The Finance Gap for UK Nature

(GFI, eftec and Rayment Consulting, 2021)

Appendix 2: Financial needs to meet Biodiversity related targets and policy commitments in the UK

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Protected Sites (SSSIs/ASSIs)

Targets/ policy commitments

England

25YEP target: restoring 75% of our one million hectares of terrestrial and freshwater protected sites to favourable condition, securing their wildlife value for the long term [2042]

Environment Bill: Policy paper on environmental targets reaffirms 25YEP goal and notes that setting a target that legally supports that commitment could help drive action by landowners and others and attract investment.

In addition, the UK is committed to extending coverage of protected areas to 30% of land and sea by 2030 (30 by 30 target). In England, most of the 30% area is likely to comprise existing protected landscapes (AONBs and National Parks) as well as SSSIs. The costs of meeting the 30 by 30 target are uncertain and depend on the additional work required to establish the 30% area (designations and associated surveys and management planning) and then to enhance the management of that area (recognising that National Parks and AONBs have limited habitat management objectives at present). While there is a commitment to establish the 30 by 30 network, there is currently no commitment relating to land management across the 30% area.

Wales

Vital Nature: NRW's strategic steer for biodiversity to 2022 aims to "work towards achieving favourable conservation status for habitats and species, recognising that this means both getting the features of protected sites in favourable condition within their landscape or seascape setting, and addressing pressures on conservation status of habitats and species in the wider terrestrial and marine environment."

Scotland

No specified commitments identified, though the 2020 Challenge for Scotland's Biodiversity refers to intention to "meet the targets for favourable condition of Natura sites and SSSIs".

Northern Ireland

NI Biodiversity Strategy to 2020: By 2020, the Department aims to appropriately manage its existing suite of designated sites in line with the 12 principles of the ecosystem approach and take account of the operational guidance provided by the CBD. NI draft programme for government 2016-2021 established as its biodiversity indicator: % of protected area under favourable management.

Cost assessment method

Costs of maintaining SSSIs can be estimated by multiplying habitat areas by unit costs per hectare for each habitat.

SSSI restoration requires a range of actions which vary by sites and habitats. Comprehensive estimates of SSSI restoration costs are not available. However, detailed assessments have been made of the costs of restoring European protected sites to favourable conservation status in England and Wales, and these are set out in country level Prioritised Action Frameworks (PAFs). Though these were produced in 2015/16, most of the required investments have yet to be made, so the PAFs represent the best estimates of required investment. Costs of achieving SSSI condition can be estimated by upscaling from the European protected site area to the whole SSSI area.

The cost assessments include the costs of tackling air and water pollution affecting protected sites. These have been costed in the PAFs for England and Wales, though the costed measures are not necessarily comprehensive. The actions to address invasive non-native species, pests and diseases are included in the costings in the same way, and to the extent that the required actions have been identified and assessed. The effect of climate change on costs is uncertain, and cannot be specifically assessed; however, restoring sites to favourable condition is expected to make them more resilient to climate change.

Cost estimates

Best estimates of costs are as follows.

Table 1: Financial Needs, 2022 to 2031 – SSSI Restoration and Management (£m)

	Capital restoration costs	**Annual maintenance costs**	**Total costs over 10 years, 2022-31**
England	1,311	76	2,074
Northern Ireland	123	6	244
Scotland	1,132	35	1,484
Wales	180	16	287
UK	**2,747**	**134**	**4,089**

Costs over the period 2022-2050 are summarised in Table 2. Restoration costs are assumed to occur over the 10 years to 2031, and maintenance costs thereafter.

Table 2: Financial Needs, 2022 to 2050 – SSSI Restoration and Management (£m)

	Average annual cost				Total cost			
	2022-31	**2032-41**	**2042-50**	**2022-50**	**2022-31**	**2032-41**	**2042-50**	**2022-50**
England	207	76	76	207	2,074	763	687	3,304
Northern Ireland	24	6	6	24	244	64	57	334
Scotland	148	35	35	148	1,484	352	317	1,962
Wales	29	16	16	29	287	164	147	577
UK	**409**	**134**	**134**	**409**	**4,089**	**1,342**	**1,208**	**6,177**

Habitat creation/restoration outside SSSIs

Targets/ policy commitments

England

25YEP: creating or restoring 500,000 hectares of wildlife-rich habitat outside the protected site network, focusing on priority habitats as part of a wider set of land management changes providing extensive benefits [2042]

Environment Bill: Targets policy paper reaffirms this commitment and states that Gove proposes: "first to consider developing targets that focus on actions to restore and create habitats and bring habitat into appropriate management. This will be an important first step before developing a more complete, outcome-based target."

