesses in becoming more productive, efficient and resilient. This could involve encouraging farm and forestry businesses to innovate and maximise opportunities for co-operation across the supply chain. Interventions in the new programme could also aim to improve businesses' ability to respond to market demand and increase their competitiveness, ultimately encouraging rural growth. We could look to deliver a range of activities designed to:

- improve the productivity of a farm or forestry business;
- improve the standard of animal health and welfare;
- improve bio-security, particularly in relation to plant health;
- encourage improved resource efficiency. This could include, for example, water related activity such as improving rural water courses, farm reservoirs and drainage;
- encourage professional development in farm and forestry businesses, such as business management, resilience and risk awareness;
- foster competitive and sustainable agriculture by bringing together researchers and farmers to apply technologies on farm and exchange knowledge;
- encourage and facilitate businesses to undertake benchmarking;
- provide support for new entrants in the early years of their business; and
- increase the efficiency and sustainability of supply chains.

Rural growth and communities

Growth funding would be directed through the European Structural and Investment Funds Growth Programme, with Local Enterprise Partnerships setting out how it should be spent. The precise allocation mechanism is still to be finalised. The government has said Rural Development funding will be available through the Growth Prgoramme for:

- support for small-medium-enterprises and micro-enterprises, including business skills and advice;
- support for broadband and renewable energy in rural areas; and

- support for tourism in rural areas.

In addition, in order to improve the rural quality of life and promote sustainable development, support for socio economic activities for the benefit of rural communities will also made be available where this helps to deliver jobs and growth. Subject to budgets, this could include support for basic rural services, village infrastructure, culture and heritage – delivered through the LEADER approach.

Advice

Defra's Review of Advice, Incentives and Partnership Approaches (AIPA),[22] published in March 2013 ('the Review'), addressed two commitments made in the Natural Environment White Paper (18 & 20) and recommendations from the Macdonald Farming Regulation Task Force,[23] to streamline the way advice is currently delivered to farmers and land management businesses. The Review also includes an assessment of the effectiveness of industry-led and other partnership approaches, such as the Campaign for The Farmed Environment. The Review sets out a number of key deliverables to help ensure that advice is delivered to the right people, at the right time and provides greater value to the taxpayer. A key conclusion was that different elements of government-supported advice could be combined to allow advisers to provide advice on a number of different policy objectives and areas at the same time.

The integration of procurement covering a number of Rural Development Programme and other schemes would deliver cost-savings and better uptake by farmers through the sharing of training materials, as well as reduced overlap. Details on costs and benefits have yet to be confirmed. Detailed proposals will only be possible once the initial scoping of advice required by the new Rural Development Programme is confirmed. These are likely to cover advice for incentive schemes such as new environmental land management schemes, regulations such as Cross-Compliance (delivered as part of Farm Advisory Service) and voluntary approaches such as the Campaign for the Farmed Environment.

Skills

In the current programme there is a National Skills Framework. We have assumed that this will continue in some form, although provision for skills might also occur within other schemes delivered under the new Rural Development Programme. For example, a new environmental land management scheme could include a skills offer.

Water

There is potential for a new environmental land management scheme to include agreement options designed to address water quality issues and to be able to target areas that are high risk in water terms, as well as those that are priority in terms of biodiversity. There is also the potential for capital grants for Catchment Sensitive Farming and advice that would be available where needed. In addition, farm and forestry productivity activity could support relevant requirements for wider water resources such as water efficiency, water use and flood risk management, as well as good nutrient management. These options should support increased farm resilience in the face of uncertainty through future climate change impacts.

[22] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/221046/pb13900-review-incentives-partnership-approaches.pdf

[23] Another driver for streamlining advice is the report *'Foresight. The Future of Food and Farming*', The government Office for Science, 2011. Available at: http://www.bis.gov.uk/assets/foresight/docs/food-and-farming/11-546-future-of-food-and-farming-report.pdf

6. Assumptions in analysing the strategic scenarios being considered

Rural Development Programme budgets

In assessing the potential impact of the scenarios we have used the following figures for possible overall Rural Development Programme budgets. These are in cash, or nominal, terms. Annex A sets out the assumptions that underpin the budget scenarios.

Table 4: Total Budget for the New Rural Development Programme (£m, cash terms)

Total budget for new RDP in nominal prices (£m)	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Pillar 1 to Pillar 2 Transfer of 9%	496	452	450	451	451	450	450	**3,200**
Pillar 1 to Pillar 2 Transfer of 15%	496	563	562	563	563	563	563	**3,874**

Rural Development Programme budgets and spending are not adjusted for inflation. This means that over time the purchasing power of the Rural Development Programme budget is eroded by inflation. In the modelling we have therefore assumed that spending is declining in real terms over the new programme. As benefits are produced from spending, which is declining in real terms, the associated benefits also decline. However, administration and delivery costs do not fall in real terms, but as discussed later in Section 9, we assume that delivery administration costs fall by 30% in the new Rural Development Programme. We use Office of Budgetary Responsibility forecasts of inflation along with ONS GDP deflator in the modelling presented in this Impact Assessment.

Intervention rate and allocation of spend

Private contributions from the beneficiaries to Rural Development Programme projects are included as costs in the analysis of benefits and costs under each scenario. Estimates of private contributions have been made using evidence on 'intervention rates' from Defra databases and consultancy work. By intervention rates we refer throughout the document to the amount of government contribution as a proportion of overall investment, with this overall investment including private contributions.

In the modelling in this Impact Assessment, for the purposes of estimating benefits, we assume that:

- training and skills are paid for out of the farm and forestry productivity and Growth Prgoramme budget;
- farm and forestry productivity has an intervention rate of 59% and the Growth Prgoramme has an intervention rate of 57%. Both of these values are based on data taken from the Rural Development Team Online Database;
- spending on woodland creation and woodland management, as well as other forestry interventions, are included in environmental land management;
- there are no private contributions for any of the agri-environment schemes. We have assumed that around 45% of new environmental land management expenditure will go to upper tier schemes, 40% goes to middle tier schemes, 10% to forestry and 5% goes on capital items. These assumptions are purely for modelling purposes at this stage. No decisions have yet been taken with regard to priorities and spending allocations in the new environmental land management scheme for the new Rural Development Programme;

- forestry has an intervention rate of 80%. Based on relative spending in the current RPDE we assume that 65% of spending on forestry is directed at forestry creation and the remaining 35% is directed at forestry management. This split may however be different in the new Rural Development Programme; and
- LEADER projects have a split of 36% public funding and 64% private funding. This assumption comes from the Impact Assessment of LEADER produced by consultants Ekosgen.[24] Using evidence from the same report we have assumed that 57% of LEADER interventions are business support with the remaining 43% going to community support. In practice, the focus is likely to be more towards business support, including farming and growth, in the new Rural Development Programme.

Loans

For some activities, the new programme may make use of loans or other financial instruments in place of the grants that have been used in the current and previous programmes. The exact details of which activities may use these and the extent to which they may be used are yet to be confirmed within the new programme's scheme design. For the purposes of this Impact Assessment we assume that 30% of the funds allocated to the Growth Programme only are distributed in the form of loans.

The use of favourable terms loans or other financial instruments could impact the benefits and costs of the Rural Development Programme. By targeting credit restrictions and/or closing the gap between privately and socially attractive returns on investment, loans may help deliver programme objectives while reducing the level of deadweight loss that can be associated with capital grants, especially where these cover a large share of the investment. On the other hand they may imply higher administration costs, particularly for revolving loans as repayments need to be collected annually. Favourable terms loans are also unlikely to represent powerful incentives to invest where the returns to investment are predominantly public in nature (as even with zero interest loans the amount of the subsidy can cover at most the sole cost of interest payments).

The specific characteristics of how these loans may work are currently unclear. We have made some indicative assumptions to model the impact of moving to loans. We will revisit this modelling in the future when further discussion and decisions on the specific form of these loans has taken place following the consultation for the new programme. The consultation includes a specific question requesting views on how loans or other financial instruments could play a role in delivering the new Rural Development Programme.

The modelling of the impact of loans under each scenario assumes that 30% of funds spent through the Growth Programme are in the form of loans. We assume these loans have a seven year payback period, with 5% nominal interest rate per year. We assume that all beneficiaries pay the money loaned to them back and we assume that all money paid back by beneficiaries is loaned out again to fund further projects under the Growth Programme. The money that is loaned back out accrues further benefits as it is essentially new Growth Programme spending.

[24] National Impact Assessment of Leader, page 35 and 59, Ekosgen, 2011. Available at: http://rdpenetwork.defra.gov.uk/assets/files/Impact%20of%20Leader/National%20Impact%20Assessment%20of%20LEADER.pdf

7. Description of scenarios

This section sets out some of the detailed impacts of option 0 and the eight further scenarios being assessed. It breaks down in detail the committed spending under option 0 and describes how this could impact on a new Rural Development Programme. It then compares spending in the eight further scenarios and describes how each scenario could impact on the broad scheme areas assumed to be funded in the new Rural Development Programme. The provision of budget figures is subject to a number of assumptions, as set out in Annex A.

Option 0 – Do minimum

This is the baseline option used to benchmark the other scenarios, representing the absolute minimum that we must include under the new programme. This includes the multi-annual contractual commitments from the current programme on agri-environment and forestry schemes, which amounts to £2.16 billion. This meets the legal obligation for us to have a new Rural Development Programme and for 30% of the funds drawn from the EU to be spent on environmental land management measures. In addition, this option must incorporate the legal obligation for 5% of EU funds to be spent through the local LEADER approach.

Under this option we would not address the measures in the new Rural Development Regulation. Apart from the LEADER element, it represents running down the Rural Development Programme over the life of the new Common Agricultural Policy, as the contractual obligations from the current programme fall each year. This option assumes that Pillar 1 of the Common Agricultural Policy still exists.

Table 5: Detailed Breakdown of Legally Committed Spending in Option 0 (£m, 2013, cash terms)

Figures in £m	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Forestry creation	31	20	15	12	10	8	6	**102**
Higher level stewardship	188	202	189	172	154	140	115	**1,160**
Entry level stewardship	165	163	116	79	58	48	39	**668**
Organic entry level stewardship	15	15	13	10	8	7	4	**72**
Uplands entry level stewardship	25	26	21	19	17	15	11	**136**
Classics	16	1	0	0	0	0	0	**17**
Total committed (legally binding)	**440**	**428**	**354**	**292**	**247**	**218**	**176**	**2,155**

New environmental land management (Environmental Stewardship)

Under option 0 there is no provision for new environmental land management agreements. Only the contractual commitments with existing agri-environment and forestry agreement holders would be met. Ongoing legal and international commitments would be placed at risk, leaving the UK exposed to an increased risk of infraction proceedings from the European Commission. It could also see a retreat from the progress which has been made after 20 years of investment in environmental measures, as agreement holders exit from their agreements with no prospect of entering a successor scheme. A significant decline in public goods provision might be expected, placing at risk the long term future of many natural assets and ecological services as land managers replace lost income by chasing short

term production goals. There might be no further increase in woodland area and most management of priority woodlands would cease. That management that is undertaken without any support would probably continue, although even this may decline due to lack of investment in harvesting and extraction equipment through farm and forestry productivity schemes. The potential for greater regulation (for example enforcing statutory requirements on Sites of Special Scientific Interest) would increase.

Farm and forestry productivity

Option 0 only meets legal commitments on LEADER and contractual commitments on agri-environment schemes, so there would be no resources available to undertake any other activity in support of farm and forestry productivity.

Growth and rural communities

Option 0 only meets legal commitments on LEADER and contractual commitments on agri-environment schemes, so there would be no resources to undertake any other activity in support of growth or rural communities. Ministers would have to rescind the commitment to channel some rural development funding through the European Structural and Investment Funds Growth Programme.

The LEADER approach

The LEADER approach would deliver 5% of the EU funding component. This is calculated under option 0 at approximately £78 million and 4% of the total budget (EU and Exchequer funding) for Pillar 2. In terms of coverage, LEADER would have to reduce in size from the current extent – either through reducing the number of groups, reducing individual budgets or reducing the length of the new programme.

Scenarios 1 to 8: Summary

In addition to option 0 we consider the following scenarios:

9% transfer

Scenario 1 - Balance as now (9%): 83% environmental land management; 5% farm and forestry productivity; 8% general rural growth; and 4% LEADER.[25]

Scenario 2 - More environmental focus (9%): 88% environmental land management; 3% farm and forestry productivity; 5% general rural growth; and 4% LEADER.

Scenario 3 - More rural growth focus (9%): 78% environmental land management; 3% farm and forestry productivity; 15% general rural growth; and 4% LEADER.

Scenario 4 - More farm and forestry productivity focus (9%): 80% environmental land management; 8% farm and forestry productivity; 8% general rural growth; and 4% LEADER.

15% transfer

Scenario 5 - Balance as now (15%):83% environmental land management; 5% farm and forestry productivity; 8% general rural growth; and 4% LEADER.

Scenario 6 - More environmental focus (15%): 88% environmental land management; 3% farm and forestry productivity; 5% general rural growth; and 4% LEADER.

Scenario 7 - More rural growth focus (15%): 78% environmental land management; 3% farm and forestry productivity; 15% general rural growth; and 4% LEADER.

Scenario 8 - More farm and forestry productivity focus (15%): 80% environmental land management; 8% farm and forestry productivity; 8% general rural growth; and 4% LEADER.

All eight scenarios include the £2.16 billion of contractual commitments as detailed in option 0 above. The relative share of additional expenditure between scheme areas in each of the scenarios is shown in Chart 2 below. Scenarios 5 to 8 have a larger total spend than scenarios 1 to 4, reflecting the increase in transfer from 9% to 15% between Pillar 1 and Pillar 2 under these scenarios. Scenario 5 (15% transfer and 'balance as now' proportions) has a total budget and funding allocation between scheme areas that is similar to the current Rural Development Programme for England, in cash terms. A detailed breakdown of spending under each scenario can be found in Annex B

[25] LEADER represents 5% of EU funding. When national funding is taken into account it represents 4% of the total Rural Development Programme budget.

Chart 2: Allocation of Spending under All Scenarios.

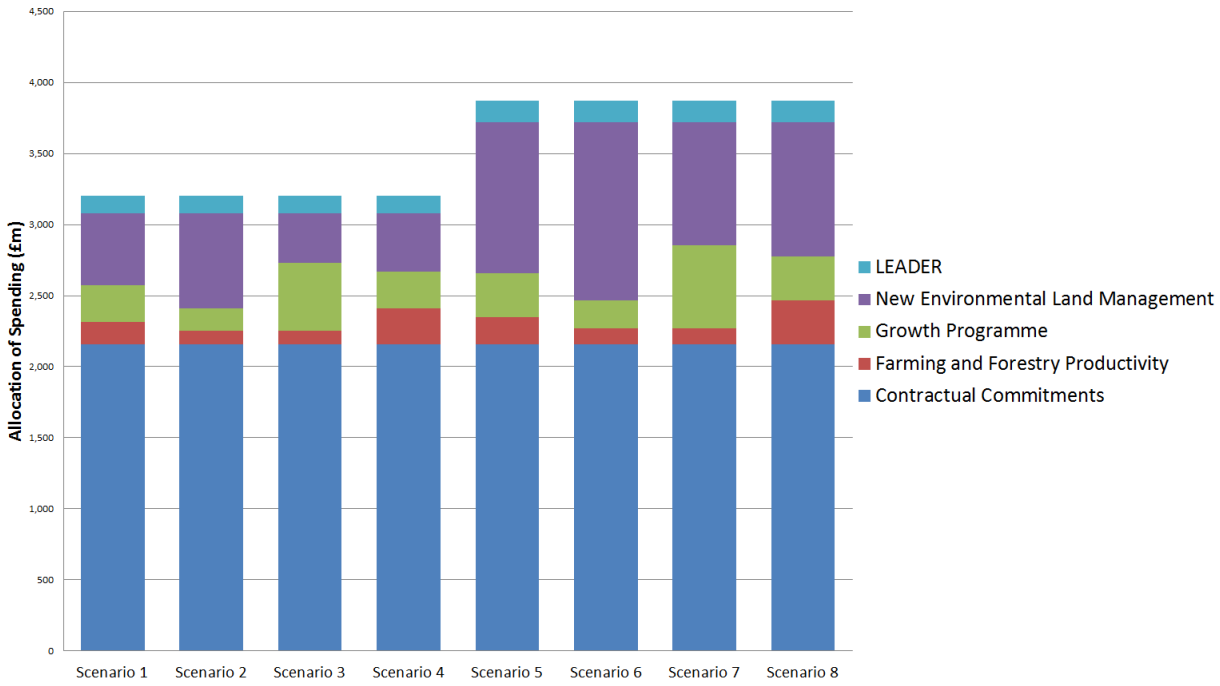


Table 6: Scenario Budget Allocations Excluding the Existing £2.155 Billion of Contractual Commitments for Agri-environment (£m, 2013, cash terms)

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	507	667	347	411	1060	1254	866	944
Farm and forestry productivity	160	96	96	256	194	116	116	310
Rural growth	256	160	480	256	310	194	581	310
LEADER	122	122	122	122	155	155	155	155
Total	**1,045**	**1,045**	**1,045**	**1,045**	**1,719**	**1,719**	**1,719**	**1,719**

Table 7: Scenario Budget Allocations for Environmental Land Management Excluding the Existing £2.155 Billion of Contractual Commitments for Agri-environment (£m, 2013, cash terms)

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	507	667	347	411	1060	1254	866	944

Having only a 9% transfer would impact on the extent to which real improvements in environmental outcomes could take place. It would mean revisiting the relative priorities between creation and management of habitat and forest, as well as where the relative priorities across the range of objectives should lie. It might increase the need to direct funds not otherwise directed at designated or priority sites to those areas where the greatest synergies across the different objectives might be obtained. Scenario 3 would present a stark choice. It would place a significant emphasis on protected sites and priority habitats and consequently on higher tier agreements. The potential for developing bigger, better and more connected areas consistent with the Lawton principles and the rate at which new agreements could be offered would be limited as the headroom would be minimal. To a large extent it would mean servicing current commitments and looking to enhance the outcomes from our existing portfolio of agreements.

All 15% transfer scenarios would provide greater levels of spending on environmental outcomes than the 9% transfer scenarios. Scenario 5 would involve spending on environmental land management in the same proportions as under the current programme. This would provide a clear signal on the continued importance of Rural Development Programme spend to secure public environmental goods from land managers. There would be more scope at the start of the programme to set up new, targeted agreements, than in scenarios with a lower proportion of spend.

In scenario 6, the additional focus of resource would leave environmental land management schemes better placed to meet the challenge set by Natural Environment White Paper and the Lawton Review. The ambitions of Biodiversity 2020 would be more achievable and the new programme would be better placed to support Water Framework Directive and wider policy outcomes for climate change, landscape and the Historic Environment. This means it would be possible to extend the “reach” of the new scheme further than under scenario 5 in terms of the area covered and expenditure for protected areas, priority habitats, and woodland management support. The scope for more landscape scale approaches (supporting the Lawton principles of bigger, better and those that are more connected) would be enhanced relative to other scenarios. It should also be possible to set up new agreements earlier in the programme period benefiting from the larger headroom. This would bring forward benefits expected from new agreements and the scope for meeting targets and obligations over the life of the programme.

