

Pathways to 2030: 10 key areas for investment in nature's recovery across Wales

Addressing the nature emergency - the importance of finance

Wales faces a nature emergency. Degradation of ecosystems has caused the decline of many species, impacted negatively on our economy and wellbeing, and depleted the services which nature provides and on which we all depend. Failure to act urgently could cause irreversible damage to habitats and species, while hampering our response to the challenges of mitigating and adapting to climate change.

Recognising that we are entering the sixth global mass extinction event, and that human safety and wellbeing is threatened by the loss of ecosystem services such as pollination and flood prevention, the Senedd declared a nature emergency in 2021. Noting that Wales is falling behind other UK countries and is failing to meet its international biodiversity commitments, the Senedd called for legally binding nature recovery targets and new domestic environmental governance provisions.

Urgent action for nature recovery is essential to strengthen the natural capital on which people and the economy depend, to address the climate emergency and to deliver international commitments as part of the post 2020 agenda under the Convention on Biological Diversity. The Kunming-Montreal Global Biodiversity Framework, agreed in the 15th Conference of the Parties (COP15) in December 2022, includes a new mission for the period up to 2030 "to take urgent action to halt and reverse biodiversity loss to put nature on a path to recovery for the benefit of people and planet". The need for urgent collective action was recognised through the Welsh Government's Biodiversity Deep Dive, undertaken in the run up to COP15, focusing on one of the central targets - a commitment to protect and effectively manage at least 30% of our land, freshwater and sea for nature by 2030.

Delivering the actions required for nature's recovery requires an increase in public investment in nature. We need to invest more in managing land to maintain and restore habitats, in research and monitoring actions to develop our evidence base, in communications and education to enhance the awareness of stakeholders and the public, in human resources to develop and implement nature policies and programmes, in stronger governance, and in regulatory enforcement.

The failure to halt nature's decline in recent decades is partly a result of insufficient funding for the necessary actions. A recent study for the Green Finance Institute estimated that there is a gap of between £5 billion and £7 billion between the resources currently dedicated to nature recovery actions in Wales and those needed to meet priority outcomes for nature.

Part of the nature financing gap should be met by private investment in natural resources, reflecting businesses' dependencies on nature and responsibilities to support its recovery. This depends on government action to support and regulate the development of nature markets, and to co-invest alongside businesses. Alongside private finance, there is a need for increased public expenditure to help to close the nature finance gap. Many of the benefits of nature are public goods, benefiting the entire population and economy of Wales, and will not be delivered by private finance alone. Public investment in nature will enhance Wales's national infrastructure and deliver multiple benefits, supporting economic development and physical and mental wellbeing, and reducing the costs of public services such as healthcare and flood management.

This report sets out priority actions for nature recovery to 2030 (**Table 1**) and the public investment required to deliver them. These actions are arranged under 10 themes, ranging from public access to nature to peatland conservation and species protection. Under each theme, we identify priority actions to **STOP** activities that are damaging nature, **REDUCE** adverse effects, and **START** to deliver positive actions for nature recovery. In each area we define the actions needed and the financial resources required to deliver them, both in overall terms and the additional resources needed above existing public expenditures and taking account of overlaps between actions.

Tables 2 and 3 present an overall summary of financial needs across the 10 action areas. The total (gross) costs of the actions are summarised in **Table 2**, while the net additional costs of actions (on top of existing expenditures and taking account of overlaps between actions) are summarised in **Table 3**.

The additional annual expenditures needed to deliver the costed package of actions for nature recovery are estimated to amount to £158 million annually, assuming that the majority of the annual agriculture and rural development budget also focuses on actions that contribute to nature recovery.

The costings provided are indicative, and some could be refined as further evidence becomes available, but we believe they provide a reasonable assessment of the scale of financial investment required now to begin to respond to the nature crisis. The list of actions defined, and the financial resources needed to deliver them are not exhaustive, and more will be needed if nature recovery is to be achieved. However, we hope that this document helps to inform debate about priorities and financial resource needs, and how we secure the funding required to meet national needs and international biodiversity commitments.

Table 1: Nature finance actions and costs

1. Access and public participation		
STOP	REDUCE	START
Reverse the erosion of accessible wildlife rich spaces, especially in urban areas.	Barriers to co-operative environmental action.	Delivering access to environmental justice for the people of Wales.