Wales

No specific targets/ commitments identified. Nature Recovery Action Plan has an objective to increase the resilience of our natural environment by restoring degraded habitats and habitat creation

Scotland

No specific commitments identified.

Northern Ireland

No specific commitments identified.

Cost assessment method

Unit costs for creation, restoration and maintenance of each priority habitat type are estimated in a model developed by Rayment (2017, 19) for RSPB, National Trust and the Wildlife Trusts. This has been further updated through a recent review of literature and documentation on capital costs of habitat restoration and creation projects.

Capital costs of habitat restoration and creation are estimated by multiplying area of each habitat restored and created by unit cost per hectare. All habitat in good condition, and habitat newly restored and created, is assumed to require annual maintenance to maintain condition. Habitat maintenance costs are estimated by estimating annual area requiring maintenance by unit cost per hectare (mostly based on agri-environment scheme payments, updated in model based on changes in cost drivers).

Costs for England assume 250,000 hectares are created and 250,000 hectares restored by 2042 (25YEP target). In the absence of targets for other countries, similar targets are assumed in proportion to existing priority habitat area. Breakdown of habitats created follows targets in England Biodiversity 2020 Strategy; breakdown of restored habitats is proportionate to area of each in unfavourable condition.

The costs cover actions to control invasive non-native species and address pests and diseases to the extent that these are currently known and included in habitat restoration and management actions. The effects of climate change on habitat creation, restoration and maintenance costs is uncertain and cannot be specifically assessed; however, creation and restoration of priority habitats will contribute to climate change mitigation and adaptation and help to build long-term resilience, while climate effects need to be considered in developing and implementing habitat creation and restoration strategies.

Cost estimates

Estimates of costs are presented in the table below. Costs total £4.1 billion in the UK over the period 2022 to 2031, comprising capital costs of habitat creation and restoration of £2.8 billion and annual costs of habitat maintenance of £1.3 billion.

Table 3: Total costs of meeting habitat creation and restoration targets outside SSSIs (£m, 2022-2031)

	Capital costs		**Total annual costs over 10 years**	**Total costs over 10 years**
	Creation	**Restoration**	**Maintenance**	
England	1,090	399	618	2,107
Northern Ireland	118	43	52	213
Scotland	652	239	461	1,352
Wales	173	63	203	440
UK	**2,033**	**744**	**1,335**	**4,112**

Average annual and total costs over the period 2022-2050 are summarised in Table 4.

Table 4: Average annual and total costs of meeting habitat creation and restoration targets outside SSSIs, 2022-2050 (£million)

	Annual average				Total cost			
	2022-31	**2032-41**	**2042-50**	**2022-50**	**2022-31**	**2032-41**	**2042-50**	**2022-50**
England	211	255	117	197	2,107	2,548	1,052	5,707
Northern Ireland	21	26	11	20	213	261	101	575
Scotland	135	162	79	127	1,352	1,615	712	3,679
Wales	44	51	29	42	440	510	261	1,211
UK	**411**	**493**	**236**	**385**	**4,112**	**4,934**	**2,125**	**11,172**

Species conservation

Targets/ policy commitments

England

25YEP: taking action to recover threatened, iconic or economically important species of animals, plants and fungi, and where possible to prevent human induced extinction or loss of known threatened species in England and the Overseas Territories

Environment Bill: Policy paper on targets indicates that Government plans to introduce targets relating to **species abundance** and **extinction risk** as the most effective in demonstrating progress towards species recovery. Species abundance: "Our most comprehensive species data is about the abundance of species. Using this, we could set a target covering a wide range of species across different habitats, including farmland birds, woodland butterflies and priority species under Section 41 of the NERC Act. Species extinction: We also want to consider how a target could focus action to reduce species extinction risk, in particular whether this could track the change in the number of species within each International Union for the Conservation of Nature (IUCN) Red List category.

Wales

No specific commitments identified.

Scotland

No specific commitment found. Environment Strategy monitoring framework mentions that indicator is under development for status of Scotland's biodiversity, based on changes in the abundance and distribution of a wide range of species

Northern Ireland

No specific commitments identified.

Cost assessment method

Species abundance – in addition to creation, restoration and maintenance of priority habitats, increase in species abundance indicators requires agri-environment measures to be applied at sufficient scale in wider countryside. Rayment (2017, 2019) model estimates requirements for biodiversity management for arable, improved grassland and rough grazing land, through application of appropriate Countryside Stewardship packages, based in advice from RSPB ecologists. These requirements are estimated for the four countries. Area of required prescriptions is multiplied by cost per hectare, applying relevant agri-environment payment rates, updated in model to reflect changes in cost drivers.