Farm and forestry productivity

Table 8: Scenario Budget Allocations for Farm and Forestry Productivity (£m, 2013, cash terms)

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Farm and forestry productivity	160	96	96	256	194	116	116	310

Scenario 5, with a funding allocation of 5% providing £194 million, would have resources broadly equivalent to in the current programme. Activities could be carried out across most farm and forestry productivity objectives. However, because the range of activities in the new Rural Development Programme may differ from the current programme, a particular focus could be placed on those activities using innovative technology or farming practices, or those encouraging co-operation between groups of producers and businesses (not necessarily just primary producers). Of the 9% transfer scenarios, both scenario 2 and scenario 3 would provide a significant reduction in budget in comparison with current levels of funding. These would still involve achieving as many objectives as possible, but might have to concentrate on small grants that demonstrate significant benefits in the areas of innovation and collaboration, with very strong criteria about the degree to which the funding would take businesses above the 'standard farm practice'. Of the 15% transfer scenarios, both scenario 6 and scenario 7 would have to involve scaled back activity in a number of areas when compared with the current programme.

Scenarios 4 and 8 provide the highest level of resources, with a funding allocation of 8% of the budget. This might allow activity in relation to the broadest range of objectives for farm and forestry productivity. Projects could achieve multiple objectives, but there would be greater flexibility to develop schemes that respond to topical current and changing priorities or to target specific groups of farmers at different stages – for example young farmers or specific farming sectors. There could be more investment in innovative projects, which would have potential for a transformative effect on businesses, but which might carry higher risk or have less evidence to guarantee the likely outcome. Support could also be considered for larger, cooperative projects which would require funding of approximately £1 million to £5 million, but would bring benefits to dozens of farmers rather than individual businesses, in addition to an offer of small grant schemes.

Growth and rural communities

Table 9: Scenario Budget Allocations for Rural Growth (£m, 2013, cash terms)

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Rural Growth	256	160	480	256	310	194	581	310

Scenario 2 would provide the lowest level of resource to support rural growth. Thus the extent and range of rural economic support activities would be scaled back in comparison with all other scenarios and in comparison with the current level of funding. This would reduce the extent to which market failures impending non-land based businesses could be addressed, requiring either a narrow focus on a reduced number of activities in LEP areas, or a broader range of activities in targeted areas within individual LEP areas. This would also, we assume, preclude offering any support to rural community priorities.

At the 9% level of transfer from Pillar 1 to Pillar 2 scenario 3 would provide the highest allocation to growth, so we could seek to cover the full range of rural economic growth activities. This could also be possible under scenarios 5 and 8, which provide resources at the same level as the current programme.

This could allow support across the range of rural growth priorities identified, delivering more demonstrable benefits to the wider rural economy.

Under scenario 7 rural economic support activities could be scaled up in comparison with all other scenarios, with a funding allocation of 15% providing £581 million. Of all the scenarios, Scenario 7 includes the largest amount of funding that Local Enterprise Partnerships could direct to address what they identify as the most significant barriers to rural growth in their areas and co-ordinate with their use of other European and domestic funds in rural areas. By making funding dedicated to rural England a more significant part of the overall resourcing directed by Local Enterprise Partnership strategies, it might also increase the rural focus of their work as a whole, or the number of Local Enterprise Partnerships in mixed urban/rural regions that draw upon Rural Development Programme and other funds to undertake specifically rural investments

LEADER

Table 10: Scenario Budget Allocations for LEADER (£m, 2013, cash terms)

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
LEADER	122	122	122	122	155	155	155	155

The LEADER approach would deliver 5% of the EU funding component, which equates to 4% of the total budget for Pillar 2. This is calculated at £122 million for a 9% transfer from Pillar 1 to Pillar 2 and £155 million for a 15% transfer from Pillar 1 to Pillar 2.[26] In all scenarios LEADER could look to cover the full range of growth activities identified, as well as giving a specific focus to farm and forestry productivity and continued activity in support of rural communities. However, in terms of coverage, under the 9% scenarios LEADER would almost certainly have to reduce in size from the current programme – either through reducing the number of groups, reducing individual budgets or reducing the scope of the new programme. Under the 15% scenarios LEADER could look to increase beyond the current level of approximately 70% of rural England, in area and/or population terms and with an increased number of groups.

Overall growth-related activity across scenarios

Direct growth related activity under the new programme will include activities to support growth and rural communities, farm and forestry productivity and LEADER. In addition, environmental land management may deliver some indirect benefits for rural economic development, as studies such as the National Ecosystems Assessment (NEA) have shown. For example, the NEA demonstrated that our coastal wetlands can be valued at providing £1.5 billion annually in benefits through buffering the effects of storms and managing flooding.

Total direct growth-related activity would therefore represent 17% of total expenditure under the balance as now scenarios (1 and 5) and 20% under the farm and forestry productivity focus scenarios (4 and 8). It would represent 12% of expenditure under the environmental land management focus scenarios (2 and 6) and 22% of expenditure under the rural growth focus scenarios (3 and 7).

[26] In the current RDPE the LEADER approach delivers £138 million of funding through a network of 64 Local Action Groups.

8. Methodology for scenarios assessment

The scenarios introduced in the previous section have been assessed using a very wide range of evidence, resorting as much as possible to evaluation evidence from the current RDPE (2007 to 2013).

Option 0 (the do minimum to ensure compliance with existing legal commitments and with the Rural Development Regulations) is the counterfactual against which all other scenarios have been assessed. The costs and benefits of implementing option 0 compared to a hypothetical scenario where any Rural Development Programme activities would immediately cease have also been presented for completeness, but the focus of the analysis is on the incremental impacts of scenarios 1 to 8 over option 0.

Wherever possible, information about costs and benefits of all scenarios has been monetised in line with Impact Assessment and HM Treasury Green Book guidance, reflecting a combination of market and non-market values. The document also presents a broader range of supporting evidence, including qualitative findings on the impacts of the current RDPE.

The quantitative cost benefit analysis has considered the following categories of costs:

- delivery administration costs (i.e. the costs to government of delivering the new Rural Development Programme);

- beneficiary administration costs and policy burden (i.e. the costs incurred by beneficiaries as a result of participating in the Rural Development Programme, including opportunity costs and the private contributions to the costs of projects where relevant); and

- the costs (in terms of loss of agricultural production) from the voluntary transfer of funds from Pillar 1 to Pillar 2 under the 9% and 15% transfer scenarios (compared with the 1% transfer assumed in the do minimum and necessary to comply with the regulations and with legal requirements).

A variety of information and assumption underpins the cost estimates in the analysis, but wherever possible these reflect actual evidence from the current programme provided by the Rural Development Programme team within Defra. Estimates of the costs of lost agricultural production from the Pillar 1 to Pillar 2 transfer reflect modelling for the CAP consultation evidence paper, which is being published alongside this Impact Assessment.

It is important to note that an assumption in estimating the costs to land managers of delivering agri-environment schemes is that the level of subsidy payment they receive exactly corresponds to the resource costs of delivering the agri-environment options. Given participation in these schemes is voluntary some land managers may receive a higher level of agri-environment funding than is necessary to offset the costs of their participation and so earn producer surplus from agri-environment scheme participation. This implies the costs may have been overestimated. More generally participation in the Programme is completely voluntary for businesses, as such the Programme will not introduce any new regulatory burden and does not fall under One In Two Out (OITO) rules.

The analysis of benefits has focused on a thorough review of evidence on the impacts of the current RDPE for different possible areas of intervention in the new Rural Development Programme. This is the case, for example, of agri-environment schemes, which represent the large majority of expenditure under all the scenarios considered in this Impact Assessment. Where formal evaluation evidence was not available, other sources of evidence (both evaluation and appraisal evidence) or ad-hoc estimates based on proxies have been developed. All the key sources and assumptions are set out in Section 11.

This evidence has been used to develop a number of benefit to cost ratios (both ranges and best estimates) for different possible areas of intervention in the new Rural Development Programme, including environmental land management, farm and forestry productivity, wider rural growth activities and LEADER activities. This set of benefit to cost ratios allows us to model the present value of the benefits of alternative scenarios that differ in terms of the scale of programme investment and of its distribution across different activities (each characterised by different expected returns). Annexes C to E provide more detail of the methodology that has been applied wherever benefit to cost ratio estimates have been developed by Defra analysis or have involved significant adaptation of published estimates (as opposed to being simply taken and applied from published report).

An important implicit assumption in this approach is that the new Rural Development Programme will be able to at least replicate the cost-effectiveness of the current RDPE in terms of benefits per pound invested. In fact, learning from the current programme may support an improvement in the cost effectiveness of the new Rural Development Programme. The use of benefit to cost ratios also implicitly assumes that constant returns to scale to investment in different RDPE activities apply across the set of scenarios considered. This seems to be reasonable as an overall working assumption considering the range of funding scenarios that are being considered in relation to the shape and size of the current RDPE, but benefit to cost ratios of marginal intervention can always differ from programme averages.

There are significant uncertainties with estimates of benefits and benefit to cost ratios. Our level of confidence varies across different programme areas. Specifically:

- overall we have rather good evaluation evidence on the benefits of environmental land management and agri-environment schemes, drawing on the Food and Environment Research Agency (FERA) Report in terms of wildlife benefits of agri-environment complemented by additional internal analysis drawn from variety of published sources (e.g. in terms of carbon, air and water impacts valuation);

- the confidence that should be placed on monetised estimates of the benefits of forest creation and management is at best moderate. We can estimate and value carbon benefits reasonably well using established methodologies (i.e. Woodland Carbon Code and Department of Energy and Climate Change (DECC) values of carbon). The same applies to wood fuel benefits. However, in valuing the benefits in terms of landscape/biodiversity we have to rely on proxies and old valuation evidence;

- the available evidence on the benefits of farm and forestry productivity activities in the current RDPE is very limited. The estimates presented in this Impact Assessment should be regarded as illustrative at this stage. They are taken from a forthcoming report by CCRI for Defra and rely on financial proxy approach and reflect interviews with a small sample of beneficiaries and non-beneficiaries;

- monetary estimates of the benefits of rural growth intervention have been developed internally by Defra analysts relying on a variety of evaluation and appraisal sources. They vary in robustness and are sometimes illustrative or preliminary (e.g. in the case of the Rural Community Broadband Fund). The most robust estimates in this area reflect evaluation of interventions focused on job creation, relying on monitoring data from the RDPE Online Database. The forthcoming RDP will deliver these interventions through the Growth Prgoramme. This is an entirely new approach to joining up RDP spending with that from other EU and domestic schemes, with the intention of achieving better co-ordination between them and economies of scope and scale. However, as any such benefits will only be realised in the new programme, the benefits assessment cautiously assumes no improvement upon those achieved by the current programme; and

- as far as LEADER is concerned, monetised estimates of benefits are taken from a recent report by Ekosgen for Defra. The report reflects a thorough methodology but there is uncertainty as to representativeness of the sample compared to the current LEADER programme.

Given the significant uncertainties associated with estimates of benefits and benefit to cost ratios, a sensitivity analysis has been carried out on the net present value and overall benefit to cost ratios of all scenarios to higher and lower bound estimates of 'input' benefit to cost ratios. These results are presented in Section 12. It is however important to note that this sensitivity is unlikely to reflect the full range of uncertainty associated with the estimates and, in particular, it does not address the fact that in many cases the available monetised estimates cover only a subset of the potential impacts of areas of activities in the Rural Development Programme.

Section 9 to Section 11 present more detail on the estimation of both benefits and costs for the purpose of scenario analysis. They also include reference to additional evidence (sometimes quantitative, sometimes qualitative) of the impacts of the current RDPE. While this has not been used for modelling purposes it helps provide a more complete picture of our understanding of the impacts of the new programme.

9. Delivery administration costs

We have included an estimate of government's delivery costs in the analysis of the benefits and costs for each scenario. This is based on current spend and ambitions for achieving efficiency by reducing future delivery costs.

Table 11 shows estimates of annual delivery costs for Defra and the other delivery bodies. Staff costs come from estimates made by the Rural Development Programme team within Defra. The estimate of overheads uses Impact Assessment guidance proxies of 30% of staff costs. This uplift has been applied to wage costs to take account of overheads and employer costs, such as pensions and national insurance, as per the Standard Cost Model from the Department for Business, Innovation and Skills (BIS).

Table 11: Annual Administration Cost Estimates for 15% Transfer (£m, 2012 Prices)

	Staff Costs	Overheads	Additional IT
Natural England	24.6	7.4	11.1
Rural Development Delivery Team	5.1	1.5	
Forestry Commission	1.4	0.4	
Defra	1.5	0.5	
Rural Payments Agency	3.9	1.2	

When analysing administration costs for option 0 and the 9% Pillar transfer scenarios, we have reduced the administration costs in proportion to the overall budget. Only administration costs additional to those incurred in option 0 are included in the benefit to cost ratio estimate.

Administration costs for each body have been assigned to activities as follows:

- Natural England costs have been apportioned based on relative spend to environmental land management;
- Rural Development Delivery Team costs have been assigned to farm and forestry productivity, rural growth and LEADER;

- Forestry Commission costs have been assigned to forestry spending; and
- Defra and Rural Payments Agency costs have been apportioned to each of the activities under RDPE based on relative spend.

We do not model costs associated with the delivering of skills, as at present we do not have estimates of these costs, though we hope that in future iterations of the Impact Assessment this will be possible. This is also true for loans. It would seem likely that there will be additional costs associated with giving Rural Development Programme funds in the form of loans. However at this stage it is too early to quantify this exact cost.

The UK government will implement the new Common Agricultural Policy in England in ways that are as simple, effective and affordable as possible. The ambition is to significantly reduce the steady state running costs of delivering the Common Agricultural Policy over the new programme period to the minimum possible, aiming for a reduction of 30% by the end of the next spending review period. The main way to achieve this will be:

- the implementation of a new Common Agricultural Policy Delivery IT system;
- future delivery organisational design;
- Pillar 1 policy and implementation choices; and
- simple, cost-effective schemes in the new Rural Development Programme.

The new Common Agricultural Policy delivery system is a much more efficient, customer friendly, online system ready to support implementation from 2015. The system includes a single online application system to cover both Pillars of the Common Agricultural Policy. It will replace an ageing array of IT systems, and costly and inflexible contractual arrangements.

For the purposes of this Impact Assessment we have assumed a 30% reduction in all administration costs shown in Table 11 by the end of the next spending review period in 2018/19.

10. Beneficiary administration costs and policy burden

Introduction

Costs incurred by beneficiaries as a result of participating in the Rural Development Programme are made up of the following:

- **the cost of applying for funding**: this will include costs to businesses of both successful and unsuccessful applicants;
- **the costs of inspection**: projects under different axes will experience different levels of inspection; and
- **the private contributions to the cost of projects,** including opportunity costs where relevant.

Applications and inspections

The cost of applying for funding and complying with inspections has been estimated based on discussion with RDPE delivery bodies. These time commitments are then converted to financial costs by multiplying by the relevant hourly wage rate, which we assume to be between £14.24 and £15.56 an hour.[27] We assume that farm and forestry productivity and Growth Prgoramme training schemes last 30 hours for the purposes of estimating the opportunity cost associated with a participant attending these training schemes.

Table 12: Summary of Beneficiary Costs (£, 2012 prices)

(£)		Time Taken to Apply (hrs)	Cost of Applying	Time Taken to Comply With Monitoring/Inspection (hrs)	Cost of Monitoring
New environmental land management	Agri Environment	12.5	195	10	156
	Forestry	4.5	64	0	0
Farm and forestry productivity	Training	1.5	23	1.5	23
	Non-Training	12.5	195	14	218
Growth Prgoramme	Training	1.5	23	1.5	23
	Non-Training	12.5	195	14	218
LEADER	Training	1.5	23	1.5	23
	Non-Training	12.5	195	14	218

[27] These figures have been provided from the Rural Development Programme Delivery Team and Natural England who administer the current programme. The cost estimate also includes a 30% premium on wages for overheads. This overhead covers costs in connection with fixed administration costs, such as expenses for premises (rent or building depreciation), telephone, heating, electricity, IT equipment, etc. The overhead also includes absence owing to illness, since the hourly pay used to calculate administration costs should, as far as possible, be the hourly pay per effective hour. The overhead also covers employer's National Insurance Contributions.

Private contributions

Private contributions have been estimated using data on interventions rates referred to in Section 6. In addition the private contribution figures shown below in Table 13 also include assumed interest payments made on loans from the Growth Prgoramme.

Aggregate impact

The aggregate impacts of costs to business have been calculated on the basis of the targets used in the current programme for the number of participants or holdings. No targets have yet been agreed for the new programme. These targets relate to a programme of similar size to the one that would result from a 15% transfer from Pillar 1 to Pillar 2, on the assumptions used in this assessment. Hence the targets refer to a programme very similar to that analysed under scenario 5. We adjust targets for other scenarios based on amounts spent relative to scenario 5.

Estimates of total administration costs associated with a new programme are displayed in Table 13. In estimating aggregate administration costs we have assumed that applications are spread equally over the new Rural Development Programme. All administration costs are therefore smoothed over the period. We also assume that all monitoring and inspection is carried out in equal amounts each year and hence again these costs are smoothed over the entire programme.

. **Table 13: Total Costs (Present Values) to Business (£, million)**

Scenario	Scenario	PV of Admin Costs	PV of Business Contributions	PV of Total Beneficiary Costs
1	Balance as now (9% transfer)	62	329	390
2	More environmental focus (9% transfer)	41	232	273
3	More rural growth focus (9% transfer)	51	444	495
4	More farm and forestry productivity focus (9% transfer)	88	378	466
5	Balance as now (15% transfer)	80	451	531
6	More environmental focus (15% transfer)	55	331	386
7	More rural growth focus (15% transfer)	67	596	663
8	More farm and forestry productivity focus (15% transfer)	112	512	624

11. Benefits

Introduction

This section looks at the benefits, both monetary and non-monetary, of the current RDPE activities. It provides an overview of the approach to derive monetised estimates of benefits and a summary of the main categories of benefits that could not be monetised. It then reviews in more detail the evidence on benefits across a number of areas, including environmental land management (agri-environment and forestry), farm and forestry productivity, rural growth and LEADER.

Monetised benefits

The analysis of the monetised benefits of RDPE projects reflects a number of evaluation sources that looked at the impacts of the current programme, including a recent mid-term evaluation report by ADAS-Hyder, an evaluation of LEADER and a body of evaluation evidence for agri-environment schemes. It also includes a range of other sources (including appraisal and evaluation evidence) and ad hoc modelling.