Wildlife Rich Green Spaces

Priorities in this area are to:

1. Introduce new Green Space Standards and champion high quality, accessible and nature rich green spaces across Wales;
2. Invest in provision of high quality and accessible green spaces, especially for the most deprived communities in Wales;
3. Increase tree cover to 20% of Wales's urban area.

A new impetus is required to champion green spaces across Wales, develop new Green Space Standards, and work with local authorities and communities to enhance provision, management and access. This could be achieved by establishing a network of green space champions across Wales, to develop a new Green Spaces Programme and Standard and to co-ordinate its implementation at local level. A national green space champion and co-ordinating team would develop guidance and standards for green space and accessibility, and undertake policy advocacy, advisory and communications at national level. 30 local champions (1 per 100,000 population) would champion green spaces locally, working with local authorities, infrastructure managers, local businesses and organisations to enhance access, improve quality of green space, raise awareness of the benefits of access to nature and support designation of Local Nature Reserves. The overall cost would amount to £2.2 million per year, including staff costs of £1.98 million (33 staff + overheads) and an annual communications budget of £200,000.



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A substantial programme of investment in the provision of new, high quality and accessible green spaces across Wales is needed, focusing especially on the most deprived urban areas. [A 2020 report by Vivid Economics for the National Trust](#) estimated that a **£5.5bn capital investment** in upgrading and creating urban green spaces across Great Britain would deliver £200bn in physical health and wellbeing benefits to the most disadvantaged communities, as well as benefits for active travel, biodiversity, carbon capture and air quality. The report used a GIS mapping approach to identify areas of under-provision of green space and mapped these against deprivation to prioritise investment needs. The report estimated the need for £5.45bn capital spend and £275m annual operating spend. The report did not provide separate estimates for Wales, but included Cardiff, Newport and Swansea in the analysis. If the investment needs for Wales were proportionate to population, this would suggest a need for capital investment of £278 million and annual operating expenditure of £14 million, at an average annual cost of £39.3 million over 2023-30.

[Wales's mean urban canopy cover was estimated at 16.3% in 2013](#), with 14,097 hectares of a total urban area of 86,331 hectares covered by trees. Achieving an overall target of 20% of urban tree cover by 2030 would provide benefits for human health and wellbeing and enhance ecosystem services in urban areas. It would require planting trees over 3169 hectares. Assuming a typical cost per hectare of £10,800 (based on £8.30 per tree for Local Authority Treescape Fund in England, and typical planting rate of 1300 trees per hectare), the total cost of reaching a 20% target would be £34.2 million, or an average of £4.3 million per annum between 2023 and 2030. This would need to be targeted in areas with less than 20% tree cover at present.

Co-operative environmental action

A priority is to reduce the barriers to co-operative environmental action by using the Sustainable Farming Scheme (SFS) to facilitate collaboration between landowners to deliver catchment scale Nature Based Solutions and build on the Project Skyline recommendations to empower communities to take control of underutilized publicly owned land/sea for nature restoration.

Collaboration between farmers and land managers has potential to enhance greatly the effectiveness of environmental land management actions, helping to achieve positive change at the landscape scale. This should have benefits for species, habitats and ecosystem services, as well as land managers themselves (helping to enhance cost effectiveness, learning and social interaction and address joint challenges and opportunities).

The collaborative tier of the new SFS will help to address this, and will require sufficient funding, promotion and facilitation.

[The Project Skyline report](#) examined the feasibility of landscape-style community land stewardship in the South Wales Valleys as a means of giving communities a connection to landscape that can provide income, jobs, a place of social and cultural activity, and a home for nature. The report recommended that Welsh Government should support the establishment of two or three pilot landscape-scale, community stewardship projects in the Valleys. We suggest that three pilots are established, each running for 2 years, to develop a landscape vision and community plan in three communities. Each pilot will require a project manager and an additional annual budget to cover overheads, expenses, event costs and fees, at an annual cost of £240,000 across the three pilots. A similar annual budget would be required between 2025 and 2030 to implement these plans in each community and/or develop plans for additional communities. More investment would be needed in future years to roll this approach out more widely across Wales.