Preventing species extinction – as well as habitat actions, threatened species also require dedicated species recovery actions (research, education, advice, targeted site management, species protection measures). Based on advice from Natural England, as well as previous BAP costings work (GHK, 2010), each red listed species is estimated to require one-off actions costing on average £225,000 as well as ongoing actions averaging £12,000 per annum. There are currently around 1500 red listed species in England and the red list assessment process is ongoing. These estimates were used to calculate the cost of species recovery actions in England, with costs in other UK countries assumed to be proportionate to overall land area.

The costs cover actions to control invasive non-native species, address pests and diseases and respond to the impacts of climate change to the extent that these are currently known and included in species recovery actions.

Cost estimates

The cost of a package of measures designed to enhance the abundance of widespread farmland species across the UK is estimated at £384 million annually, or £3.8 billion over 10 years to 2031 (Table 5).

Table 5: Estimates of Financial Needs for Species Abundance(£m)

	England	**Northern Ireland**	**Scotland**	**Wales**	**UK**
Annual costs (£m)					
Arable biodiversity measures	126	1	17	3	147
Improved grassland biodiversity measures	108	24	39	34	205
Rough grazing biodiversity measures	5	1	21	5	31
Total	**240**	**26**	**77**	**41**	**384**
Total costs, 2022 to 2031 (£m)					
Arable biodiversity measures	1,265	14	169	26	1,474
Improved grassland biodiversity measures	1,083	236	394	337	2,050
Rough grazing biodiversity measures	48	10	208	49	315
Total (£m)	**2,396**	**260**	**772**	**412**	**3,839**

Annual average and total costs over the period 2022-2050 are shown in Table 6.

Table 6: Annual average and total financial needs to enhance species abundance, 2022-2050 (£M)

	Annual average				**Total cost**			
	2022-31	**2032-41**	**2042-50**	**2022-50**	**2022-31**	**2032-41**	**2042-50**	**2022-50**
England	240	240	240	240	2,396	2,396	2,156	6,947
Northern Ireland	26	26	26	26	260	260	234	755
Scotland	77	77	77	77	772	772	695	2,238
Wales	41	41	41	41	412	412	370	1,194
UK	**384**	**384**	**384**	**384**	**3,839**	**3,839**	**3,455**	**11,134**

The cost of actions for species recovery are estimated at £1.0 billion to 2031, including one off costs of £842 million and recurrent costs of £167 million (Table 7).

Table 7: Estimated cost of actions for species recovery (total 2022 to 2031, £m)

	One-off costs	**Total recurrent costs**	**Total**
England	451	90	541
Northern Ireland	49	10	59
Scotland	270	54	323
Wales	72	14	86
UK	**842**	**167**	**1,009**

Table 8 gives average and total costs of actions for species recovery over the period 2022-2050.

Table 8: Average annual and total costs of actions for species recovery (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	54	39	30	41	541	381	269	1,191
Northern Ireland	6	4	3	4	59	41	29	129
Scotland	32	23	18	25	323	228	161	712
Wales	9	6	5	7	86	61	43	190
UK	101	73	56	77	1,009	712	502	2,223

Woodland Creation/ Management

Targets/ policy commitments

England

25YEP - increasing woodland in England in line with our aspiration of 12% cover by 2060: this would involve planting 180,000 hectares by end of 2042.

Environment Bill: The Targets policy paper reiterates a manifesto commitment to increase tree planting across the UK to 30,000 hectares of trees per year by 2025. Also mentions England Tree Strategy and Nature for Climate Fund, and that Government would like to develop evidence and assumptions of whether statutory long-term targets for trees would be appropriate.

Wales

Woodland for Wales Strategy: Woodland cover in Wales increases by at least 2000 hectares per annum from 2020 to 2030 and beyond to meet strategy priorities and to maintain the overall productive potential from Welsh woodlands.

Scotland

Securing a green recovery on a path to net-zero: climate change plan 2018–2032 – update: Annual target of 12,000 hectares woodland creation in 2020/21 rising to 18,000 hectares in 2024/25.

Northern Ireland

Environment Minister Edwin Poots announced in March 2020 plans to plant 18m trees at a cost of £80m over 10 years, increasing woodland cover by 9,000 hectares by 2030. The Woodland Trust has said that up to 2,000 hectares a year would be needed to hit an earlier target of doubling Northern Ireland's woodland cover from 6% to 12% by 2056.