Existing evidence was sufficient to produce reasonably good estimates of the possible benefits associated with a reasonable spread of specific interventions relevant to land management and rural growth. On the other hand, robust evidence of the impacts of RDPE on farm and forestry productivity is particularly limited. Monetised estimates of benefits in this area are best understood as partial and illustrative estimates at this stage.

The highlights of the review of evidence on the benefits of the Rural Development Programme have been summarised in Table 14 in terms of benefit to cost ratios. The basis of these estimates is described in sub-sections A to D below.

The additional benefits of the loans that we assume form a proportion of the Growth Programme spend are included in the benefit estimates presented in this Impact Assessment. The detail of the structure of these loans in the modelling is discussed in Section 6. As these loans are revolving funds, any funds paid back are loaned back out, and these funds accrue further benefits.

As explained in Section 8, benefit to cost ratios allow for straightforward modelling of benefits because the yearly benefits associated with alternative scenarios (in real terms) can be quickly computed by multiplying costs for each activity by the relevant benefit to cost ratios. The present value (2012 prices) of the benefits can be computed by discounting these flows of benefit by 3.5% (in accordance with HMT Green Book guidance). At the same time this approach introduces the implicit assumption that the new Rural Development Programme will be able to at least match the impacts of the current programme.

In applying benefit to cost ratios to produce estimates of benefits consideration has been given to the basis on which they were originally estimated. For example, benefit to cost ratios for agri-environment reflecting programme costs only have been applied to programme costs only. By contrast the forestry benefit to cost ratios reflected administration costs, and so have been applied to cost estimates which also included administrative costs.

In addition to introducing the main benefit to cost ratios that have been used for modelling purposes, the following sub-sections also introduce benefit to cost ratios for specific types of intervention (for example those aimed at heritage). These have not been used for the purpose of scenario modelling as this would require more detailed assumptions about the specific design of land management interventions. However, this evidence is presented for completeness.

Table 14: Benefit to Cost Ratio Conclusions for RDPE Activities

	Area of Activity	Sub-Area	Benefit Cost Ratio Ranges (Best Estimate)	Source	Confidence
A	**i. Environmental land management: agri-environment**	Mid-tier	**2.2 – 5.3 (3.5)**	FERA Report + additional internal analysis drawn from variety of published sources	**Good** Ranges reflect reasonably robust and recent evidence
		Higher-tier	**2.2 –5.5 (3.7)**		
	ii. Environmental land management: forestry	Creation	**1.6 – 4.7 (3.2)**	Internal analysis using published sources	**Low-Moderate** Carbon valued robustly, Biodiversity/Landscape use proxies and reflect old valuation evidence
		Management	**5.0 – 6.1 (5.6)**		Wood fuel valued robustly, Biodiversity/Landscape use proxies and reflect old valuation evidence
B	**Farm and forestry productivity**		**0.86 – 1.73 (0.86)**	Forthcoming CCRI report	**Low** Illustrative estimates: rely on financial proxy approach and reflect interviews with small sample of beneficiaries and non-beneficiaries
C	**Rural growth**		**0.8 – 7 (1.8)**	Internal analysis of different types of RDPE growth interventions	**Low-Moderate** Internal estimates vary in robustness and are sometimes illustrative
D	**LEADER**	Business	**6.05 – 6.71 (6.38)**	Ekosgen Evaluation Report	**Moderate** Estimates reflect thorough methodology but there is uncertainty as to representativeness of the sample compared to the current LEADER programme
		Community	**3.55 – 3.87 (3.71)**		

Non-monetised benefits

Rural Development Programme activities are likely to deliver a broader range of benefits than it has been possible to monetise for the purpose of this cost benefit analysis. Where relevant these benefits are highlighted in the following sub-sections. The main categories of non-monetised benefits we have identified include:

- wider benefits of agri-environment schemes in relation to helping meet statutory and international obligations on habitats and biodiversity, also possible benefits in relation to improvement to the historical environment at archaeological sites;

- possible windfall benefits for local economies of interventions aimed at maintaining and improving historical heritage and landscape character;

- broader benefits from woodland creation and woodland management beyond the monetised benefits of biodiversity/landscape improvement, carbon storage and employment. These broader benefits (e.g. recreational access, increased habitat connectivity, flood prevention) are contingent upon geographical location and are not captured in available stated preference surveys of the value of forestry in the UK, which focus on non-use value of biodiversity and landscape improvements; and:

- broader socio-economic benefits associated with socio-economic interventions targeting rural communities, for example in relation to the improvement of basic services and community renewal.

A) Environmental land management (agri-environment and forestry)

Introduction

Environmental land management activities are expected to account for the majority of expenditure under the new Rural Development Programme budget. This will include the existing agreements that extend into the new programme period, as well as the new environmental land management offer. The new offer is proposed to include a higher (site specific) option and a mid-level (area specific) option. In the new programme, the common features of environmental land management are currently proposed to be that:

- agreements provide annual payments in return for a commitment to farm with more care for the environment;
- the management involved goes clearly beyond the minimum statutory requirements that apply (including cross-compliance and Greening); and
- the agreements are voluntary, typically lasting for 5 years.

Unlike in the current RDPE, the new environmental land management scheme is not anticipated to have either separate organics or uplands schemes. It is also anticipated that the English Woodland Grant Scheme will be incorporated into the new environmental land management scheme; although at present it sits outside of this. The benefit to cost ratios of forestry management and creation will be discussed in part ii.

i. Agri-environment

Current agreements overview

In the current RDPE Environmental Stewardship is the agri-environment offer, within which there are two schemes: Entry Level Stewardship (ELS) and Higher Level Stewardship (HLS). In addition to the basic

scheme, two additional strands sit within Entry Level Stewardship and are aimed at specific types of farming system. These are organics (OELS) and the uplands (UELS). The benefit to cost ratios of the schemes are used to estimate the costs and benefits of option 0 for the RDPE.

Current agreements: Entry Level Stewardship (ELS) and Higher Level Stewardship (HLS)

The benefit to cost ratios for Higher Level Stewardship and Entry Level Stewardship agreements are discussed in detail under the heading 'New environmental land management', because the benefit to cost ratios reached for these are assumed to match the new higher (site specific) option and mid-level (area specific) option in the environmental land management offer for the new programme.

Current agreements: Organic Entry Level Stewardship (OELS)

In the current RDPE the principal funding difference between the Organic Entry Level Stewardship and the Entry Level Stewardship schemes is that the payment rate is £60/ha, rather than £30/ha. The estimates of the Organic Entry Level Stewardship's value for money take this into account by assuming that they are half the value presented in the table for Entry Level Stewardship. While this may appear a rough approximation, it is important to take the following into account:

- options taken up in Organic Entry Level Stewardship may have lower or greater environmental benefits than Entry Level Stewardship, and therefore the value for money may differ from the estimates presented here;
- the payment offered under Organic Entry Level Stewardship helps to support the incomes of organic farming and secure the environmental benefits of organic farming more generally, which is not taken account in the estimates here; and
- a National Audit Office (NAO) report in 2010 concluded that Organic Entry Level Stewardship supported measures which organic farmers tended to do anyway, and therefore the additionality of benefits arising from the uptake of options is limited.[28]

Current agreements: Uplands Entry Level Stewardship

In the current RDPE, Uplands Entry Level Stewardship covers 68% of farming within severely disadvantaged areas but is open to all farmers within these areas. The benefits of the scheme were appraised in a report to Defra by Eftec consultants in 2006.[29] Given the scheme was not introduced until 2010; this report appraised theoretical policy options, which may not closely match the design of the implemented scheme. This report considered several policy scenarios and estimated the changes in welfare using a stated preference survey. The data collected as part of the survey was evaluated, and the estimates were broadly similar to those from other studies.

The scheme's costs and benefits were explored further in an Impact Assessment, which used evidence from the Eftec study, published in 2008.[30] The benefits and costs compared with a "zero-policy baseline" were set out in an internal Impact Assessment that was carried out in 2010. The benefit to cost ratio presented here draws mainly on the Eftec and 2010 analysis.

Separate from the Eftec analysis, a 2011 evaluation of the scheme found that only around 20% of agreement holders reported that at least one of the options had required significant changes in land management. This implies that the scheme is incentivising relatively little in terms of additional environmental outcomes.

[28] Available at: http://www.nao.org.uk/whats_new/0910/0910513.aspx
[29] Available at: http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/sda.pdf
[30] Available at: http://archive.defra.gov.uk/rural/documents/countryside/uplands/uels-ria.pdf

The benefits were expected to increase over time for farms within the scheme as the options realise their full benefits only after several years of implementation. The analysis assumed benefits were zero in the first year of operation, rising to 100% after 6 years.

These profiles of uptake and benefits realisation result in a total benefit of £555 million[31] over the period 2011/12 to 2014/15, with associated costs of £68 million[32]. This results in a benefit to cost ratio of 8.2. It should be noted that as the benefits from schemes in the latter part of the period were not yet fully realised, the value for money of maintaining the schemes in the new Rural Development Programme is likely to be higher. However, to correct for the low level of additionality in the scheme these benefits have been scaled by the 20% figure set out above. Given the scheme was assessed as a whole, it is difficult to determine whether the options associated with the 20% deliver higher or lower benefits than the average. **Therefore, the corrected figure of a benefit to cost ratio of 1.6 may overestimate or underestimate the true benefits of Uplands Entry Level Stewardship**.

In addition, a range around this central estimate has been produced to attempt to account for the uncertainty underlying the benefits calculation. Additional to a central estimate of willingness to pay for an environmentally-focused uplands scheme, the Eftec study produced the associated 95% confidence interval. These high and low benefit estimates have been compared to a central estimate of the environmental dis-benefit from providing no support. It is important to note that it is not correct to interpret the true benefit to cost ratio as having a 95% chance of being within this range as it assumes the willingness to pay study accurately elicited the willingness to pay of the study participants and that the scenarios investigated are fully in line with the final design of Uplands Entry Level Stewardship. **This range is between 1.3 and 2.0.**

New environmental land management: benefit to cost ratios

In the new Rural Development Programme the environmental land management scheme is anticipated to consist of higher-tier (site specific) agreements and mid-tier (area specific) agreements. These higher tier agreements are expected to be closely related to the existing Higher Level Stewardship scheme, and 90% of such agreements are expected to be focused on farms with existing Higher Level Stewardship agreements. Therefore, the existing Higher Level Stewardship valuation evidence is likely to be a robust estimate of the value of the benefits of higher-tier environmental land management agreements.

The principles underlying the mid-tier (area specific) agreements are that, at the holding level, we require improved selection of options aligned to the policy target, better management of those options and, that by co-ordinating actions in defined areas, we achieve additional environmental benefits compared with Entry Level Stewardship agreements. However, it is anticipated that agreements will also be more expensive than current Entry Level Stewardship agreements, and therefore it is not clear whether the benefit to cost ratio will increase or not. Owing to the uncertainty in determining how the mix of options and therefore the environmental impacts would change, the benefits of the mid-tier scheme have been estimated using the Entry Level Stewardship benefit to cost ratio.

To assess the benefits of policies with environmental impacts, HMT Green Book appraisal guidance outlines two recommended approaches: revealed and stated preference. The valuation of non-market goods and services such as biodiversity and landscape necessitate an approach which does not use market prices. Stated preference studies are the only studies which can estimate non-use values. The benefit to cost ratios presented in this section have been used to assess the costs and benefits of the new environmental land management scheme in scenarios 1 to 8 only, and the costs and benefits of ELS and HLS in option 0.

[31] As before, both numbers are in £2009 prices and are undiscounted, the benefits are 2009 values.
[32] See above.

Both contingent valuation and choice experiment approaches were used in a Defra and Natural England funded study by FERA (2010) entitled 'estimating the wildlife and landscape benefits of environmental stewardship.'[33] This study estimated the willingness to pay for households for Environmental Stewardship. Following a literature review, peer-review of the methodology, focus group testing and a piloting exercise, the study carried out extensive work to carefully translate the environmental outcomes in Environmental Stewardship schemes to scenarios for which survey participants could articulate their true willingness to pay. Tests were carried out on the robustness of the results and it was found that their validity was "comparable to those in other contingent valuation studies. These valuations were then combined with data on the costs of the scheme to produce benefit to cost ratios.

The study also considered the question of additionality, i.e. the additional benefits which would occur above business as usual environmental and farm management. Using data collected as part of earlier studies, questions in the willingness to pay survey were framed in such a way to elicit values for the additional benefits only. The higher and mid-tiers of the new environmental land management scheme will be designed to maximise the additionality, potentially increasing the benefits above that estimated in the willingness to pay study.

In the original study, the benefit to cost ratios only captured the biodiversity, landscape and greenhouse gas impacts of Environmental Stewardship. Additional benefits which were not valued include: potentially significant resource protection benefits (i.e. water and air quality); and benefits to the historic environment and archaeology. The scheme's impact on water and air quality was quantified using a tool called Farmscoper, which is designed to estimate the impact of the uptake of different Environmental Stewardship options on different farm types. This model has received close scrutiny from stakeholders, and is considered to be robust. Owing to option coverage limitations in Farmscoper, the impact of all options was not able to be assessed. These estimates were then combined with data on the uptake of those options under current Entry Level Stewardship and Higher Level Stewardship agreements to produce an aggregate impact, which was then valued.

Water quality impacts were valued using internal Defra values which were based on a report by ADAS,[34] whereas air quality values were taken from published Defra guidance.[35] Valuations for water and air quality based on willingness to pay estimates were inflated by 2% per annum to reflect the assumption that rising incomes should reflect a higher willingness to pay for health and environmental quality. In addition, the valuation for water reflects increasing household[36] numbers based on projections by the Department for Communities and Local Government (DCLG).

Greenhouse gas impacts were also revised to take account of more recent evidence on their quantified impact and revised CO_2 prices from the Department of Energy and Climate Change.[37] Estimates of the greenhouse gas impacts of individual agri-environment options were taken from a tool called OSCAR,[38] which models the way in which changes in land management impact on soil carbon sequestration. This tool was produced for the European Commission, and was chosen as it has greater option coverage than Farmscoper in terms of percentage of total points accounted for. Where greenhouse gas impacts arise from reductions in output, these savings may be offset by increases in production elsewhere to

[33] Available at: http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/estimatingthewildlife.pdf

[34] Available at: http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=13653

[35] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/182390/air-quality-damage-cost-guidance.pdf

[36] Projections of English household numbers were used to inflate values as the willingness to pay values in the original study were expressed in terms of pounds per household. An alternative approach would have been to increase values reflecting population projections. The difference is not material over the relevant time horizon. See annex C for further details.

[37] Available at: https://www.gov.uk/carbon-valuation

[38] Available at: http://sitem.herts.ac.uk/aeru/oscar/

maintain the supply of agricultural output. This may act to reduce the additional net savings of greenhouses gases in the UK, and therefore reduce the estimates of benefits.

The benefit to cost ratios covering wildlife and landscape impacts in the 2010 willingness to pay study were estimated at the time as 1.8 (or 2.0 when excluding the admin costs from the denominator). These have been updated to incorporate a more recent assessment of actual programme costs, the monetisation of broader environmental impacts, revised valuations and an adjustment to increase the willingness to pay estimates to reflect trend productivity growth, in line with Defra's value transfer guidance[39] (Annex C). The total value of the benefit from Environmental Stewardship is proportional to the number of households in England. Revised projections of the number of households have been taken from the latest Department for Communities and Local Government projections[40].

The **benefits to cost ratios are 3.7 for the higher-level scheme and 3.5 for the mid-level scheme**. The main reason for this difference is the higher level of carbon abatement associated with higher-tier environmental land management which is partly offset by the relatively higher unit delivery costs associated with the more complex higher-tier scheme strand. However, the different strands address different environmental issues and so are not interchangeable. Higher-tier, in particular, is targeted at sites of high environmental value including those fulfilling specific obligations under the EU Habitats Directive. Administrative costs have been excluded from the benefit to cost ratio estimates as they are accounted for separately. These estimates are considered to be reasonably robust estimates of the benefits associated with agri-environment schemes.

Table 15: Benefit Cost Ratios for Mid-Tier and Higher-Tier Agri-Environment Schemes

	Mid-Level			Higher-Level		
	Low	Central	High	Low	Central	High
Biodiversity & Landscape	2.1	3.3	4.9	2.0	3.2	4.7
Greenhouse Gases (without land use change)	0.1	0.1	0.2	0.2	0.5	0.8
Air Quality	0.0	0.0	0.0	0.0	0.0	0.0
Water Quality	0.0	0.1	0.1	0.0	0.0	0.0
Overall	**2.2**	**3.5**	**5.3**	**2.2**	**3.7**	**5.5**

Table 15 shows the benefit to cost ratios for the mid and higher-level agri-environment schemes according to the source of the benefit. Following the original study[41], the low and high sensitivity scenarios consider a variation of the willingness to pay for biodiversity and landscape benefits. As it is clear from the table, these benefits drive the overall benefit to cost ratios across both schemes. The reductions in greenhouse gas emissions do not include land use change and are substantially higher for the higher-level scheme compared with the lower-level scheme. The estimated impact on air and water quality pollutants is very small compared with the payment a farmer receives, causing benefit to cost ratios very close to zero. Sensitivities for greenhouse gas, air and water quality consider variations in the impact the schemes have on pollution and reflect uncertainty on the value of pollution mitigation.

Wider benefits of agri-environment schemes

[39] https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/182376/vt-guidelines.pdf
[40] November 2010
[41] Estimating the wildlife and landscape benefit of Environmental Stewardship, FERA, 2010.

Environmental Stewardship, and the now closed schemes Countryside Stewardship and Environmentally Sensitive Areas, have been key tools for achieving environmental objectives in England, including biodiversity targets for Sites of Special Scientific Interest (SSSIs) and farmlands birds. It is a key contributor to statutory and international obligations on habitats and biodiversity. Agri-environment schemes have been particularly successful in preventing detrimental agricultural change in key areas of wildlife, landscape and historic value

To date, outcomes across all schemes have included:

- 88% of eligible Sights of Special Scientific Interest (SSSIs) protected of which 96% are classed as being in favourable condition or unfavourable recovering condition; [42]
- protection and restoration of 84% of the area of habitats identified as national a national priority;
- significant increase in breeding populations of nationally scarce farmland birds. For example, cirl bunting pairs have increased by 130% (1992 to 2003) and stone curlew pairs by 87% (1997 to 2005);
- reintroduction of extinct species such as the short-haired bumblebee, where Environmental Stewardship has been used to create the necessary flower-rich habitat;
- climate change modelling suggests that Environmental Stewardship can deliver greenhouse gas reductions of 3.46 million tonnes of CO_2 equivalents per year, an 11% reduction from the agriculture, forestry and land management sector in England;
- resource protection: modelling work for Entry Level Stewardship indicate a 2.09% to 4.27% reduction in nitrate losses per ha and a 4% reduction in phosphate losses per ha as a result of current take up of Entry Level Stewardship options; and
- agri-environment schemes delivered a 78% improvement in condition and a reduction in risk for 1,515 scheduled monuments on East Midlands farmland (2005 to 2007).

Further details can be found in Natural England's review of agri-environment schemes, which was published in 2009[43].