Cost assessment method

The costs of woodland creation are estimated by calculating annual areas created per annum in each country to meet the cumulative targets and multiplying these by unit costs per hectare. It is assumed that all newly planted woodland is maintained, applying a per hectare maintenance cost to the cumulative area created.

The area of woodland assumed to be planted by 2030, 2040 and 2050 is shown in Table 9.

Table 9: Cumulative area of woodland assumed to be created (hectares)

	Main estimate, based on country targets		
	2030	**2040**	**2050**
England	86,340	166,340	214,340
Northern Ireland	11,900	26,900	41,900
Scotland	142,000	242,000	310,000
Wales	22,000	42,000	62,000
UK	**262,240**	**477,240**	**628,240**

Woodland targets overlap with targets for creation of priority habitats, which include native broadleaved woodlands across the UK and native pinewoods in Scotland. The additional costs of new woodland creation on top of priority habitat targets are estimated by subtracting costs for priority habitat woodland creation and maintenance.

These estimates assume that woodland creation targets are met by the planting of native broadleaved woodlands as well as native pinewoods in Scotland. If the targets were met by planting non-native conifers, this would have similar costs. While it would contribute towards climate mitigation targets, many would question whether planting non-native conifers would be beneficial for nature and would justify public investment.

Cost estimates

Table 10 provides estimates of the total costs of new woodland creation and maintenance in the UK to meet the targets set out above. Total costs amount to £2.5 billion over the 10 year period 2022-2031, with the capital costs of woodland creation amounting to £2.4 billion.

Table 10: Estimated total costs of woodland creation and maintenance, UK, 2022 to 2031 (£m)

	Creation	**Maintenance**	**Total**
England	845	42	886
Northern Ireland	122	6	128
Scotland	1,224	82	1,306
Wales	190	12	202
UK	**2,382**	**141**	**2,523**

Average annual costs and total costs over the period 2022-2050 are given in Table 11.

Table 11: Average annual and total costs of woodland creation (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	89	87	58	79	886	871	524	2,282
Northern Ireland	13	16	17	15	128	160	154	442
Scotland	131	112	84	110	1,306	1,117	759	3,182
Wales	20	22	23	22	202	218	210	630
UK	**252**	**237**	**183**	**225**	**2,523**	**2,366**	**1,648**	**6,537**

Table 12 estimates the additional costs of woodland creation and maintenance, after deducting costs for priority habitat creation presented above. Corresponding annual averages and total costs over the 2022-2050 period are given in Table 13.

Table 12: Estimated additional costs of woodland creation and maintenance, deducting costs of priority habitat creation, UK, 2022 to 2031 (£m)

	Creation	Maintenance	Total	Total present value
England	375	22	397	328
Northern Ireland	72	3	75	61
Scotland	943	70	1,013	865
Wales	115	9	124	104
UK	**1,505**	**104**	**1,609**	**1,357**

Table 13: Average annual and total additional costs of woodland creation (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	40	28	44	37	397	285	392	1,073
Northern Ireland	8	10	16	11	75	97	140	312
Scotland	101	77	76	85	1,013	766	680	2,459
Wales	12	12	21	15	124	125	189	438
UK	**161**	**127**	**156**	**148**	**1,609**	**1,272**	**1,401**	**4,282**

The following results have been highlighted as highly uncertain.

Further increases in rates of woodland creation are likely to be required to compensate for the losses of trees due to climate change. For example, the CCC Valuation Report has reported that there is likely to be a loss of 211,400 ha of pine trees in England by 2050 (assuming a constant level of loss) due to climate change. To compensate for these losses, it would be necessary to double the planned rates of tree planting above (which amount to 214,000 hectares of new woodland in England by 2050).

Table 14 presents an upper estimate of the costs of woodland creation to compensate for these climate change losses, and assumes a doubling of the capital costs of tree planting across the four UK countries.

Table 14: Average annual and total costs of woodland creation, upper estimate with double rate of new planting to compensate for climate change effects (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	173	163	100	147	1,731	1,631	904	4,266
Northern Ireland	25	30	31	29	250	302	282	835
Scotland	253	207	146	204	2,531	2,066	1,310	5,906
Wales	39	41	42	41	392	408	381	1,181
UK	**490**	**441**	**320**	**420**	**4,904**	**4,407**	**2,877**	**12,189**

The additional costs of these enhanced rates of planting, above the habitat creation costs estimated above, are given in Table 15.

Table 15: Average annual and total additional costs of woodland creation, upper estimate with double rate of new planting to compensate for climate change effects (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	124	104	86	105	1,241	1,044	772	3,057
Northern Ireland	20	24	30	24	197	239	268	705
Scotland	224	172	137	179	2,238	1,715	1,230	5,183
Wales	31	31	40	34	314	315	360	989
UK	**399**	**331**	**292**	**343**	**3,991**	**3,313**	**2,630**	**9,934**

Peatland Restoration

Targets/ policy commitments

UK

The International Union for Conservation of Nature (IUCN) UK National Committee published the UK Peatland strategy in 2018, with a primary target of two million hectares of peatland in good condition, under restoration or being sustainably managed by 2040

England

The England Peat Action Plan 2021 states that the Government will immediately fund at least 35,000 ha of peatland restoration by 2025, through the Nature for Climate Fund and other sources. The England Peat Strategy: Policy Discussion Document 2020 states that the Government will bring all peatland into good condition, restoration management or more sustainable management by 2040.

Wales

National Peatland Action Programme, 2020-2025 committed £1m per annum to peatland restoration. It aims to deliver 600-800 hectares of peatland restoration per year. The Welsh Government's long term Peatland Policy (Welsh Government Ministers Decision Report 26, June 2019) commits to (i) ensuring "all peatlands with semi-natural vegetation are subject to favourable management/restoration (a minimum estimated area of 30,000 ha)", and (ii) restoring "a minimum of 25% (~c. 5,000 ha) of the most modified areas of peatland".

Scotland:

Climate Change Plan: third report on policies and proposals 2018-2032: Restore 250,000 hectares of peatland by 2030.

Northern Ireland

No specific commitments identified.

Cost assessment method

Costs have been estimated by estimating the area of peatland restoration required to meet the commitments identified above. It is assumed that all degraded blanket blog and lowland raised bog will have been restored or will be under restoration by 2040, in line with the national target for England and IUCN target for the UK. The annual area restored is multiplied by average capital costs of £1430 per hectare for blanket bog and £4369 per hectare for lowland raised bog. The cumulative area of bog restored is assumed to be maintained at an annual cost of £57 per hectare for blanket bog and £206 per hectare for lowland raised bog.

The total area of peatland assumed to be restored amounts to 1.4 million hectares (Table 16).

Table 16: Cumulative area of peatbog to be restored by country (hectares)

	2030	**2040**
England	97,849	223,547
Northern Ireland	66,744	133,487
Scotland	250,000	1,005,891
Wales	19,319	38,638
UK	**433,912**	**1,401,563**

The peatland restoration targets overlap with those for SSSI restoration and priority habitat creation and restoration. The additional costs of peatland restoration and maintenance have been estimated by deducting the area restored under the SSSI and priority habitat targets.

Cost estimates

Table 17 provides estimates of the total costs of peatland (blanket bog + lowland raised bog) restoration and maintenance in the UK to meet the targets set out above. Total costs amount to £920 million over the 10 year period 2022-31, with the capital costs of bog restoration amounting to £746 million.

Table 17: Estimated total costs of peatland restoration and maintenance, UK, 2022 to 2031 (£m)

	Restoration	**Maintenance**	**Total**
England	158	35	193
Northern Ireland	121	33	154
Scotland	436	97	534
Wales	30	8	38
UK	**746**	**174**	**920**

Average annual costs and total costs over the period 2022-2050 are given in Table 18.

Table 18: Average annual and total costs of peatland restoration and maintenance (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	19	28	14	21	193	283	125	602
Northern Ireland	15	19	10	15	154	193	92	439
Scotland	53	141	58	85	534	1,414	526	2,473
Wales	4	5	2	4	38	47	22	107
UK	**92**	**194**	**85**	**125**	**920**	**1,937**	**765**	**3,621**

Table 19 estimates the additional costs of peatland restoration and maintenance, after deducting costs for SSSI and priority habitat restoration presented above. These amount to £254 million over the period 2022 to 2031.

Table 19: Estimated additional costs of peatland restoration and maintenance, deducting costs of SSSI and priority habitat restoration, UK, 2022 to 2031 (£m)

	Restoration	**Maintenance**	**Total**
England	38	9	46
Northern Ireland	30	8	39
Scotland	131	29	160
Wales	7	2	9
UK	**206**	**48**	**254**

Corresponding annual averages and total costs over the 2022-2050 period are given in Table 20.