A recently published study has found the first evidence at a landscape scale of the benefits of Environmental Stewardship for farmland birds[44]. The results showed strong evidence for positive effects of management that provides winter food resources (Environmental Stewardship stubble and wild bird seed crops) on population growth rates of a number of seed-eating species at 3 landscape scales (1, 9 and 25 km^2). Results from previous research have shown that winter survival is a key demographic affecting the populations of seed-eating birds.

More Environmental Stewardship options have been found to provide ecosystem services than those originally designed to achieve this[45]. For example, in a study published in 2008, scheme handbooks were found to have a total of four options (2 ELS, 2HLS) specifically designed to deliver prevention of soil erosion, whereas a total of 120 different options were considered to have the potential to assist in the delivery of this service. In addition, Environmental Stewardship options delivering over 15 services

[42] As of 1st August 2013. Available at: http://www.sssi.naturalengland.org.uk/Special/sssi/reportAction.cfm?Report=sdrt15&Category=N&Reference=0

[43] Available at: http://www.naturalengland.org.uk/ourwork/farming/funding/aesiereport.aspx

[44] Baker, D. J., Freeman, S. N., Grice, P. V. and Siriwardena, G. M. (2012), Landscape-scale responses of birds to agri-environment management: a test of the English Environmental Stewardship scheme. *Journal of Applied Ecology*, **49**, 871-882

[45] Available at: http://randd.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&ProjectID=15901&FromSearch=Y&Publisher=1&SearchText=nr&SortString=ProjectCode&SortOrder=Asc&Paging=10#Description

were identified; they were associated with woodlands, hedgerows, upland moorland and blanket bog, lowland heathland, and semi-natural grassland.

Maintaining and restoring the historic environment

Heritage (both historical and natural) represents a significant element of tourist attraction to the countryside. Investment in heritage can also support the creation of skilled jobs in rural areas and help grow rural businesses.

English Heritage estimate that for every £1 of public sector spending on the historic environment, an extra £1.60 is created in local economic activity over a 10 year period.[46] Studies are also available on the value to the local economy of restoring traditional buildings and stone walls in the Lake District and Yorkshire Dales National Parks.[47] The Yorkshire Dales study estimates that spending on building restoration has a multiplier effect of £1.65 on the local economy and £2.41 on the wider local economy (which included the market towns serving the Park). For stone wall repairs the multiplier estimated at £1.92 for local economy and £2.35 for wider local economy.[48]

While these studies are useful to indicate the potential local growth benefits of heritage interventions, they do not immediately lend themselves to estimate the economic welfare benefits at a national scale. For the purpose of estimating an illustrative example of the benefits per pound of expenditure of RDPE heritage interventions we have not focused on economic impact studies but looked instead at a study conducted in 2006[49] which estimated people's willingness to pay for small or large improvements in cultural heritage in severely disadvantaged areas. For this analysis it is assumed that cultural heritage and historic environment are terms used to describe the same thing and that the values within severely disadvantages areas are the same as for outside severely disadvantaged areas.

Costs associated with maintaining and restoring historic environment come from an overall figure for agri-environment spending for scheduled and undesignated archaeological landscape features, spend on traditional farm buildings under the old Axis 3 and maintenance on weatherproof condition again funded via Axis 3. Assuming these interventions maintain cultural heritage, a benefit to cost ratio of 1.4 is achieved. If however these interventions were to change the condition of cultural heritage from rapid decline to much better conservation then the **benefit to cost ratio is estimated to be 5.3.** This estimate illustrates the value for money that might be offered by RDPE activities. However it is not used in the cost benefit analysis presented in this Impact Assessment as it is not yet decided what level of funds will be directed to this activity in the new programme and because the source evidence adopted here does not directly relate to RDPE activities or draw upon evidence of their effectiveness.

Access

The benefits of access can be divided into a number of areas such as health and wellbeing, recreation and tourism, use value and non-use value. Often it is not possible to distinguish use and wellbeing

[46] Available at: http://www.english-heritage.org.uk/professional/research/social-and-economic-research/value-of-historic-environment/economic-value/

[47] *A study of the social and economic impacts and benefits of traditional form building repair and re-use in the Lake District ESA*, English Heritage and Defra, ADAS, 2005.
A study of the social and economic impacts and benefits of traditional farm building and dry stone wall repairs in the Yorkshire Dales National Park, English Heritage and Defra, CCRU and ADAS, 2005

[48] Brackets indicate value updated to 2008 prices. The values from the Yorkshire Dales study have been used as they are similar to those in the Lake District study, but are slightly more conservative.

[49] *Economic Valuation of Environmental Impacts in the Severely Disadvantaged Areas*, Eftec, 2006. Available at: http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/SDA.pdf

values as part of willingness to pay estimates for access, as individuals' willingness to pay may include the health and wellbeing benefits received.

Access can be seen to improve health through increased physical activity. If increases in countryside recreation could deliver a 1% decrease in the UKs sedentary population, between £480 million to £2 billion per year could be achieved in health benefits. Location will also have a significant impact on the value of recreation sites as the same resource in different areas will result in different values. The National Ecosystem Assessment estimates that nature recreation can generate values of between £1,000 - £65,000, per site per year, depending on the location.

There is little robust evidence around the willingness to pay of individuals for access. The most robust tend to be in the area of woodlands/forestry, but these are not easily transferable to RDPE spending. Individuals do however clearly demonstrate a positive value for access as can be seen through some spending activities such as car parking charges in some National Parks and Forestry Commission sites

Promoting opportunities for the understanding and enjoyment of the special qualities of National Parks by the Public

National Parks (and areas of outstanding natural beauty) are the nation's most important landscapes and areas for recreation. Although there are no separate estimates for the value of recreation and access in National Parks, individuals do however clearly demonstrate a positive value for access as can be seen through some spending activities such as car parking charges in some of the National Parks.

National Parks have around 95 million visits per year. The estimated tourism expenditure is £3,087 million per year or £4,057 if one includes the National Parks area of influence. Employment supported by the National Parks is estimated to be 48,249 (68,222 including the area of influence).[50]

The impact of access and recreation can be assumed to be at least equal to that of access more generally, i.e. Average expenditure per day is estimated between £5 to £10, with multipliers of between 1.2 to 1.6. Employment multipliers are typically in the range of £50,000 to £80,000 visitor expenditure for every one full time equivalent (FTE) job supported locally. [51]

ii. Forestry

Woodland creation

The woodland creation benefit to cost ratio estimate used in this Impact Assessment comes from Defra internal estimates. This estimate calculates benefits over an 80 year period, and includes benefits associated with biodiversity, landscape, carbon and employment. It was not possible to estimate values for the benefits on air and water quality associated with woodland creation due to a lack of robust data.

The carbon value of woodland creation is estimated using estimates of carbon sequestered taken from the woodland carbon code lookup tables. DECC carbon values are used to value this sequestration. The biodiversity benefit associated with woodland creation was estimated using analysis by Garrod and Willis (1997).[52] This study estimated willingness to pay for marginal increases in biodiversity. The landscape

[50] Valuing England's National Parks , page 43/44, Cumulus Consulting and ICF GHK, 2013
[51] Costs and benefits of public access to the countryside: literature review page 5, ICF GHK, 2013
[52] The non-use benefits of enhancing forest biodiversity: a Contingent ranking study. *Ecological Economics* 21, Pages 45-61. Garrod, G. and Willis, K., 1997.

value associated with woodland creation comes from the study Willis et al (2003), which estimated the value of woodland landscape. The estimates of benefits associated with avoided carbon are considered to be robust as they use DECC guidance. However the values used for biodiversity and landscape are proxies and reflect old valuation evidence, and therefore cannot be viewed as robust.

The costs included in the benefit to cost ratio are from Forestry Commission estimates of the average cost to government of woodland creation. In addition, private contributions to projects by beneficiaries are included as well as the public costs of administering Rural Development Programme grants and the costs to applicants of applying for grants.

The mid-term evaluation of the RDPE estimated the deadweight of woodland creation grants to be 19%.[53] It is assumed that the new scheme would result in the same level of deadweight as the old; however in reality it is likely to be much lower due to improvements in targeting.

Following this methodology **a benefit to cost ratio of 1.6 to 4.7 with a central estimate of 3.2** is estimated for forestry creation. This range is created by using upper and lower DECC carbon values (see Annex D for more information about this and other estimates of forestry benefits).

Woodland management

In estimating the benefits of woodland management, it is assumed that any activity improves the biodiversity and landscape ecosystem services of woodland. Carbon benefits are not estimated as the impact depends primarily on the end use of any timber extracted which is highly uncertain. The value of timber/wood fuel extracted is estimated. Benefits are calculated over the 10 year period of the agreement. Benefits associated with job creation are also included.

The landscape value of woodland management is estimated using the Entec-Hanley (1997)[54] study in to landscape improvements in British forests. This study used stated preference techniques of choice experiment and contingent valuation. Biodiversity is the primary benefit of woodland management, the benefits of which are estimated using Garrod and Willis (1997)[55] which estimated the public's mean willingness to pay for non-use biodiversity value of remote coniferous forests in Britain.

Benefit estimates associated with wood fuel follow published guidance and are considered robust. However the landscape and biodiversity values are proxies based on willingness to pay evidence and such cannot be seen as robust.

Costs associated with woodland management come from Forestry Commission estimates. The benefit to cost ratio estimate also includes the costs of administering RDPE grants or the cost to applicants of applying for grants.

Two measures covering woodland management were assessed in the mid-term evaluation (measures 225 and 227). The average of the deadweight of the two measures is used to estimate the deadweight for management (47% for 225 and 33% for 227).[56] This is estimated to be 40%.

[53] Rural Development Programme England Mid Term Evaluation, Page 240, ADAS & HYDER, 2010.
[54] *Valuing Landscape Improvements in British Forests.* Report to the Forestry Commission, Entec and Hanley, N., 1997.
[55] The non-use benefits of enhancing forest biodiversity: a Contingent ranking study. *Ecological Economics* 21,Pages 45-61. Garrod, G and Willis, K., 1997.
[56] Rural Development Programme England Mid Term Evaluation, Page 149/150, ADAS & HYDER, 2010.

Following this methodology we estimate a **benefit to cost ratio in the range of 5.0 to 6.1 with a central estimate of 5.6** for woodland creation. This range is created using the maximum and minimum estimates from the studies that analyse landscape and biodiversity values.

Maintaining Woodland cover

Maintaining woodland cover relates to the replanting of trees following their removal, for example as a result of pests and diseases. The costs of planting and establishing new trees would be the same as in the case of woodland creation. The same applies to the benefits, given that without the planting of new trees the benefits of the tress being replanted would be lost. Overall therefore the costs and benefits of maintaining woodland cover on a per hectare basis can be seen as broadly in line with the costs and benefits from woodland creation. A **benefit to cost ratio of 3.2** is estimated for maintaining woodland cover. This estimate demonstrates the value for money offered by RDPE activities. However it is not used in the cost benefit analysis presented in this Impact Assessment as it is not yet decided what level of funds will be directed to this activity in the new programme.

Non-monetised benefits of woodland creation and woodland management

Woodland creation and woodland management provide a wide range of further benefits, the majority of which it is not possible to place a monetary value on. The most robust is carbon sequestration for woodland creation which has been monetised. Both woodland creation and management increase the resilience of the existing woodland stock. They also lead to specific benefits such as biodiversity benefits (creation leading to corridors and extended habitats and management increasing the light and therefore biodiversity in a woodland). Woodland creation can also lead to landscape benefits and water benefits depending on the siting of the woodland. Woodland management can have wider carbon impacts if the wood harvested is used to displace fossil fuels. Wood management grants can also support access to woodlands.

Quantity of carbon savings

Estimates of carbon savings for the new programme can be made for spending on agri-environment activities and forestry activities. As discussed earlier carbon savings associated with agri-environment come from a model OSCAR that is used by the EU Commission. Estimates of carbon savings associated with forestry activities come from the Forestry Commission's woodland carbon code lookup tables. These tables calculate the amount of carbon sequestered by a hectare of woodland over 5 yearly intervals. This gives a 5 yearly stream of carbon sequestered from woodlands planted under the scheme. These estimates have been reduced by 20% due to uncertainties allowing for reduced growth potential of the woodland. A further 15% reduction is applied to the amount of carbon sequestered due to risks such as extreme weather, fire, pest and disease. The cumulative effects of these two reductions means estimates of carbon sequestered have been based on 65% of the figures reported in the Woodland Carbon Code look up tables. In addition these exclude any carbon emissions from establishment of the woodland. In order to monetise this benefit we then applied the DECC values of carbon to this stream of carbon benefits to give the total value of benefits.

Table 16 displays the tonnage of avoided carbon under each scenario. Ranges have been estimated for carbon sequestered using ranges on estimates of carbon sequestered for agri-environment schemes. These ranges estimate that the mid-tier environmental land management will avoid between 1,800 and 2,600 tonnes per £ million of expenditure, while the higher-tier environmental land management avoids between 6,700 and 8,200 tonnes per £ million of expenditure. Ranges are not available for carbon sequestered by forestry activities.

Table 16: Carbon Savings of All Scenarios

Scenario	Scenario	Avoided Carbon (million tonnes/CO_2)	
		Min	Max
1	Balance as now (9% transfer)	5.5	5.9
2	More environmental focus (9% transfer)	7.2	7.8
3	More rural growth focus (9% transfer)	3.8	4.1
4	More farm and forestry productivity focus (9% transfer)	4.5	4.8
5	Balance as now (15% transfer)	11.6	12.5
6	More environmental focus (15% transfer)	13.7	14.8
7	More rural growth focus (15% transfer)	9.5	10.2
8	More farm and forestry productivity focus (15% transfer)	10.3	11.1

The amounts of carbon avoided displayed in the table are additional to the carbon sequestered under the baseline option 0. All of the 15% transfer scenarios result in higher levels of avoided carbon than the 9% transfer. Within the 9% and the 15% transfer scenarios it is the environmentally focused scenarios that avoid the most carbon. The farm and forestry productivity focus scenarios avoid more carbon then the growth focus scenario simply because these scenarios direct more money at environmental activities than the growth focus scenarios.

B) Farm and forestry productivity

Introduction

We have not assessed fully the impact of RDPE funding on farm and forestry productivity and competitiveness in the current programme, in particular because of the transfer of management responsibility from the Regional Development Agencies to Defra in 2011. Data from the Regional Development Agencies recorded before this hand-over is currently being migrated to the RDPE Online Database. This means that a full assessment of the effects of funding on productivity and competitiveness has not yet been possible to complete. We have thus not been able to monetise many of the benefits associated with farming interventions. However, it is worth noting that wider evidence on farming competitiveness is clear on what the key drivers of productivity growth are. For example, OECD evidence states that the rate of innovation, diffusions of new technology and best practice, and educational and skills level of farmers are key in driving productivity and therefore competitiveness of the

sector[57]. We include textual discussion of the benefits of farming productivity and competitiveness interventions.

The key gaps in data relating to farm and forestry productivity and competitiveness include the benefits of modernising business practices, improving resource efficiency, developing innovative new products and processes, developing infrastructure and improving the economic value of forestry. Estimating the causal impact of RDPE spending on these areas is difficult, even with data availability, as there will often be a multitude of factors contributing to any benefits produced and benefits may not materialise for a number of years.

The following sections present a few benefit to cost ratio estimates for a selected number of forestry productivity and competitiveness interventions, reflecting the evidence available from the current programme. These estimates should be taken as illustrative as they rely on some rather broad brush assumptions. They also generally reflect only a subset of the benefits associated with the relevant interventions. Finally, they are unlikely to be fully representative of the broader range of RDPE interventions that could be funded under the farm and forestry competitiveness objective. We also discuss a report recently produced by consultants CCRI which estimates an overall benefit to cost ratio for Axis 1 (as opposed to at the individual activity level) of the current RDPE.

Farm and forestry training schemes under Axis 1 of the current RDPE

RDPE funds training schemes that are aimed at business leaders and senior managers with the purpose of increasing their business and management skills so that participants can build their businesses and create jobs – thus aligning to the government's growth agenda.

The benefit of participating in an RDPE training course has been calculated by estimating the increase in long-term annual productivity as a result of the training, profiling this benefit over the rest of a participant's working life, and aggregating across all participants who said they benefited from the course. Assumptions on wage premia reflected BIS guidance on the value of education (NVQ level 3 equivalent) and ranged between 2.75% and 6%. These wage premia assumptions reflect lifetime increases in wages estimated from cross sectional data and so no assumptions on this wage premia diminishing are necessary. Rural Gross Value Added per worker estimates have been produced using data from the Office for National Statistics.

The benefits were aggregated using the number of beneficiaries reporting that they had learnt new skills or processes as a result of the training, before adjusting for deadweight using parameters recommended by BIS.[58] Monetised costs associated with the training courses include the government costs of delivery, the opportunity cost of attending the course as well as the administrative costs incurred by beneficiaries.

The resulting range of benefit to cost ratios was 4 to 19. While this may seem high, even the top of this range is consistent with BIS estimates of the benefit to cost ratio associated with further education. This benefit to cost ratio estimate uses BIS guidance. However the assumptions used on the improvement in Gross Value Added per worker are less robust. We have used a range on this key assumption, and we have conservatively opted to use the bottom of this range as the best estimate for modelling purposes.

[57] *Fostering Competitiveness and Innovation in Agriculture,* OECD

[58] *Assessing the Deadweight Loss Associated with Public Investment in Further Education and Skills*, BIS, May 2012. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32281/12-767-assessing-deadweight-loss-with-investment-further-education.pdf

Advisory services

Very limited data is available on the impact of advisory services under Axis 1 of the current RDPE. All that is available is the number of forestry holders supported. We have valued the benefit that these services create using a financial proxy of the cost of a part time course, which comes from a BIS paper on valuing the benefits of adult learning.[59] The rationale for using this proxy is that the price of a good or service reflects the benefit that the recipient receives. If the benefit, in monetary terms, were lower than the price paid then the price of the course would fall. Further, the level of knowledge and skills learnt from a part time course (as opposed to the more significant and long-lasting benefits from more ambitious training programmes described above) could be assumed to be similar to that provided by the RDPE advisory services. While this is not a flawless methodology, it represents the best possible estimate of a lower bound of the value of these services given the data available. Using this methodology (which also adjusts for deadweight) we estimate **a benefit to cost ratio of at least 0.3**.

Farm modernisation

Data from the current RDPE is available on the numbers of farms supported to improve competitiveness, nutrient management and animal health and welfare. Data is also available on the number of jobs said to be created under this measure. Illustrative assumptions on the degree to which farms targeted by these RDPE activities can reduce their costs and improve their margins can be combined with available information on job created through these activities to come up with estimates of benefit. For farms supported to improve competitiveness, benefit is measured by assuming a small percentage increase in average agricultural gross margin using data from the Farm Business Survey. For farms supported to improve nutrient management we assume a small reduction in variable input costs, again using data from the Farm Business Survey. For farms supported to improve animal health we assume a small percentage drop in costs associated with bovine tuberculosis. For each we assume that effects last for three years. We also value the jobs created using the impact on Gross Value Added of each worker over three years using Office for National Statistics data. Using this methodology an illustrative range of efficiency improvements of 1 - 10% would give **a benefit to cost ratio estimate in the range of 0.1 to 0.5**. While these are very low they reflect the lack of monetisable evidence on the full potential benefits associated with farm modernisation. Notwithstanding this, the numbers also suggest that care should be taken to ensure additionality and value for money in scheme design for this new round of the Rural Development Programme.