Table 20: Average annual and total additional costs of peatland restoration and maintenance (£m)

	Annual average				Total cost			
	2022-31	2032-41	2042-50	2022-50	2022-31	2032-41	2042-50	2022-50
England	5	7	3	5	46	68	28	142
Northern Ireland	4	5	2	4	39	48	22	108
Scotland	16	43	18	26	160	432	159	751
Wales	1	1	1	1	9	11	5	26
UK	**25**	**56**	**24**	**35**	**254**	**558**	**214**	**1,027**

Landscape and Historic Environment

Rayment (2017,19) estimated the extent of boundary features (hedgerows and stone walls) and historic environment features (scheduled monuments and other undesignated sites) requiring restoration and maintenance annually in the four countries. Costs for boundary features were estimated by applying a unit cost per metre of hedgerow and wall restored, and hedgerow created and maintained. For historic environment features, the costs of grassland management, scrub control, arable reversion to grassland and minimum tillage arable management around historic sites were estimated. Annual costs at UK level are estimated at £472 million for boundary features and £108 million for historic environment features over the 10 years 2022-2031 (Table 21).

Table 21: Annual costs of maintenance and restoration of landscape and historic environment features (£m, 2022-2031)

	England	Northern Ireland	Scotland	Wales	UK
Landscape features					
Annual capital costs	226	38	83	45	**393**
Annual maintenance costs	54	15	3	7	**79**
Total annual costs	***280***	***53***	***86***	***52***	***472***
Historic environment features					
Annual capital costs	10	2	17	4	**33**
Annual maintenance costs	43	2	25	5	**75**
Total annual costs	***53***	***4***	***42***	***9***	***108***
Total annual costs	**333**	**58**	**128**	**61**	**580**

Annual average and total costs over the period 2022-2050 are estimated in Table 22.

Table 22: Estimated annual average and total costs for landscape and historic environment features, 2022-2050 (£m)

	Annual average				**Total cost**			
	2022-31	**2032-41**	**2042-50**	**2022-50**	**2022-31**	**2032-41**	**2042-50**	**2022-50**
England	333	92	92	175	3,330	925	832	5,088
Northern Ireland	58	24	24	36	578	245	220	1,042
Scotland	128	19	19	57	1,280	194	175	1,649
Wales	61	14	14	31	613	144	130	887
UK	**580**	**151**	**151**	**299**	**5,801**	**1,508**	**1,357**	**8,667**

Soil Protection

Rayment (2017,19) estimated the costs of environmental land management measures needed for soil protection in the UK, based on estimates of areas of arable land and grassland soils in each country with very strong erodibility, as well as areas of deep peat soils under cultivation. The assessment assumed that arable soils with very strong erodibility would require a combination of winter cover crops and reversion to grassland; grassland soils with very strong erodibility would require seasonal livestock removal; and arable deep peat soils would require reversion to grassland.

Annual costs of these measures are put at £469 million (Table 23), which would amount to £4.7 billion over a ten year period at UK level. The majority of these costs are in England.

Table 23: Estimated financial needs relating to soil protection (Annual, £m)

	England	**Northern Ireland**	**Scotland**	**Wales**	**UK**
Arable conversion to grassland	210	9	13	1	233
Winter cover crops	101	7	10	1	118
Seasonal livestock removal	71	28	16	2	117
Total	**383**	**43**	**40**	**3**	**469**

Diffuse Water Pollution

Rayment (2017,19) estimated the costs of environmental land management measures to reduce diffuse water pollution in the UK. The analysis was based on the Environment Agency Cost of Agricultural Measures (CAM) model, and estimated areas of land management measures required on arable land (management of field corners, overwinter tramlines, winter stubbles, winter cover crops, buffer strips, fallow and conversion of arable land to grass) and grassland (buffer strips, field corner management, low inputs, seasonal livestock removal).

Annual costs of these measures are put at £136 million (Table 24), which would amount to £1.4 billion over a ten year period at UK level. The majority of these costs are in England.

Table 24: Estimated financial needs relating to diffuse water pollution (Annual, £m)

	England	Northern Ireland	Scotland	Wales	UK
Arable land	88	1	12	2	102
Grassland	17	6	6	5	34
Total	**105**	**6**	**18**	**7**	**136**

Some of the costed agri-environment measures (e.g. buffer strips, field corners, cover crops) contribute to objectives for biodiversity and soil protection as well as prevention of water pollution. After allowing for these overlaps, the additional financial need is estimated at £108 million annually at UK level (Table 25).

Table 25: Estimated financial needs relating to diffuse water pollution, in addition to needs for biodiversity and soils (Annual, £m)

	England	Northern Ireland	Scotland	Wales	UK
Arable land	74	1	10	2	86
Grassland	11	4	4	3	22
Total	**85**	**5**	**14**	**5**	**108**

Current Expenditures on Biodiversity

Current funding (2021-22) for biodiversity conservation in the UK is approximately £950 million per year. Of this, roughly £550 million comes from the public sector, £300 million from the NGO sector (net of government grants) and £95 million from the private sector (Table 26). Funding amounts to more than £700 million in England, £120 million in Scotland, £80 million in Wales and £30 million in Northern Ireland.

Table 26: Current Funding for Biodiversity in the UK (Annual, £m)

	England	**Northern Ireland**	**Scotland**	**Wales**	**UK**
Public sector	385	19	89	58	**552**
NGO sector	252	9	24	15	**300**
Private sector	80	3	8	5	**95**
Total	**717**	**31**	**121**	**78**	**947**
Total over 10 years	**7,171**	**309**	**1,206**	**799**	**9,486**

Source: Figures are for latest available year (mostly 2019/20). Estimates based on various sources, including Biodiversity Indicators for England and UK, departmental reports, charity accounts, and unpublished studies. Private sector figures are very rough estimates.

Projecting this forward for 10 years would give a total UK funding level of £9.5 billion over the period 2022-2031.

Public sector funding

The largest source of public sector funds is the agri-environment programme, estimated to account for around £300 million of biodiversity funding each year, or 55% of the overall total (Table 2).

Table 27: Main sources of public sector funding for biodiversity in the UK (annual, £m)

	England	Northern Ireland	Scotland	Wales	UK
Agri-environment schemes	242	6	24	28	300
Forestry/ woodland schemes	14	2	27	15	58
Statutory nature agencies	12	9	14	11	45
Environment agencies	9	0	2	0	11
National Heritage Lottery Fund	24	1	2	1	28
EU LIFE	8	0	3	3	14
Green Recovery Challenge Fund	40	0	0	0	40
Local authorities	20	1	2	1	24
Other public spending	16	0	15	1	32
Total	**385**	**19**	**89**	**58**	**554**

Source: Estimates based on various sources, including Biodiversity Indicators for England and UK, departmental reports, charity accounts, and unpublished studies

NGO Funding

NGO funding for domestic biodiversity conservation measures amounts to approximately £337 million in the UK, with £37 million of this coming from government grants and £300 million from NGOs' own funding sources (Table 28).

Table 28: Estimated NGO Biodiversity Funding, UK (annual, £m)

	England	Northern Ireland	Scotland	Wales	UK
Total spending on biodiversity	283	10	27	17	337
of which grants	31	1	3	2	37
NGO funding net of grants	252	9	24	15	300

The largest levels of spending on UK biodiversity are made by the RSPB, National Trust, Wildlife Trusts, Woodland Trust, Wildfowl and Wetlands Trust and WWF.

Private Sector

The largest private sector funders of biodiversity conservation activity in the UK are the water companies in England and Wales. Other sources include the housing and development sector (through biodiversity offsets), minerals sector, private estates and various landowning businesses (e.g. airports). Note that the figures are rough estimates only (Table 29).

Table 29: Estimated Private Sector Biodiversity Funding, UK (annual, £m)

	England	Northern Ireland	Scotland	Wales	UK
Water sector*	40	1	4	2	48
Others	40	1	4	2	48
Total	**80**	**3**	**8**	**5**	**95**

**Water sector is publicly owned in Scotland and Northern Ireland. Water companies' environmental investments in England and Wales are determined through the regulatory framework overseen by OFWAT, which also administers a competitive Water Innovation Fund.*

International Biodiversity Funding

In addition, the UK provides international biodiversity funding estimated at £208 million, including UK Government (especially DFID) and NGO funding (Table 30).

Table 30: Estimated Funding for International Biodiversity, UK (annual, £m)

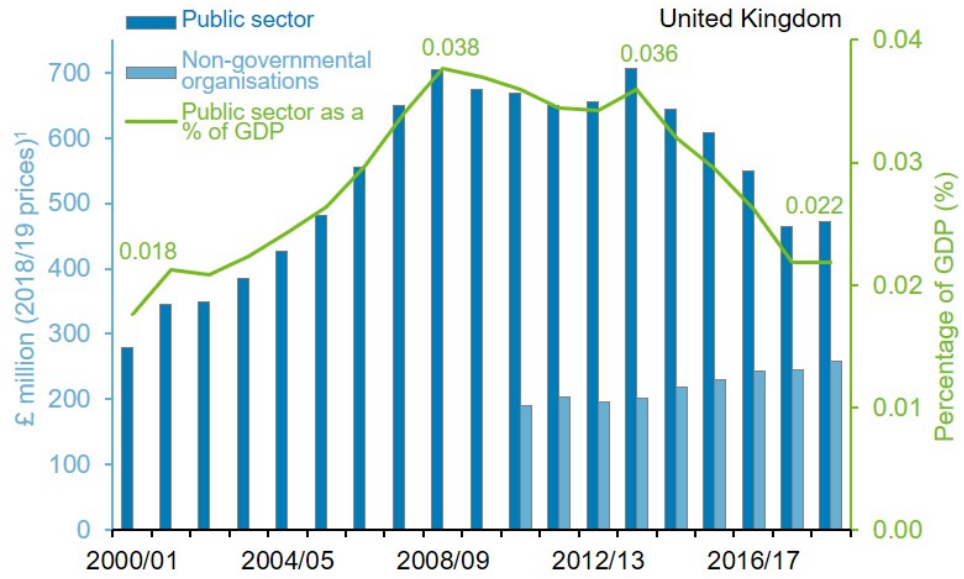
	UK
UK Government	154
NGOs	54
Total	**208**