CCRI estimate of benefit to cost ratio for Axis 1 of current programme

A forthcoming CCRI empirical study into the benefits associated with interventions in the current RDPE under Axes 1 and 3 makes use of an approach to cost benefit analysis (the Social Return on Investment approach) which aims to achieve a comprehensive coverage of economic, environmental and social benefits by using several indirect proxies to measure these benefits.

This application of the Social Return on Investment (SROI) approach relies on a survey of RPDE beneficiaries and other stakeholders to identify the range of outcomes RDPE Measures could achieve. It then assigns financial proxies to these outcomes in order to estimate the return on investment of RDPE. The approach seeks to reflect judgements on the strength of the causal link between RDPE funding and

[59] *Valuing Adult Learning: Comparing Well-being Valuation to Contingent Valuation*, BIS, November 2012. Available at: http://www.bis.gov.uk/assets/biscore/further-education-skills/docs/v/12-1127-valuing-adult-learning-comparing-wellbeing-to-contingent

relevant outcomes. The modelling also accounts for deadweight and displacement, and provides present value estimates of benefits over a five-year period. It is the first attempt at applying the SROI method and assign financial proxies to the wide range of socio-economic and environmental outcomes that RDPE Measures deliver.

The process of monetising the relevant outcomes involves identifying financial proxies for each separate outcome. They use the 'best financial approximation' available through which to assess the significance of the outcome and thus allow comparison with other (monetised) outcomes. Beneficiaries were asked directly, in relation to each of the outcomes explored, whether they had received benefits (termed evaluative benefits), and whether they expected to receive all or additional benefits over the next five years (termed forecast benefits). There is some discussion in the CCRI report about how best to combine evaluative and forecast benefits SROI ratios. They suggest that in some cases forecast benefits may be simply added to evaluative benefits (when projects are expected to deliver additional benefits as a result of earlier investment) while in other cases projects may require further investment in order to realise the benefits that recipients forecast.

If forecast benefits were simply a windfall of Axis 1 investment so far, then CCRI estimates an SROI of 1.73. Alternatively, by taking a conservative assumption that achieving forecast benefits will require a new amount of investment equal to what has gone into Axis 1 projects thus far produces a SROI ratio of 0.86 (note that this would essentially double the denominator and therefore halve the first estimate). In general the report highlights a low additionality of some types of Axis 1 intervention such as grants. However the report is not yet finalised and work on the methodology, evidence of outcomes and proxies used is ongoing.

Conclusions

The evidence described above illustrates that there is limited availability of data on outcomes associated with farm and forestry productivity and competitiveness spending for RDPE. The benefit to cost ratio estimate for training (see Table 17 below) demonstrates that spending can be very cost effective. Other benefit to cost ratio estimates would appear to indicate the opposite. However, these estimates take a very narrow view of the benefits of these interventions and do not monetise a significant number of benefits, e.g. potential environmental benefits associated with resource efficiency.

Table 17: Benefit to Cost Ratios for Farm and Forestry Productivity

Activity	BCR Ranges (Best estimates)
Training	4 – 19
Advisory Services	0.3 (lower bound)
Farm Modernisation	0.1 - 0.5 (partial estimate)
CCRI SROI estimates	0.86 - 1.73 (0.86)
Illustrative benefit to cost ratio used in Impact Assessment Modelling	**0.86 – 1.73** **(0.86)**

One of the difficulties with the available evidence is that evaluation data for farm and forestry productivity and competitiveness primarily relates to the numbers of jobs created by RDPE interventions. However for some of the farm and forestry competitiveness interventions actively help farmers to become less reliant on labour, and so job creation is not a very good indicator of the way in which these interventions can add value.

The CCRI study for Defra attempts to produce a benefit to cost ratio for farm and forestry productivity and competitiveness interventions in aggregate and monetises a number of the outcomes not included in the individual benefit to cost ratio estimates. The CCRI figure indicates that these interventions as a whole may have been border-line cost effective in the current RDPE, but what can be achieved in the new programme will strongly depend on targeting actual market failures and the detail of scheme design. Overall, in the absence of clearly better or comprehensive evidence we have decided to use the CCRI benefit to cost ratio to estimate the benefits associated with farm and forestry competitiveness.

The CCRI estimates of SROI are not final estimate and will likely change as the SROI methodology develops. We hope that in the final version of this Impact Assessment the CCRI work will be at a more developed stage, with an estimate that more accurately reflects the benefits that these interventions produce. In the meantime, we **use a benefit to cost ratio of 0.86** (in line with the lower, summary SROI estimate suggested by CCRI) **as our default illustrative assumption**, while testing sensitivity to a benefit to cost ratio of 1.73 (the higher summary estimate), as illustrated in the sensitivity section below.

C) Rural growth

i. Growth Prgoramme

The activities that Defra has said that it will fund with Rural Development Programme funding channelled through the EU Structural and Investment Funds Growth Programme are similar to some of those pursued under Axis 3 of the current programme. However Axis 3 of the current RDPE involves socio-economic as well pure growth related interventions. In the new programme it is unlikely that these socio-economic interventions will be pursued under the Growth Prgoramme. As with farm and forestry productivity and competitiveness there are significant gaps in evidence on outcomes under Axis 3. The key gaps exist in diversification of farms into non-agricultural activities, village renewal and supplying new services to rural areas. Additionally, the Growth Programme will be a new approach to delivering funding. Local Enterprise Partnerships rather than central government will direct funding to the highest priorities in their area through developing growth strategies. These will use RDPE funding (dedicated to rural areas) along with other EU and domestic resources to deliver locally coherent programmes to overcome barriers to economic growth. This new approach has been adopted to address weaknesses arising from fragmented, multiple funding streams and the difficulties for central government in adapting programmes to meet local priorities. However, evidence of effectiveness has to be drawn from these existing programmes under RDPE.

As set out in Section 6, the modelling of the Growth Programme includes 30% of the total growth programme budget as loans. The loans are arranged as a revolving loan fund. This involves loaning funds back out when existing loans are paid back. This revolving arrangement increases the benefits associated with the allocation of funding assigned to the Growth Programme.

To estimate the likely benefits associated with the Growth Programme we have estimated benefit to cost ratios for a number of growth type interventions under Axis 3 of the current RDPE (Annex E). These estimates indicate that these interventions are cost effective despite information being incomplete. In this section we set out how we have estimated benefit to cost ratios for these interventions and explain how we have decided upon an overall benefit to cost ratio for activities funded through the Growth Prgoramme. The conservative assumption has been made that effectiveness will mirror the current

range of benefit to cost ratios, rather than improving to the level of the activities generating the highest return.

Rural business training

Using the same methodology as that used for farm and forestry competitiveness training we have estimated the benefits and costs for training under Axis 3. A range was estimated of 7 to 29, (which again is consistent with the estimates produced by BIS for further education). A **benefit to cost ratio of 7 was chosen as a prudent estimate for modelling purposes.**

Support for the creation and development of micro-enterprises

Benefits associated with support for the creation and development of micro-enterprises have been estimated by monetising the benefits of job creation associated with the intervention, using data from the Rural Development Programme Team database. This database contains data on outcomes reported by beneficiaries of RDPE funding under each measure. The benefit of a job created is measured using the annual estimate of Gross Value Added per worker from Office for National Statistics data. A range is estimated on the benefit to cost ratio by varying the assumption on the persistence of the benefit associated with jobs created. This assumption varies between 1 and 5 years which is consistent with the level of persistence used by Ekosgen in their evaluation of LEADER.

When assessing the costs associated with this intervention the total value of RDPE grant is used, along with delivery administrative costs incurred by the government and related delivery bodies. Then administrative costs incurred by beneficiaries are also estimated.

Using the methodology outlined above the **benefit to cost ratio associated with this measure is 0.5 to 2.3 with a central estimate of 1.4.** However this estimate leaves out important benefits that we are not able to quantify with available evidence. Examples of these benefits include value of sales generated by the new businesses, the value of any exports, any indirect jobs created as a result of the new firms and the increase in entrepreneurial skills in the economy. This benefit to cost ratio estimate can be considered a robust but very conservative estimate of the benefits.

Rural Growth Networks

Rural Growth Networks aim to tackle the key barriers to economic growth in rural areas: lack of agglomeration; lack of peer sharing; lack of access to broadband; and physical networking infrastructure. Through 2013 to 2015, five pilot Rural Growth Networks have been funded at an Exchequer cost of £15 million, and with £5 million RDPE micro-enterprise grant funding. These are being rolled out in Cumbria, Devon/Somerset, Durham/Northumberland, Coventry/Warwickshire and Swindon/Wiltshire.

An estimate of the benefit to cost ratio for the Rural Growth Networks has been produced by adopting a similar methodology to that for the support for creation and development on micro-enterprises. This estimates the forecast number of jobs created by each of the Rural Growth Network when successfully applying for funding. These forecasts were subject to scrutiny and questioning in the funding application process.

The figures for Gross Value Added per worker were tailored to the relevant value for the area that the particular Rural Growth Network is in. A range is estimated on the benefit to cost ratio by varying the assumption on the persistence of the benefit associated with jobs created. This assumption varies between 1 and 5 years which is consistent with the level of persistence used by Ekosgen in their evaluation of LEADER.

Taking account of deadweight, the **estimated benefit to cost ratio for the Rural Growth Networks was 3.5 to 16.2. A benefit to cost ratio of 3.5 was chosen as a prudent estimate for modelling**

purposes. This benefit to cost ratio estimate can be considered a robust but very conservative estimate of the benefits.

Rural community broadband fund

The Rural Community Broadband Fund contributes to the extension of superfast broadband into the last 10% of premises that are due to receive only standard broadband under the current £530 million Rural Broadband Programme. An evaluation of the Rural Community Broadband Fund community led approach is underway and will inform decisions on approach to delivery. Broadband is one of the possible uses of rural development funds channelled through the EU Structural and Investment Funds Growth Programme.

Defra have made preliminary internal estimates of the benefits and costs associated with connecting the final 10%, this analysis has estimated **a benefit to cost ratio of 1.6 to 2.6 with a best estimate of 1.6**. This figure is estimated from the forecast improvement in business productivity as a result of the Rural Community Broadband Fund. Increased productivity is measured using estimates by Rohman et al that doubling the speed of broadband increases productivity by 0.3%.[60]

We have assumed that this benefit lasts for 3 to 5 years. Benefits may in principle last for longer but at the same time displacement effects may dampen the effect of localised improvements to broadband speed in rural areas at larger geographical scales. Overall we conservatively chose to take the lower bound benefit to cost ratio estimate of 1.6 as our best estimate, testing for sensitivity to a higher benefit to cost ratio of 2.6.

It is likely that this estimate will change as the impacts of the fund become clearer and are able to be measured. This benefit to cost ratio estimate does not include any of the benefits that are experienced by households. This benefit to cost ratio estimate is at a very early stage, it makes conservative assumptions about improvements in productivity as a result of access to broadband and includes no household benefits, thus it can viewed as a lower bound. Consultants SQW are working on producing more complete estimates of the benefits associated with the Rural Community Broadband Fund, their analysis will be available to feed in to later versions of this Impact Assessment

Encouragement of tourism activities

For this RDPE measure, we have again valued the benefit of jobs created using data from the Rural Development Programme Team database adopting the methodology outlined previously. A range is estimated on the benefit to cost ratio by varying the assumption on the persistence of the benefit associated with jobs created. This assumption varies between 1 and 5 years which is consistent with the level of persistence used by Ekosgen in their evaluation of LEADER.

In addition, we have used evidence from the Impact Assessment carried out on LEADER activities. This report found that the value of increased or safeguarded sales arising from Tourism Development was worth £17,274 per business supported. We have also used an estimate of the value of the economic benefits arising through increased visitors from LEADER intervention of £1,393. Thus we assumed that the benefit for a business supported by Measure 311 (diversification of farm businesses) is the sum of these figures, £18,667. We adjust the number of businesses supported by the deadweight figure estimated by CCRI for Axis 3 interventions of 21%

At the moment using the methodology outlined above we estimate a **benefit to cost ratio of 0.5 to 1, with a central estimate of 0.8** for Measure 311. However, this leaves out a series of benefits that cannot be monetised such as indirect economic impacts and increased engagement with the

[60] Does broadband speed really matter for driving economic growth? Investigating OECD countries 23rd European Regional Conference of the International Telecommunication Society, Rohman, Ibrahim Kholilul; Bohlin, Erik, 1-4 July 2012

environment (studies have shown holidays to rural areas have this impact). This intervention will also likely safeguard jobs which we do not value here. The benefit to cost ratio for tourism activities can be seen as reasonably robust; it values jobs but also uses estimated benefits from LEADER as a proxy. Typically the use of proxies is controversial. However, here, given that LEADER is part of the Rural Development Programme it is likely to give a reasonable estimate of the benefits.

Studies conducted on 2000 to 2006 RDPE

Studies of the Rural Development Programme before the current one (2000 to 2006) have provided some monetisation of benefits in this area. These are discussed below. These studies are not used in the modelling of benefits presented in this Impact Assessment. This is because we do not feel confident that they remain relevant estimates of the benefits of the Rural Development Programme:

- Evaluation of Processing and Marketing Grants (2000 to 2006) - around 8,000 FTE jobs were created or safeguarded, for a budget of around £35m. Assuming additionality of 50%, the estimated **benefit to cost ratio was in the range of 4 to 12**, with the low end of the range reflecting employment effects lasting 1 year at the bottom of the range, and 3 years at the top.[61]

- Similarly, an evaluation of the Rural Enterprise Scheme (2000 - 2006) found that around 15,000 jobs were created or safeguarded for a budget of £105 million. Assuming additionality of 50%, the estimated **benefit to cost ratio was from 2.5 to 7.1**, with the low end of the range reflecting employment effects lasting 1 year at the bottom of the range, and 3 years at the top. [62]

RDPE (2000 to 2006) found that around 15,000 jobs were created or safeguarded for a budget of £105 million. Assuming an additionality of 50%, the estimated **benefit to cost ratio was in the range of 2.5 to 7.5**, with the low end of the range reflecting employment effects lasting 1 year at the bottom of the range, and 3 years at the top.[63]

CCRI Report on Axis 1 and 3 of current programme

As outlined earlier consultants CCRI have used a SROI methodology to estimate the benefits associated with Axis 3. Using this methodology CCRI estimated **SROI of 2.17 for Axis 3.** However, it is important to recognise that this is not a final estimate and the methodology will likely be refined in future.

Conclusions

In the modelling in relation to the Growth Prgoramme there are a number of different benefit to cost ratios that we could legitimately use that demonstrate the cost effectiveness of these types of interventions. We have not used the CCRI estimate as this is still a preliminary estimate and it covers the whole of Axis 3, which includes a number of socio-economic schemes that will not be pursued under the Growth Programme. Hence it is not a truly representative estimate.

We have instead used a weighted average of the five benefit to cost ratios estimated for the current RDPE discussed above. The weighted benefit to cost ratio estimate has been weighted based on relative spend between the five activities. While we have only used five benefit to cost ratios across the range of different activities pursued under the current RDPE, these five activities account for 65% of spending in Axis 3 of the current RDPE and so can be considered broadly representative. Taking the **weighted average of the maximum and minimum benefit to cost ratios provides a range of 1.4 to 5.0 with a central estimate of 1.8.**

[61] Available at: http://www.agriculture.gov.ie/media/migration/publications/2008/FINALDOC.pdf
[62] Available at: www.ec.europa.eu/agriculture/rur/countries/uk/england/ex_post_en.pdf
[63] Available at: www.ec.europa.eu/agriculture/rur/countries/uk/england/ex_post_en.pdf

Table 18: Benefit to Cost Ratios for Growth Prgoramme Activity

Activity	BCR Ranges (Best Estimate)
Training	7 – 29 (7)
Support for Micro Enterprises	0.5 – 2.3 (1.4)
Rural Growth Network	3.5 – 16.2 (3.5)
Rural Broadband	1.6 – 2.6 (Business benefits only) (1.6)
Tourism	0.5 – 1 (0.8)
BCR used in IA Modelling	**1.4 – 5.0 (1.8)**

ii. Socio-economic development

There is currently a lack of data on monetised benefits of these measures at a national level. However, evidence from the Mid Term Evaluation demonstrates they have a range of social, economic and environmental benefits. [64] These include:

- measures to improve basic services for the rural community. These can address issues that adversely affect the rural population's ability to access services which require public support in, for example; small-scale transport arrangements, local shops and community facilities. At the time of the Mid Term Evaluation there was relatively low take-up of this funding. However, the report suggests that investment in services and cultural infrastructure will make a valuable contribution to increasing the attractiveness of the areas as a place to live;
- the renewal of community town centres. Case study evidence from the Mid Term Evaluation suggests the measure can enable a sense of pride in place and social ties between generations in rural areas, which will have a positive effect on the cohesion, vitality and sustainability of rural communities. An example would be through part funding a community arts project celebrating the history of a town;
- many of the businesses within these sectors are fundamentally underpinned by the quality and diversity of the landscape, the historic environment and biodiversity and the opportunities for the public to enjoy these; and
- National Parks as nationally designated landscapes attract 95 million visitors per annum, with 87 million day trips and 24 million visitor days from staying visitors.[65] Annual visitor expenditure equates to £3.0 billion, which increases to at least £4 billion when the wider "area of influence", which includes neighbouring towns and villages which cater for National Park visitors, is counted. This expenditure is estimated to support some 48,000 FTE jobs, around 34% of total employment in National Parks.

[64] Rural Development Programme for England: Mid-Term Evaluation, ADAS-HYDER, 2010.
[65] Valuing England's National Parks – Report for National Parks England, Cumulus Consultants Ltd, 2013.

D) LEADER

LEADER support to businesses

The average grant aid to businesses surveyed in the National Impact Assessment of LEADER[66] was £7,787. Key features of LEADER support are that:

- average increases in sales are about £8,000 to date and £38,000 including future returns;
- 55% of businesses surveyed assigned financial benefits (increased sales, profits and reduced costs) wholly to LEADER and 44% assigned employment benefits entirely to LEADER;
- 652 gross jobs generated amongst surveyed businesses are attributable to LEADER at a gross cost per job of £12,400 on total project investment of £8.1 million; and
- average deadweight (the proportion of total output which would have occurred regardless of LEADER investment) is between 13% and 18% depending on business sector compared with benchmark business support deadweight of 47%.

Within the business support category returns range from 4.87:1 for tourism development projects to 8.78 for projects focused on agricultural diversification. Overall return on investment for support to business has been **estimated at 6.05 to 6.71 with a central estimate of 6.38**. This central estimate is the benefit to cost ratio assumption used for LEADER support spending.

In estimating the benefit to cost ratios for LEADER business support projects, Ekosgen took account of and controlled for deadweight, displacement and bias in reporting jobs created and safeguarded. Thus the benefit to cost ratios used in the analysis have taken account of these important considerations.

LEADER support to communities

Support to communities accounts for 42% of current LEADER projects and 43% (£8.3 million) of total project investment. This is the split of Axis 4 expenditure that we use in our analysis. The Ekosgen study showed that:

- 71% of project managers believe that LEADER projects have provided otherwise inaccessible services. A further 18% believe that similar services could be accessed but not locally;
- conservation, tourism and heritage projects have attracted an average of 6,665 additional visitors per project per annum to date;
- of the projects surveyed 669 gross jobs have been created or safeguarded to date as a result of LEADER and a further 462 are expected in the future; and
- across all community support projects average deadweight is between 17% and 23% and compares well against benchmark deadweight figures for sub-regional publicly funded projects of between 39% and 40%. Since this research was published, the LEADER approach has delivered a significant amount of programme spending and hundreds more relevant projects. Evaluation studies of Axis 1, 3 and also of the LEADER approach itself will demonstrate further the added value that this approach brings.

Ekosgen estimates of overall return on investment for LEADER support to community activities give a **benefit to cost ratio of 3.55 to 3.87 with a central estimate of 3.71.** This central estimate is the assumption used in our analysis.

[66] *National Impact Assessment of LEADER*, Ekosgen, 2011. Available from: http://rdpenetwork.defra.gov.uk/assets/files/Impact%20of%20Leader/National%20Impact%20Assessment%20of%20LEADER.pdf

In estimating the benefit to cost ratios for LEADER community support projects, Ekosgen took account of and controlled for deadweight, displacement and bias in reporting jobs created and safeguarded. Thus the benefit to cost ratios used in the analysis have taken account of these important considerations.

12. Results

In this section we display the results of the benefit to cost analysis conducted for each scenario in this Impact Assessment. These results are shown in Table 19 below.

Table 19: Summary of Cost Benefit Analysis of All Scenarios (£m, 2012 prices)

Scenario	Scenario	PV Benefits	PV Costs	Benefit Cost Ratio	NPV
1	Balance as now (9% transfer)	2,773	1,257	2.2	1,516
2	More environmental focus (9% transfer)	2,885	1,142	2.5	1,743
3	More rural growth focus (9% transfer)	2,866	1,360	2.1	1,506
4	More farm and forestry productivity focus (9% transfer)	2,615	1,332	2.0	1,283
5	Balance as now (15% transfer)	4,956	2,010	2.5	2,947
6	More environmental focus (15% transfer)	5,089	1,867	2.7	3,222
7	More rural growth focus (15% transfer)	5,080	2,140	2.4	2,940
8	More farm and forestry productivity focus (15% transfer)	4,762	2,102	2.3	2,661

The scenario with the highest central estimate of the benefit to cost ratio is scenario 6, the environmental focus scenario with a 15% Pillar 1 to Pillar 2 transfer. This is because the agri-environment schemes have the highest quantified benefit to cost ratios.

Each of the 15% transfer scenarios have higher net benefits and net present value than their equivalent 9% transfer scenarios. This is because the costs associated with moving funds away from Pillar 1 are much lower than the benefits of investing further funds into the new programme.

The 'balance as now' scenarios have higher benefit to cost ratios than the farming productivity or growth focus scenarios. This is again because the agri-environment schemes have the highest quantified benefit to cost ratios and the balance as now scenarios have a higher share of expenditure on agri-environment than the farming or growth focus scenarios.

For the same reasons the farming productivity focus scenarios have benefit to cost ratios comparable to the growth focus scenarios. The growth focus scenario has a lower allocation of agri-environment spending than the farming focus scenario. As a result the growth focus scenario, despite growth activities having a higher benefit to cost ratio than farm and forestry productivity, has a very similar overall benefit to cost ratio.

Overall, due to the doubts about the quality of monetisable evidence available to evaluate the benefits of the new programme it is difficult to recommend one scenario above another. However, what can be concluded from these results is that a 15% transfer from Pillar 1 to Pillar 2 enables the delivery of much higher benefits then a 9% transfer from Pillar 1 to Pillar 2.

Sensitivity Analysis

Sensitivity analysis has been conducted on the results presented here with respect to each of the benefit to cost ratios used. The basis of these ranges is discussed above in the monetised benefits section.

Table 20: Benefit to Cost Ratios used in Sensitivity Analysis

Area of activity	Sub-Area	Lower BCR	Higher BCR
A) i. Environmental Land Management: Agri-Environment	Mid-tier	**2.2**	**5.3**
	Higher-tier	**2.2**	**5.5**
A) ii. Environmental Land Management: Forestry	Creation	**1.6**	**4.7**
	Management	**5.0**	**6.1**
B) Farm and Forestry Productivity		**0.86**	**1.73**
C) Growth Programme		**1.5**	**5.6**
D) LEADER	Business	**6.05**	**6.71**
	Community	**3.55**	**3.87**

Table 21 overleaf displays the impact that this sensitivity analysis has on the net present value and benefit to cost ratio results under each scenario.

At the bottom end of the sensitivity analysis the environmental focus scenarios produce the highest benefit to cost ratio estimates for the various scenarios. The farm and forestry productivity focus scenarios have the lowest net present value and benefit to cost ratio at the low end of the analysis. This poor performance reflects the low benefit to cost ratio used for farm and forestry productivity. As can be seen in Table 20, the environmental benefit to cost ratios are much higher at the lower end than those for farm and forestry productivity. This reflects the lack of monetisable evidence available for farm and forestry productivity in comparison with agri-environment schemes and forestry creation and management.

At the top end of the sensitivity analysis the rural growth scenario has the highest net present value and benefit to cost ratio. This reflects the high benefit to cost ratio used for the Growth Programme at the top end of the analysis which, although not as large as the environmental benefit to cost ratios, is associated with comparatively high levels of private investment which produces higher benefits. However the benefit to cost ratio used at the top end for the Growth Programme benefit to cost ratio is not as robust as that used for the environmental benefit to cost ratios and so these results need to be considered with caution.

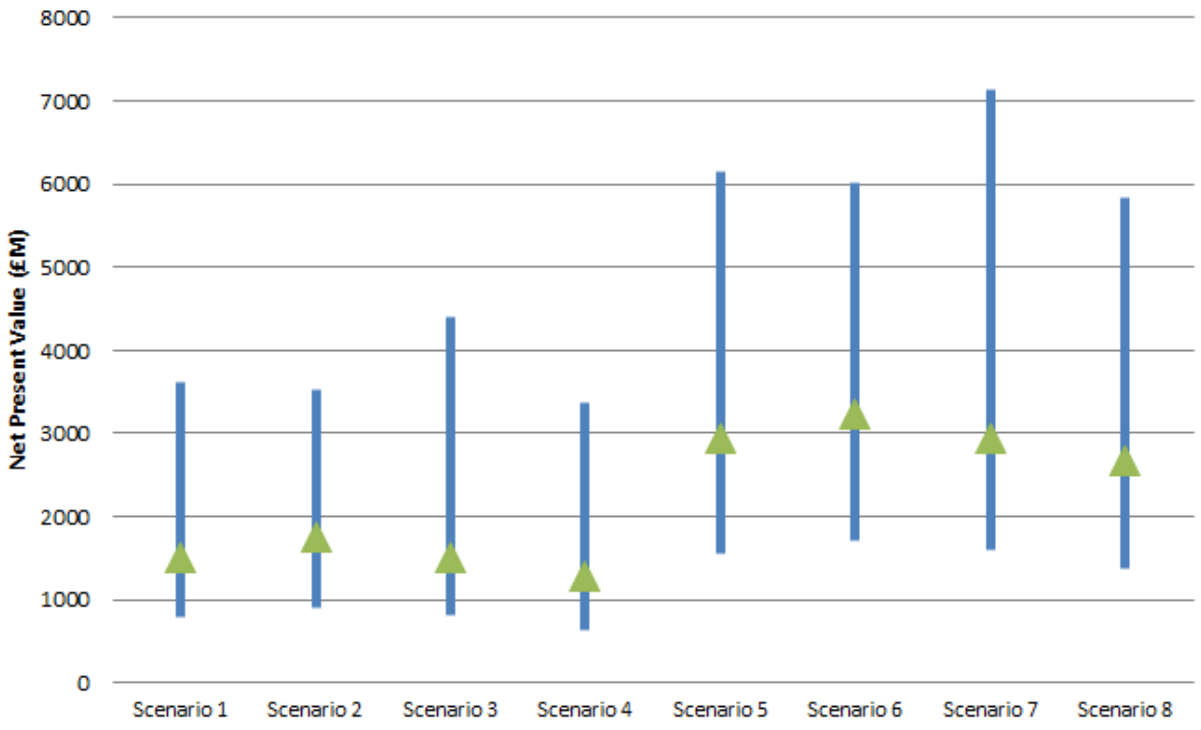
The farm and forestry productivity focus scenarios have comparatively poor results in the low and high case, for a 9% and a 15% transfer. While this may appear to imply that a farm and forestry focused programme is unable to provide the level of benefits provided by some of the other scenarios, in actuality this may simply reflect the poor evidence available to us on the benefits of these types of interventions.

Table 21: Summary of Cost Benefit Analysis with Sensitivities (£m, 2012 prices)

Scenario	Scenario	PV Benefits		PV costs	Benefit Cost Ratio		NPV	
		Min	Max		Min	Max	Min	Max
1	Balance as now (9% transfer)	2,034	4,872	1,257	1.6	3.9	777	3,614
2	More environmental focus (9% transfer)	2,047	4,654	1,142	1.8	4.1	906	3,512
3	More rural growth focus (9% transfer)	2,171	5,765	1,360	1.6	4.2	811	4,405
4	More farm and forestry productivity focus (9% transfer)	1,959	4,698	1,332	1.5	3.5	627	3,366
5	Balance as now (15% transfer)	3,559	8,151	2,010	1.8	4.1	1,549	6,141
6	More environmental focus (15% transfer)	3,572	7,872	1,867	1.9	4.2	1,705	6,005
7	More rural growth focus (15% transfer)	3,734	9,274	2,140	1.7	4.3	1,595	7,134
8	More farm and forestry productivity focus (15% transfer)	3,467	7,938	2,102	1.6	3.8	1,365	5,836

We also include a visual representation of ranges and best estimates for net present values for each scenario in Chart 3. Once again, the 15% scenarios emerge more favourably than the 9% scenarios from the analysis, but the results highlight the fact that all ranges show a degree of overlap and that the degree of overlap is particularly large in the two subsets (9% scenarios and in the 15% scenarios).

Chart 3: Summary of Cost Benefit Analysis with Sensitivities (£m, 2012 prices)



Impacts on business

Direct costs and benefits to business (following EANCB definitions) have been estimated and are summarised in Annex F. At a high level, direct benefits to business include payments received under the Programme (which are transfer from Government to business) plus any private benefits of investment. Costs include the overall investments undertaken by business under the programme plus administrative costs, plus the costs associated with transfer of funds from Pillar 1 to Pillar 2.

Overall the annual benefits to business of the Programme are estimated to exceed the costs, with net benefits ranging from £84m to £237m across the scenarios. These results reflect the nature of an expenditure Programme and the fact that participation is voluntary from a business perspective.

13. Other assessments

Risks

There are two main types of risks to consider in differentiating between scenarios. There are the delivery risks in having a Rural Development Programme (scenarios 1 to 8), and the associated cost risk of having no Rural Development Programme (option 0). It is important to note here that there is no material difference between scenarios 1 to 8 when considering these types of risks. As a Rural Development Programme that addresses at least four of the six priorities in the new EU Rural Development Regulation is a legal requirement of the draft Rural Development Regulation, taking up option 0 brings some risk of the associated costs of infraction and disallowance.

Small firms impact test

For the purpose of this Impact Assessment, all businesses having fewer than 250 full time equivalent employees are considered small businesses. Most, if not all, businesses receiving support from the Rural Development Programme will be small businesses. For example, all but 0.2% of farms in England are small firms. When both small and large businesses apply for Rural Development Programme funding the application process is not expected to disproportionately disadvantage the small businesses. The programme generally adopts a targeted approach to investment**,** drawing in those businesses which can most contribute to Rural Development Programme objectives. Positive encouragement of priority projects will help ensure that small businesses have access to new programme funds even if they have relatively little experience of applying for grant support.

Competition assessment

The impacts on competition are likely to be small compared with the scale of public benefits generated in delivering the Rural Development Programme. An assessment of the implications on competition will be informed by following guidance on possible competition-distorting impacts of procurement and granting funding. HM Treasury and the Office of Fair Trading publish guidance which applies to subsidies that carry the highest risk of distorting competition and these will be assessed routinely as part of the funding award process.

Monitoring and evaluation

An ex-post evaluation of the current RDPE will be completed by 2015/16. In addition two enhanced Annual reports, including evaluation of the new Rural Development Programme is a requirement by the EU Commission in 2017 and 2019. This will provide an opportunity to review the new programme and look further at the impact and Value for Money of proposed actions. We will also shortly be undertaking a further evaluation of current Axis 1 and 3 measures, including a beneficiary survey, which will provide further robust evidence of impact. This will build upon the current CCRI evaluation report and provide a benchmark for the 2017 and 2019 evaluations. It will also help to address current evidence gaps that have been described in this Impact Assessment.

This work will improve the basis for estimating benefit to cost ratios for socio-economic, forestry and productivity and competitiveness interventions which have been identified as requiring further evidence. This is particularly relevant given the government's focus on jobs and growth and the contribution that the Rural Development Programme can make to support the achievement of these policy aims. There is generally more reliable evidence on the benefit to cost ratios of agri-environment schemes. The benefit estimates underpinning these benefit to cost ratios focus on the environmental and carbon benefits of the schemes.

The mid-term evaluation of the current RDPE was not able to provide robust estimates of impacts on jobs and Gross Value Added of the current programme, which makes it difficult to estimate the impacts of the new programme. Other than the high level principles set out in the Green Book, there does not appear to be standard operational guidance within government to measure and value the impacts of projects targeting regional growth and jobs. We are liaising with Other government Departments to try and establish a robust approach to strengthen the evidence in this area.

The monitoring and evaluation arrangements for the current RDPE are based on a common set of indicators devised by the European Commission in consultation with Member States and specified in Annex VIII of the Rural Development Implementing Regulation (Commission Regulation 1974/2006). However, this legislation will be succeeded by the new regulation which will govern the period covered by the new programme.

As well as the common indicators applying to all Member States, the government will introduce a number of programme-specific indicators and targets to measure success against new programme objectives. Both common and additional indicators will be further developed during the lifetime of the new programme through on going evaluation, with evaluation undertaken as described above in 2017 and 2019, and an ex-post evaluation of the new Rural Development Programme in 2020/21.

Enforcement and sanctions

Provisions for the control of expenditure under the Rural Development Programme and compliance with EU requirements are currently based on the provisions of the Rural Development Regulation (Council Regulation 1698/2005), the implementing regulation (Commission Regulation 1974/2006) and the Controls Regulation (Commission Regulation 1975/2006). New regulations will be agreed at EU level to ensure enforcement during the period covered by the new programme.

The powers of the Secretary of State and delivery bodies to enforce the Rural Development Regulation and apply sanctions for non-compliance are provided in The Rural Development (Enforcement) (England) Regulations 2007 (SI 2007, No 75).[67] These will be superseded by new legislation which will govern the new programme.

Equality

The programme will follow best practice in relation to procurement rules for grants to ensure that equality rules are followed and there will be no bias in eligibility to applicant's background or location.

END

[67] A copy of this Statutory Instrument is available at: http://www.defra.gov.uk/erdp/pdfs/rdp07_13/enfregs.pdf

Annex A: Assumptions

Introduction

This annex sets out the detailed assumptions used in this Impact Assessment. This includes: the new programme budget; inflation; Pillar 1 Greening; Rural Development Programme transition; funding mechanisms; and other innovative approaches.

Available Rural Development Programme budget

The available budget for the new Rural Development Programme has yet to be set.

The split of the UK's expected receipts from the CAP is being decided. We have assumed that the UK will receive £17.8 billion from Pillar 1 and £1.84 billion from Pillar 2. No decision has been taken on the allocation of UK funds within the UK.

However, in addition to the level of transfer other important parameters have yet to be confirmed or set. The Rural Development Programme budget scenarios that this Impact Assessment assesses are therefore based on a number of assumptions.

The main assumptions are:

a) the actual UK CAP allocations are the same as the indicative ones presented by the European Commission;

b) As there is not yet an agreed allocation for UK countries, we assume for the purposes of this consultation that direct payment (Pillar 1) allocations are based on current regional shares and rural development allocations (Pillar 2) are based on the historic allocation for the current Rural Development Programme.

c) Defra co-finances EU funds to 2020 at the minimum co-financing rates agreed by heads of government as part of the EU budget deal. This includes 0% co-financing on money transferred from Pillar 1 to Pillar 2;

d) The planning assumption for converting Euro's to Sterling remains at £0.80=€;

e) all EU funds are consumed by 2020;

f) all amounts are cash amounts (i.e. they are not adjusted for inflation);

g) commitments from the current programme and transition year carrying on into the new programme are unaffected by decisions on double funding with Greening of Pillar 1 payments; and

h) annualised figures are based on the EU allocation profile and does not represent Defra's forecast spend.

We have also taken the following into account in developing the scenarios;

- we need to allocate funding first to existing commitments;
- we need to spend 5% of EU funding through the LEADER approach. That works out at about 4% of the combined EU and Exchequer budget;
- a minimum of 30% of EU funds must be spent on environmental priorities;
- Defra has committed to contribute Rural Development Programme funds to the Growth Prgoramme. The Growth Prgoramme is also supported by other EU funds.

For the scenarios that analyse a 15% transfer from Pillar 1 to Pillar 2 we use a budget of £3.7 billion. This figure is similar to the budget for the current Rural Development Programme for England (RDPE) in cash terms. For scenarios that instead analyse a 9% transfer from Pillar 1 to Pillar 2 we use a budget of £3.2 billion. The actual figures may vary according to the agreed funds and reflecting the exchange rate between Euro and Sterling.

Based on these assumptions, a 1% transfer is the absolute minimum needed to meet the contractual commitments left over from the current programme and the EU obligations to spend 30% on environmental land management measures and 5% through the LEADER approach.

Inflation

Rural Development Programme budgets and spending are not adjusted for inflation. This means that over time the purchasing power of the Rural Development Programme budget is eroded by inflation. In the modelling we have therefore assumed that spending is declining in real terms over the new programme. As benefits are produced from spending, which is declining in real terms, the associated benefits also decline. However, administration and delivery costs do not fall in real terms, but as discussed in Section 9, we assume that delivery administrative costs fall by 30% in the new Rural Development Programme. We use Office of Budgetary Responsibility forecasts of inflation in the modelling presented in this Impact Assessment.