This takes total UK funding for biodiversity in the UK and overseas to approximately £1.15 billion.

Trends in Funding

The JNCC biodiversity expenditure indicator shows that public funding for biodiversity in the UK peaked in 2008/09 at around £700 million and 0.036% of GDP, falling to £473 million and 0.022% of GDP in 2018/19.

Figure 1: Trends in UK Biodiversity Expenditure



Source: JNCC Biodiversity Indicator E2. Expenditure on UK and international biodiversity

Emerging Funding Sources

Growth in nature funding can be expected in the next few years.

While **public sector** funding will be constrained by budgetary challenges following the COVID-19 crisis, Defra will seek additional funding from the Treasury to address the climate and nature crises and to support delivery of Environment Bill (EB) and 25 Year Environment Plan targets. Funding for biodiversity is devolved, so depends on funding decisions in pursuit of specific priorities and targets at country level. In England, Defra recently commissioned research to assess the costs of meeting notional EB targets, highlighting a significant funding gap that will need to be closed if targets are to be set and met.

A major recent development was the announcement in 2020 of a £640 million **Nature for Climate Fund** in England, which will fund investments in peatland restoration and woodland creation. This fund has already supported two £40 million rounds of funding for nature conservation and restoration projects through the **Green Recovery Challenge Fund** in England. In Scotland, £250 million has been committed for peatland restoration over 10 years through the **Peatland Action** programme. Also in Scotland, a £10 million **Nature Restoration Fund** was recently announced, and will support a mix of urban and rural-focused projects, such as improving greenspace for outdoor learning, green active travel routes, planting of wildlife corridors and natural flood management. These new funding developments are helping to offset the loss of LIFE funding following withdrawal from the EU.

There is significant scope for growth in private sector investment for nature in the UK, given increasing interest in nature-based solutions. Opportunities include:

- **Biodiversity Net Gain** – the government's impact assessment of BNG proposals estimated annual funding of £199 million per year for conservation in England;

- **Carbon markets** – market is expected to grow in push towards net zero, with increasing demand for and price of credits – an effective market depends on regulation and enabling measures;
- **Natural flood management** – the government has a £5.2 billion multi-year investment programme for flood protection in England alone, but nature based solutions amount to only £200 million. Significant scope for future growth;
- **Water company investments** – water companies are emerging as major private sector investors in nature based solutions in England and Wales, and price regulation increasingly facilitates this – further growth can be expected;
- **Voluntary nature positive investments** – as the concept of nature positive is increasingly adopted by business, there will be increasing interest in nature investments as voluntary offsets for negative impacts.

The potential scale of these markets is difficult to predict, but some illustrative projections are made in Table 31, suggesting a possible market size of £615 million annually in England and £760 million in UK by 2030.

Table 31: Possible scale of future private sector markets, 2030, illustrative

Market area	**Possible scale of funding (£m pa)**		**Notes**
	England	UK	
Biodiversity net gain	199*	230*	England figure is central estimate from Defra impact assessment. UK figure is scaled up by GDP, if similar requirements across UK. *Note – this is gross expenditure and 90% of this is accounting for losses through development – a 10% net gain requirement would deliver an estimated £20m of funding towards targets to enhance biodiversity.
Carbon markets	46	87	Green Alliance estimate of natural carbon market in UK by 2030; England figure proportionate to land area. Numbers look conservative.
Natural flood management	250	300	England figure assumes annual investment in flood management continues at £1 billion, and that share of nature based solutions increases to 25%; UK figure scaled by population
Water company investments	80	96	Assumes doubling of current estimated biodiversity investment
Voluntary nature positive investments	40	50	Illustrative – no evidence available
Total	**615**	**763**	

Private investment could therefore help to close the funding gap, but **additional public investment (public money for public goods)** is also needed, particularly to meet targets for biodiversity to be set through the Environment Bill.