Greening

Another issue that will have implications for the new programme is the approach that the UK government takes towards Greening of Pillar 1. From 1 January 2015, 30% of the Basic Payment will be dependent upon certain eligible farmers carrying out three land management requirements: Crop Diversification, Ecological Focus Areas and Permanent Grassland. The costs and benefits of Greening are considered in the overall CAP Implementation evidence paper. For the purposes of this assessment the impact of Greening has not been factored in.

Rural Development Programme transition

The new Rural Development Programme is expected to begin in January 2015 following a transition period in 2014, during which some spending from the current programme will be allowed to continue. In this assessment we have treated spending and commitments entered into during the transition period as part of the commitments from the current programme.

New funding mechanisms

For some activities, the new programme may make use of loans or other financial instruments in place of the grants that have been used in the current and previous programmes. The exact details of which activities may use these and the extent to which they may be used are yet to be confirmed.

Other innovative approaches that may be used in the new programme include fostering greater collaboration between rural businesses, more local influence in tailoring scheme delivery to local needs, improved coordination of outcomes across landscapes and new delivery models. In addition, closer working with the private sector could support environmental outcomes through payments for ecosystem services (PES) approaches, including biodiversity offsets or covenants.

Annex B: Scenarios 1 to 8: Detailed breakdown of spending

Scenario 1: Balance as now (9% transfer)

Table 22: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 23: Detailed Breakdown of Spending in Scenario 1 (£m, 2013, cash terms)[68]

Figures in £2013m	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	27	12	46	77	99	113	133	**507**
Farm and forestry productivity	9	4	15	24	31	36	42	**160**
Growth programme	14	6	23	39	50	57	67	**256**
LEADER	7	3	11	19	24	27	32	**122**
Total	**496**	**452**	**450**	**451**	**451**	**450**	**450**	**3,200**

[68] Nb. All numbers in tables are rounded to the nearest whole number. Therefore individual lines may not add up exactly to the column of totals.

Scenario 2: More environmental focus (9% transfer)

Table 24: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 25: Detailed Breakdown of Spending in Scenario 2 (£m, 2013, cash terms)

Figures in £2013m	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	36	15	61	102	130	148	175	**667**
Farm and forestry productivity	5	2	9	15	19	21	25	**96**
Growth programme	9	4	15	24	31	36	42	**160**
LEADER	7	3	11	19	24	27	32	**122**
Total	**496**	**452**	**450**	**451**	**451**	**450**	**450**	**3,200**

Scenario 3: More farm and forestry productivity focus (9% transfer)

Table 26: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 27: Detailed Breakdown of Spending in Scenario 3 (£m, 2013, cash terms)

Figures in £2013m	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	19	8	32	53	68	77	91	**347**
Farm and forestry productivity	5	2	9	15	19	21	25	**96**
Growth programme	26	11	44	73	94	107	126	**480**
LEADER	7	3	11	19	24	27	32	**122**
Total	**496**	**452**	**450**	**451**	**451**	**450**	**450**	**3,200**

Scenario 4: More rural growth focus (9% transfer)

Table 28: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 29: Detailed Breakdown of Spending in Scenario 4 (£m, 2013, cash terms)

Figures in £2013m	2014/15	2015/16	2016/17	2017/18	2018/19	2019/20	2020/21	Total
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	22	9	38	63	80	91	108	**411**
Farm and forestry productivity	14	6	23	39	50	57	67	**256**
Growth programme	14	6	23	39	50	57	67	**256**
LEADER	7	3	11	19	24	27	32	**122**
Total	**496**	**452**	**450**	**451**	**451**	**450**	**450**	**3,200**

Scenario 5: Balance as now (15% transfer)

Table 30: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 31: Detailed Breakdown of Spending in Scenario 5 (£m, 2013, cash terms)

Figures in £2013m	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	35	84	128	167	195	213	239	**1,060**
Farm and forestry productivity	6	15	23	31	36	39	44	**194**
Growth programme	10	24	37	49	57	62	70	**310**
LEADER	5	12	19	24	29	31	35	**155**
Total	**496**	**563**	**562**	**563**	**563**	**563**	**563**	**3,874**

Scenario 6: More environmental focus (15% transfer)

Table 32: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 33: Detailed Breakdown of Spending in Scenario 6 (£m, 2013, cash terms)

Figures in £2013m	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	41	99	151	198	230	252	283	**1,254**
Farm and forestry productivity	4	9	14	18	21	23	26	**116**
Growth programme	6	15	23	31	36	39	44	**194**
LEADER	5	12	19	24	29	31	35	**155**
Total	**496**	**563**	**562**	**563**	**563**	**563**	**563**	**3,874**

Scenario 7: More farm and forestry focus (15% transfer)

Table 34: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 35: Detailed Breakdown of Spending in Scenario 7 (£m, 2013, cash terms)

Figures in £2013m	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	28	68	104	137	159	174	195	**866**
Farm and forestry productivity	4	9	14	18	21	23	26	**116**
Growth programme	19	46	70	92	107	117	131	**581**
LEADER	5	12	19	24	29	31	35	**155**
Total	**496**	**563**	**562**	**563**	**563**	**563**	**563**	**3,874**

Scenario 8: More rural growth focus (15% transfer)

Table 36: Summary of All Scenarios

Level of transfer	9%	9%	9%	9%	15%	15%	15%	15%
Scenario	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**
Environmental land management	83%	88%	78%	80%	83%	88%	78%	80%
Farm and forestry productivity	5%	3%	3%	8%	5%	3%	3%	8%
Rural growth	8%	5%	15%	8%	8%	5%	15%	8%
LEADER	4%	4%	4%	4%	4%	4%	4%	4%

Table 37: Detailed Breakdown of Spending in Scenario 8 (£m, 2013, cash terms)

Figures in £2013m	**2014/15**	**2015/16**	**2016/17**	**2017/18**	**2018/19**	**2019/20**	**2020/21**	**Total**
Total committed (legally binding)	440	428	354	292	247	218	176	**2,155**
New environmental land management	31	75	114	149	174	189	213	**944**
Farm and forestry productivity	10	24	37	49	57	62	70	**310**
Growth programme	10	24	37	49	57	62	70	**310**
LEADER	5	12	19	24	29	31	35	**155**
Total	**496**	**563**	**562**	**563**	**563**	**563**	**563**	**3,874**

Annex C: Agri-environment technical annex

Further information on agri-environment benefit to cost ratios (BCRs)

The NELMs benefit to cost ratios (BCRs) are based on a combination of biodiversity and landscape valuation evidence from a report by FERA/Newcastle (2010),[69] and additional evidence on the greenhouse gas, water and air quality impacts. The estimates from the FERA/Newcastle report have been revised in a number of ways to reflect the latest environmental valuation benefits transfer guidance.[70] This annex sets out these revisions.

In the original report, the BCR of the landscape and wildlife impacts was assessed to be 1.8. Given administrative costs are accounted for elsewhere in the RDPE Impact Assessment analysis, these are excluded from the BCR (which is only applied to programme costs), raising it to 2.0.

To estimate the BCR, the report also estimated the programme costs which would be associated with Environmental Stewardship schemes covering 70% of agricultural land. This level of uptake was achieved in 2012, so actual programme spend figures can be used to revise the BCR. Given the actual cost was lower than that estimated, the BCR increases to 2.6.[71]

The FERA/Newcastle report expressed the willingness to pay for Environmental Stewardship in per household terms and calculated aggregate willingness to pay by multiplying these values for the total number of English households. Other things being equal (and in the absence of significant shifts in the number of adults per households) changes in the numbers of households can be expected to affect the aggregate willingness to pay for Environmental Stewardship. Projections on the number of households were taken from a report by the Department for Communities and Local Government (November 2011). As the number of households is estimated to rise faster than that was assumed in the FERA/Newcastle report, the benefits increase proportionately and therefore the BCR rises to 2.8. An alternative approach could have looked at increasing aggregate willingness to pay in line with population growth. Over the relevant time horizon this would not change the BCR estimates by more than 0.1, and only for the higher tier NELMs, so a calculation based on households has been retained for consistency with the original report.

A final adjustment was made to reflect evidence that willingness to pay for environmental outcomes increases when incomes increase. This was done by combining evidence on the income elasticity of willingness to pay for environmental quality (1.0) and trend productivity growth, which is assumed to be 2% a year. Overall, this produces a BCR of 3.3 for biodiversity and landscape benefits of Environmental Stewardship schemes.

[69] Available at: http://archive.defra.gov.uk/evidence/economics/foodfarm/reports/documents/estimatingthewildlife.pdf
[70] Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/182376/vt-guidelines.pdf
[71] For consistency with this new cost figure, the benefits are also inflated to 2012 prices from 2009 prices

Annex D: Forestry technical annex

Woodland creation

A BCR for woodland creation is estimated by valuing the benefits associated with avoided carbon, biodiversity, landscape and job creation. Benefits associated with air quality and recreational access are not included in this analysis. Benefits are calculated over 80 years to reflect general life span of a tree and for simplicity it is assumed that the trees remain in the ground and are not used for timber or wood fuel. Deadweight of 19% is assumed based on the mid-term evaluation of RDPE.[72]

The costs and benefits for woodland creation are assumed to be applicable to maintaining woodland cover. This is because the measure is designed to maintain existing woodland cover without which the land would not be replanted (for example as a result of felling due to a pest or disease). Therefore this effectively equates to new planting.

Carbon

The woodland carbon code lookup tables are used to estimate the amount of carbon sequestered from new planting and the DECC carbon values are used to value this sequestration. These are calculated at 5 yearly intervals for 80 years and result in a net present benefit of £38,696 per ha. A range is estimate on the BCR results presented below by varying the carbon value using the ranges estimated by DECC.

Biodiversity[73]

The examination of biodiversity utilised previous analysis by Garrod and Willis (1997) on remote coniferous forests to generalise 'biodiversity values' across the rest of Great Britain. Willingness to pay estimates for marginal increases in biodiversity were derived relative to values estimated for remote coniferous forests and were in the range £1 to £3 per household per year for a 12,000 hectare increase in forest.[74] This study estimated that aggregate values for new broad leaf planting are £34m per year, updated to 2011 prices. This is then divided by the number of hectares to give a value of £15 per ha. Over 80 years this gives a net present value of £427.

Landscape

Willis et al (2003) produced robust statistical values indicating that households were willing to pay £268.79p per year for woodland views from home and £226.56p per year for views whilst travelling. This was used in the aggregate figure which was then updated in the National Ecosystems Assessment.[75]

Given that the number of households with a view of new woodlands planted through the Rural Development Programme is not known, the very approximate value of landscape benefits of woodland creation have been calculated by dividing the aggregated landscape value by ha of woodland (in 2003) to giver per ha value. This assumes that new woodland creation is carried out with the same proportion of new woodland being planted within a view of people's homes and roads, as existing woodland.

The aggregate landscape value for forestry in the UK was estimated to be £150 million per year (Willis et al) or £185 million per year (UK National Ecosystems Assessment, 2011).[76] The area of woodland in 2003 was 2.7m ha. Therefore the landscape value of each ha adjusted to account for willingness to pay elasticity was approximately £80 per ha (2011 prices).

[72] ADAS & HYDER (2010) Rural Development Programme England Mid Term Evaluation, Page 240
[73] From Willis (2003) using (Hanley et al., 2002)
[74] Scoping study on valuing ecosystem services of forests across Great Britain, Page 25, Eftec, 2001
[75] The social and environmental benefits of forests, Page 12, Willis et al, 2003
[76] As footnote 73 above, Page 26

Assuming that the landscape values occur immediately (they would in fact take a number of years to develop) and that the values themselves occur in perpetuity (as once established trees generally can only be felled if replanted), the net present benefit calculated over 80 years is £2287.

Gross Value Added (GVA) impacts

Forestry data is used to estimate the Gross Added Value (GVA) per ha for woodland creation. This is calculated using an average annual GVA for agriculture, forestry and fishing of £20,723. GVA per ha is shown in Table x. It is assumed that the GVA benefits for woodland creation and maintaining woodland cover only occur in year 1.

Table 38: Forestry GVA per ha

		Jobs per ha	GVA per ha per year
Woodland creation	Direct	0.0022	45.6
	Incl. local multiplier effects	0.003	62.2
	Incl. national multiplier effects	0.004	82.9

Costs

The Forestry Commission (FC) estimate that the average cost to government of woodland creation would be £6,500 for actual establishment (cost in year 1) followed by ten years of maintenance at £200/ha/annum (paid annually) for 10 years. The level of grant is expected to be 80% (i.e. beneficiary contribution of 20%) so that carbon financing can legitimately be claimed. Therefore the total cost is £8125 per ha in year one for planting and establishment and £250 a year for 10 years for maintenance. It is assumed that the maintenance occurs for the full 80 years but that after year 10 it is fully funded by the land owner at an estimated £15 per ha per year.[77] This results in a net present cost to government of £8021 and a total net present cost of £10,415 (including the land owner's cost). These figures are estimates over a number of years and therefore are taken as 2011 prices.

Administrative costs are included in the assessment of costs. These estimates were made by taking the following steps:

- from 2007 to mid-2013 (6.5 years) 2357 woodland creation grants were issued;
- the estimated labour costs to FC is £1418 per application;
- the average size of a woodland creation grant is 5.5ha and therefore the FC administrative cost per ha is estimated to be £258; and
- the cost to applicants is estimated to be £64 per application (foresters wage is estimated to be £10.95 plus 30% overheads equalling £14.24, and it is estimated that it takes 4.5 hours to complete an application). Dividing this by the average size of application (5.5ha for creation) results in an applicant administrative cost of £12ha for creation.

[77] Forestry Commission estimate

Benefit to cost ratio (BCR)

Using the methodology outlined above we estimate a BCR for woodland creation of 1.6 to 4.7, with a central estimate of 3.2.

Woodland Management

Key assumptions

It is assumed that woodland management activity improves the biodiversity and landscape ecosystem services of woodland. It is not possible to calculate the carbon costs/benefits of woodland management as the impact will depend on the end use any timber extracted. The mid-term review of RDPE estimated deadweight for current RDPE Measures 225 and 227 (measures related to Forestry). The average of these estimates is used in this analysis, which is 40%.

Benefits are calculated over a period of 10 years assuming the rationale for support is to help make significant changes to either the woodland structure or management regime rather than just supporting on-going unchanged management (as it would not be possible to make such changes in a shorter period).

Landscape

The Entec-Hanley (1997) study investigated landscape improvements in British forests using stated preference techniques: choice experiment (CE) and contingent valuation (CV). Willingness to pay for the ideal forest landscape was estimated to be £38.15 per household per year. The separate contingent valuation study indicated households would be willing to pay £29.16 per year to see enhancements in the appearance of British forests that resulted in the perception of an "ideal" forest emerging.[78]

Assuming that woodland management results in the ideal forest emerging £29.16 per household per year is taken as the lower bound estimate and £38.15 per household per year as the upper bound estimate. These figures are updated to 2011 prices and then divided by the number of ha of woodland in 1997,[79] which is then multiplied by the number of households in England to give a willingness to pay per household, per ha, per year of £926. The net present value benefit over the 10 years of a management agreement is £7974.

Biodiversity

Biodiversity is the primary benefit of woodland management. There is only one study that can be used to estimate the value of marginal changes to biodiversity. The following is from the CJC study 'Economic analysis of Forestry Policy in England'.

A study by Garrod and Willis (1997)[80] estimated….The value for a marginal change, increasing biodiversity, in these forests was £0.30 to £0.35 per household per year per 1% enhanced biodiversity management standard in these forests [using a contingent ranking (CR) method]. A contingent valuation

[78] Economic Analysis of Forestry Policy in England, Page 45/46, CJC, 2003
[79] The area of woodland for 1997 is not available and therefore the area in 2001 is taken as the nearest estimate. This is 1.1m ha and is taken from Forestry Commission (2001) Forestry Statistics Page 1. Available at: http://www.forestry.gov.uk/pdf/forestrystatistics2001.pdf/$FILE/forestrystatistics2001.pdf
[80] The non-use benefits of enhancing forest biodiversity: a Contingent ranking study. *Ecological Economics* 21, 45-61, Garrod, G and Willis, K., 1997

(CV) study produced similar results of £10 to £11 per household per year for biodiversity for a 30% increase of the area of this forest type.

The CR model of Garrod and Willis (1997) was a linear model which assumes each additional increment in enhanced biodiversity management of standard blanket commercial forests is valued equally. This may be a reasonable assumption up to the first 30% of blanket coniferous commercial forests restructured to meet an enhanced biodiversity standard (an axiom supported by the CV result).

It is assumed that the value for increased biodiversity is at least the same for broadleaf as conifer woodlands. It is then assumed that households would be willing to pay £10 to £11 per year to see an increase in management in 30% of the whole of English woodlands. This results in an estimate of around £50 per ha per year and a net present benefit of £447 per year.

Wood fuel

It is assumed that there is a market for all wood fuel and that all woods brought into management sell wood fuel from their woodlands. Expert opinion estimates that 80m^3 of wood fuel can be extracted from a hectare of woodland every 20 years and therefore it is assumed that 4m^3 per year is extracted. [81] Expert opinion is that broadleaf round wood is worth between £25 and £50 per m^3 and therefore a central estimate of £37.50 m3 is used. [82] This equates to a value of £150 per year and a net present benefit of £1291.

Gross Value Added (GVA) impacts

Forestry data is used to estimate the Gross Added Value (GVA) per ha for woodland creation. This is calculated using an average annual GVA for agriculture, forestry and fishing of £20,723. GVA per ha is shown in Table x.

Table 39: Forestry GVA per ha

	Jobs per ha	GVA per ha per year
Woodland management	0.004	82.9

These figures can then be added to the benefit figures presented in Section x. It is assumed that the GVA benefits for woodland management occur in each year of the agreement.

Costs

Woodland management costs are more difficult to determine than woodland creation as the management actions may be very different across applications. However Forestry Commission analysis of grants over the last seven years, estimates that an average of £100/ha/annum would be an appropriate cost estimate. These payments would be made annually. This level of grant is estimated by Forestry Commission to be about 60% of the additional costs that would be incurred compared to unchanged management. Therefore the total cost of management is estimated to be £167 per year. The net present cost to government is £860 and the total cost is £1438.

[81] Mike Render Forestry Commission, estimates used in the wood fuel implementation plan.
[82] Ian Tubby Forestry Commission

An estimate of the administrative costs associated with woodland management is made by taking the following steps:

- from 2007 to mid-2013 5894 management grants were issued;
- the estimated labour costs to FC is £1418 per application;
- the average size woodland management grant is 71 ha and so the FC admin cost per ha for woodland management is £20; and
- the cost to applicants is estimated to be £64 per application (foresters wage is estimated to be 10.95 plus 30% overheads equalling £14.24, and it is estimated that it takes 4.5 hours to complete an application). Dividing thi s by the average size of application results in an applicant admin cost of £1ha for management.

Table 40: Woodland creation net present costs and benefits including administration costs[83]

	NPB	NPC	Cost benefit Ratio
To government	41193	8279	5
Total	41193	10595	4

Table 41: Woodland management net present costs and benefits including administration costs

	NPB	NPC	Cost Benefit Ratio
To government	12285	881	14
Total	12285	1456	8

Benefit to cost ratio

Using the methodology outlined above we estimate a BCR for woodland management of 5.0 to 6.1, with a central estimate of 5.6. This range was created by taking the maximum and minimum values estimated for landscape and biodiversity.

[83] Nb. This can also be used for woodland restoration

Annex E: Growth Programme technical annex

Internal estimates of benefit to cost ratios (BCRs) in Axis 3 of current RDPE

This annex sets out the methodologies and inputs used to estimate benefit to cost ratios (BCRs) for various activities under Axis 3 of the current RDPE. These estimates are used as a proxy to forecast the benefits associated with the Growth Programme under the new Rural Development Programme.

Axis 3 training

The benefit to cost ratio for Axis 3 training estimates the increase in lifetime productivity as a result of participating in the training. The costs included in the BCR estimate are those from providing and participating in the training.

Training schemes under RDPE are intentionally aimed at business leaders and senior managers specifically for the purpose of increasing their business and management skills. They are generally of a similar level to that provided by higher national diploma, undergraduate degree or master's degree. However RDPE only funds short "bite size" courses which could at most be equivalent to individual modules that typically make up these types of qualifications. For the purpose of this analysis we have assumed that courses in the new Rural Development Programme will involve 30 hours of formal learning (this is at the higher end of the spectrum in terms of training provided under the current RDPE). As such any increase in productivity as a result of participating in RDPE training is bound to be lower than the increase for a typical higher national diploma or master's degree. On the other given the targeted nature of their design and self-selection by beneficiaries the increase in productivity could well be higher than a typical module under one of such further education courses.

Benefits

Benefits of participating in an RDPE training course are estimated by: 1) calculating the increase in annual productivity as a result of the training; 2) spreading this benefit over the rest of a participant's working life; and 3) aggregating this across all participants who said they benefitted from the course.

Increase in annual productivity

In this analysis a variety of wage premium estimates are used in order to estimate the labour productivity increase as a result of RDPE training courses. Wage premium estimates for higher education, such as an undergraduate or master's degree, have been made by the Department for Business, Innovation and Skills (BIS).[84] This report estimates that returns to undergraduate degree relative to A levels was typically 24%, though returns to agricultural degrees was lower at 14%. Wage premium of those with master's degrees was typically 9% more than those with undergraduate degrees. This report also estimated that the premiums associated with attaining a degree after the age of 30 falls to only 6%.

BIS have published a similar report that examines the wage premium associated with attaining qualifications at NVQ level 2 and 3, as well as more basic skill courses.[85] This report estimated a wage premium of between 2.75% to 5% for achieving level 3 qualifications when the participant already has an undergraduate or master's degree.

[84] The Returns to Higher Education, BIS, June 2011. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32419/11-973-returns-to-higher-education-qualifications.pdf

[85] Measuring the Economic Impact of Further Education, BIS, March 2011. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32329/11-816-measuring-economic-impact-further-education.pdf

The estimate of 2.75% is used as the best estimate, though it is also the bottom of the range used, with the top of the range being the 6% estimated by BIS as the wage premium for those achieving a degree after the age of 30.

We have used the 2.75% parameter as the courses provided by RDPE are only a fraction of what would typically be learnt in an undergraduate or master's degree and thus the wage premium estimated for those types of qualification would likely overestimate the RDPE training wage premium. Our midpoint estimate is about an eighth of that of a typical degree, which would appear to be appropriate. It is also consistent with the premium experienced by someone who already has a degree getting an NVQ level 3, which again appears appropriate given the level that RDPE is pitched at and how targeted it is.

The wage premium is converted to a productivity premium, which measures the increase in output as a result of the training course. BIS's paper on further education found the productivity premium to be double the wage premium. However another report by the National Audit Office found that the premium was more like 1.25[86]. This lower NAO estimate is conservatively used in the analysis.

The annual increase in productivity is estimated by multiplying the productivity premium by the output of typical participant. This is estimated by taking the average of gross value added per worker for the business service, distribution, transport, accommodation and food sectors. Gross value added per worker is estimated using ONS estimates of gross value added per worker for these sectors adjusted for Defra's rurality index, which estimates the relative prices of rural areas compared to England as a whole.[87]

Benefits over time

The benefit of improved productivity as a result of RDPE training lasts for the remainder of the participants working life, so an assumption on average age of participants is necessary. BIS found that the average age of someone participating in a provider based NVQ level 3 training course is 31, however to be conservative the average age of 42 is used for work-based NVQ level 3.[88] It is assumed that beneficiaries retire at age 65, and thus the productivity benefits of participating in RDPE training courses lasts for 23 years.

Aggregating over participants

To be conservative the number of participants utilising a new skill or process is used, as opposed to all participants in RDPE training schemes. This amounts to 73% for Measure 331 in the current RDPE. This data comes from the RDPE ROD database and shows the total number utilising a new skill or process in the current RDPE. It is assumed that this figure is profiled equally over the seven years of RDPE for the purposes of calculating a net present value of the benefits.

Deadweight adjustment

This figure is adjusted for deadweight, as these courses may have been provided in the absence of RPDE. We have used a range of 25% to 30% (equivalently 70% to 75% additionality), which is

[86] Estimating economic benefits from apprenticeships: Technical paper, NAO, February 2012. Available at: http://www.nao.org.uk/wp-content/uploads/2012/02/10121787_Technical_paper.pdf
[87] Page 82. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/245103/Statistical_Digest_of_Rural_England_2013_September_Update.pdf
[88] Measuring the Economic Impact of Further Education. Page 17, BIS, March 2011. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32329/11-816-measuring-economic-impact-further-education.pdf

consistent with the findings of BIS in their report on deadweight associated apprenticeships.[89] Further discussions with BIS have confirmed that this level of deadweight is typical for government training schemes.

Costs

The costs associated with the training under Measure 331 have been estimated by taking the total of RDPE grant costs, private contributions, delivery administration costs, beneficiary administration costs and opportunity cost of attending the training.

The RDPE ROD database provides figures on total grant funding and private contributions. These figures are profiled equally over the seven years of the RDPE.

Delivery administration costs have been estimated by taking Defra forecasts of administration costs for the new RDPE, and assigning a share of these costs based on the proportional spend on Measure 111 relative to the total RPDE.

Estimates of beneficiary administration costs have come from discussion with members of RDPE staff. Applying for a course and complying with ex-post monitoring takes between 2 and 4 hours. Each training course lasts for 30 hours. This represents an opportunity cost in terms of not working which is factored in to the costs of the training.

The hourly cost of applying, attending and complying with monitoring come from ONS estimates of typical hourly wages associated with agricultural workers, with an extra 30% for overheads, as suggested by the Impact Assessment Standard Cost Model. To get the aggregate administrative cost of attending the training we have used the total number of beneficiaries, as opposed to just those reporting that they have benefitted.

For Measure 331, a range of 7 to 29 is estimated, with a best estimate of 7.

Table 42: Key Assumptions for estimating the benefits of training

Assumptions	
Deadweight	25 - 30%
Wage premium	2.75 - 6%
Productivity Premium	1.25X wage premium
GVA per Agricultural worker	£20,723
Hourly Wage of Agricultural Worker	£11.97
Age of participant	31 – 42

Support for the creation and development of micro-enterprises

The BCR for the support for the creation and development of micro-enterprises has been estimated by monetising the benefits of job creation associated with the intervention. This data is contained within the ROD database.

[89] Assessing the Deadweight Loss Associated with Public Investment in Further Education and Skills, BIS, May 2012. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/32281/12-767-assessing-deadweight-loss-with-investment-further-education.pdf

The job creation figures are first adjusted for deadweight using an estimate of 50.7% made in a BIS report on Regional Development Agency interventions in 2009.[90] The remaining jobs are assumed to be created with an even profile in each year.

We measure the benefit of a job by using the annual estimate of gross value added per worker. The job creation figures are split between jobs created on farm or off-farm. We have estimated the gross value added per worker (equivalent to output) in rural areas for agricultural workers. This estimate has been made using ONS estimates of gross value added per worker for the agricultural sector adjusted for Defra's rurality index which estimates the relative prices of rural areas compared to England as a whole.[91] For jobs created off farm we have used average gross value added per worker of business service, distribution, transport, and accommodation and food sectors. We then assume that the benefit of each job created lasts for between 1 and 5 years, with 3 years as a central case.

When assessing the costs associated with this intervention we use the total value of RDPE grant under this measure, plus the associated private contributions to projects. Delivery administrative costs incurred by the government, related delivery bodies and beneficiaries are also included. These estimates are based on discussion with delivery bodies on the time taken for beneficiaries to apply for funding and to comply with monitoring and inspection.

This estimate leaves out important benefits that are not quantifiable using available evidence. Examples of these benefits include value of sales generated by the new businesses, the value of any exports, any indirect jobs created as a result of the new firms and the increase in entrepreneurial skills in the economy.

Using the methodology outlined above the BCR associated with Measure 312 is estimated to be between 0.5 and 2.3 with a central case of 1.4. This range is created by varying the length of time the benefit of each job lasts.

Table 43: Key assumptions for estimating the benefits of micro-enterprises

Assumptions	
Deadweight	50.7%
GVA per worker	£28,849
Length of job benefits	1-5 years
Hourly Wage of Worker	£11.97

Rural Growth Networks

The BCR for the Rural Growth Networks uses an identical methodology as that used for the BCR for the support for the creation and development of micro-enterprises. Job creation forecasts use the funding applications submitted by each of the Rural Growth Networks, which have already taken account of whether these jobs could be considered additional. The methodology was improved by adjusting the gross value added per worker figures depending on the specific location of each RGN. It is assumed that each job created lasts for between 1 and 5 years. This methodology gives a BCR range of 3.5 to 16.3, with a central estimate of 3.5.

[90] Research to improve assessment of additionality, Table 3.1, page 14, BIS, 2009. Available from: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/191512/Research_to_improve_the_assessment_of_additionality.pdf

[91]

Table 44: Key assumptions for estimating the benefits of Rural Growth Networks

Assumptions	
GVA per worker	£33,746 - £38,832
Length of job benefits	1-5 years

Rural Community Broadband Fund

Estimates of benefits associated with the Rural Community Broadband Fund (RCBF) have been measured as the increase in gross value added as a result of the fund. This increase has been estimated using the results of a study conducted by Rahman et al which found that a business doubling its broadband speed increases productivity by 0.3%.[92] The BCR estimate for the RCBF presented here is a preliminary estimate of the benefits associated with the fund. Consultants SQW have been commissioned to produce a comprehensive estimate of the benefits associated with the fund that will take account of the benefits to households as well as other wider social benefits.

The estimate presented here takes the gross value added (GVA) for predominantly rural areas from the Defra Rural Digest.[93] The proportion of households without access to broadband (23%[94]) is then used as a proxy for the proportion of businesses without access to high speed broadband. The household figure is used, as data on the proportion of businesses without access is not available from the Rural Digest. The potential increase in GVA from rural business gaining access to high speed broadband is estimated taking the predominantly rural GVA figure and adjusting for the assumption on proportion of businesses without access.

It is assumed that the fund will help 20% of these businesses and so benefit estimates are scaled by this factor. The increase in gross value added is measured by assuming that this adjusted gross value added figure will increase by 0.3%. It is assumed that this benefit lasts for between 3 and 5 years before any localised effect are dampened by displacement effect at larger geographical scales. The costs of the fund that feed in to the BCR estimate are the public investment costs, as well as the private match funding. No other costs are included. Following this methodology a BCR range of 1.6 to 2.6 is estimated. This range reflects our assumptions on the duration of the benefits associated with the fund.

[92] Does broadband speed really matter for driving economic growth? Investigating OECD countries 23rd European Regional Conference of the International Telecommunication Society, Vienna, Austria, 1-4 July 2012, Rohman, Ibrahim Kholilul; & Bohlin, Erik.

[93] Page 80. Available at: https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/245103/Statistical_Digest_of_Rural_England_2013_September_Update.pdf

[94] Page 71. Available at: https://www.gov.uk/government/publications/statistical-digest-of-rural-england-2012

Table 45: Key assumptions for estimating the benefits of Rural Communities Broadband Fund

Assumptions	
Increase in GVA from RCBF	0.3%
% of businesses in rural areas without access to high speed broadband.	23%
% of business without high speed broadband that are given access as a result of the fund	20%
Length of benefit	3-5 years

Measure 311 – Encouragement of tourism activities

For the BCR for encouragement of tourism activities, the benefit of jobs created is valued using data from the RDPE ROD database adopting the same methodology outlined in the section on support for the creation and development of micro-enterprises.

Further evidence is used from the Impact Assessment carried out on LEADER activities. This report found that the value of increased/safeguarded sales arising from tourism development was worth £17,274 per business supported. Further, this Impact Assessment estimates that increased visitors from LEADER intervention are worth £1393 to each business supported. These estimates are used to value the benefit that business supported at £18667. The number of businesses supported by the deadweight figure is adjusted using a deadweight figure estimated by CCRI for Axis 3 interventions of 21%.

Using the methodology outlined above an estimate of 0.5 to 1.0 is made with a central estimate of 0.8 for Measure 311. This range is created by varying the assumption on the length of the benefit associated job creation. This estimate leaves out a series of non-monetisable benefits such as indirect economic impacts and increased engagement with the environment (studies have shown holidays to rural areas have this impact). This intervention will also likely safeguard jobs which we do not value here.

Table 46: Key assumptions for estimating the benefits of encouragement of tourism activities

Assumptions	
Value to businesses of Tourism related support	£18,667
Deadweight	21%

Annex F: Equivalent Annual Net Cost to Business (EANCB) calculation

Rural businesses across a number of sectors will have the opportunity to apply for funding under the Rural Development Programme. Their decision to do so is completely voluntary, as such the Programme will not introduce any new regulatory burden and does not fall under One In Two Out (OITO) rules. Those businesses that do decide to take advantage of measures under the Programme will face costs in terms of administration costs and (where relevant) private contributions or opportunity costs (e.g. when employees take up training opportunities). Costs associated with applications will be met by all businesses that decide to apply, even if they are ultimately unsuccessful.

While the programme does not fall under OITO rules, direct costs and benefits to business (following EANCB definitions) have been estimated for transparency and completeness (Table 47). At a high level, direct benefits to business include payments received under the Programme (which are transfer from Government to business) plus any private benefits of investment. Costs include the overall investments undertaken by business under the programme plus admin costs, plus the loss of output associated with the transfer of funds from Pillar 1 to Pillar 2. All costs and benefits have been estimated with reference to the business as usual (Option 0).

More specifically benefit to business have been defined as being inclusive of:

- overall payments to business under the Growth Programme plus the benefits to business of the Growth Programme;
- overall payments to business under land management schemes, plus the monetary benefits to business associated with forestry schemes;
- overall payments to business in support of on farming and forestry productivity, plus the benefits to business of these programme activities;
- overall payments to business under LEADER plus the monetised benefits to business associated with the scheme.

Costs to business have been defined as being inclusive of:

- overall investment in the Growth Programme (sum of overall Programme expenditure and associated private contributions), plus associated administrative costs;
- overall expenditure on land management schemes, plus private contributions for forestry, plus associated administrative costs;
- overall investment in farming and forestry (sum of overall Programme expenditure and associated private contributions), plus associated administrative costs;
- overall investment in LEADER (sum of overall Programme expenditure and private contributions), plus associated administrative costs;
- loss of agricultural output associated with alternative levels of transfer of funding from Pillar 1 to Pillar 2.

The benefits to business from Growth Programme and LEADER activities have been estimated using the benefit to cost ratios for these activities. These reflect private benefits measured in GVA terms (hence inclusive of wages as well as gross operating surplus), so in this respect they may overestimate net impacts on business. On the other hand wage elements (e.g. opportunity costs) are accounted for among the private contributions on the cost side of the EANCB equation.

As explained in Section 8, and important assumption in estimating the costs to land managers of delivering agri-environment schemes is that the level of subsidy payment they receive exactly corresponds to the resource costs of delivering the agri-environment options. Given participation in these schemes is voluntary some land managers may receive a higher level of agri-environment funding than

is necessary to offset the costs of their participation and so earn producer surplus from agri-environment scheme participation. This implies the costs may have been overestimated.

Estimates of the private benefits to business of investment in farming and forestry productivity were not readily available. Deriving these estimates would require disentangling private benefits from the illustrative Social Return of Investment, which is complex and arguably not worthwhile at this stage given the illustrative nature of these estimates. Instead a conservative assumption has been made that the return on investment to these activities is at least the value of the funds put in by the beneficiary, otherwise they would not have invested in the first place. A similar assumption has been made for the private benefits of forestry land management activities, which are relatively minor.

The loss of output which is estimated to be incurred by farming businesses as a result transferring 9% - 15% of Pillar 1 funding to Pillar 2 is also reflected in the calculations. This adds up to £ 66 – 100m in present value terms (see the evidence paper accompanying the CAP consultation). Again accounting for the entirety of this cost probably overestimates the loss of operating surplus but a precise attribution was not possible.

Overall the annual benefit to business of the Programme are estimated to exceed the costs, with net benefits ranging from £84m to £237m across the scenarios. Benefits appear to be higher for the 15% scenario but the picture is less clear than for Net Present Value results. This is because the main area of expenditure that benefits in the move from 9% to 15% transfer scenarios is agri-environment, whose benefits are public in nature. In terms of the comparison between different scenarios for each level of transfer funding, scenarios with an increase focus on rural growth appear to benefit business the most. This finding should however be caveated by the fact that in the absence of strong evidence a prudent approach has been taken to value the benefits of investing in farming and forestry competitiveness activities.

Table 47: EANCB Results across the 8 scenarios

Scenario	Scenario	Equivalent Annual Benefit on Business	Equivalent Annual Cost on Business	Net Equivalent Impact on Business (net cost to business per year)
1	Balance as now (9% transfer)	262	155	107
2	More environmental focus (9% transfer)	224	140	84
3	More rural growth focus (9% transfer)	336	169	167
4	More farm and forestry productivity focus (9% transfer)	269	165	104
5	Balance as now (15% transfer)	409	247	162
6	More environmental focus[95] (15% transfer)	362	228	134
7	More rural growth focus (15% transfer)	501	264	237
8	More farm and forestry productivity focus (15% transfer)	417	259	158

[95] Agri-environment schemes are estimated to deliver the highest benefits per pound of expenditure among the broad categories of interventions for which budget allocations are varied across scenarios. As a result, overall benefit cost ratios for the alternative scenarios tend to increase with the share of agri-environment expenditure as a percentage of total scenario costs. They therefore increase in the move from 9% to 15% transfer as well and in the more environmental focused scenarios.