Environmental Justice for the People of Wales

Wales must create an independent body to oversee the implementation of environmental law, facilitate public access to environmental justice, and uphold environmental standards.

We suggest that, as a minimum, a body similar to [Environmental Standards Scotland](#) is required, with [similar levels of resourcing](#) - 24 staff and an annual budget of £2.2 million.



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2. Farmland		
STOP	REDUCE	START
The ongoing loss and degradation of wildlife habitat on farmed land.	Agriculture's environmental impact at home and abroad.	Funding pilots and training programmes on regenerative land management that facilitates nature recovery.

Regulatory enforcement

There is an urgent need to stop the ongoing loss and degradation of wildlife habitat on farmed land by better targeting of support, monitoring and enforcement of regulatory requirements (including for water and air pollution).

Pollution from agriculture has a major impact on species and habitats, and urgent action is needed to enforce existing regulations more effectively. [Natural Resources Wales has stated that it requires between 60 and 200 new staff](#) to ensure compliance with existing legislation. We believe that resourcing should be at the upper end of this range if legislation on water pollution, air pollution and protected sites is to be fully and effectively enforced.

[NRW's latest annual review](#) for 2020/21 indicates that the average wage of its staff was £39,170, and that inclusion of other staffing costs (NI and pensions), as well as IT, office and operating costs increases this average to £60,000. This suggests a need for further expenditure of £12 million per year to fully enforce pollution regulations.

Sustainable land management

There is an urgent need to reduce agriculture's environmental impact at home and abroad by transitioning Wales to a low input, regenerative food system which recycles nutrients and produces within the natural carrying capacity of the land.

A [report](#) by Rayment (2019) for the RSPB, National Trust and the Wildlife Trusts assessed the financial resources needed to support land management actions required to deliver environmental priorities and targets across the UK. It is estimated that we need to spend £273 million annually on environmental land management in Wales to meet our priorities for the natural environment. This includes measures for sustainable soil and water management in agriculture, maintenance and restoration of priority habitats, boundary features and the historic environment, and support to maintain vulnerable high nature value farming systems. The report estimates that expenditure of at least £4 million is needed to provide advice and guidance to support environmental land management measures.

These estimates suggest that priorities for the natural environment can be met through the existing £300 million annual agriculture and rural development budget, but only if resources are reallocated to focus action on the provision of environmental public goods. The development of the new Sustainable Farming Scheme should include funding for pilots that trial new approaches to regenerative land management, and new mechanisms to support the delivery of environmental outcomes. This should be backed by advice and training for farmers and land managers, and information and communications to demonstrate results to the wider land management community. The costs of achieving this are included within the annual total estimated above and can be met from within the SFS budget.



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3. Coasts

STOP	REDUCE	START
The continued degradation of coastal habitats such as seagrass meadows, seaweed and saltmarsh.	Coastal pollution from plastics.	An ambitious program to restore lost coastal habitats and protect the remaining areas around Wales.

Protecting coastal habitats

There is an urgent need to stop the continued degradation of coastal habitats such as seagrass meadows, seaweed and saltmarsh by regulating activities that impact on these habitats and tackling systemic issues such as water quality by implementing higher water treatment requirements, including embracing nature-based solution such as wetlands restoration.

This action depends on the enforcement of water pollution regulations, which is costed in section 2 above.

A new publication by WWF - [The Future of Seagrass in Wales](#) - sets out an action plan listing 10 immediate, medium - and longer-term actions to protect and restore seagrass in Wales. The plan calls for Welsh Government investment of around £3.2 million in seagrass protection and restoration in Wales by 2030, which equates to an annual investment of £0.4 million per year for 8 years.

Reducing plastic pollution

Wales will come under UK wide proposals for an [extended producer responsibility \(EPR\)](#) scheme for all packaging waste, which seeks to ensure full cost recovery for all larger producers. The implementation of a [Deposit Return Scheme](#) for drinks containers, as well as the commitment to extend EPR to [litter payments](#), are major priorities in tackling plastic pollution. This will be industry funded and therefore not demand public finance. However, commitment from Welsh Government to further the legislation is key to progress.

Priorities for additional funding to address the problem of plastic pollution are:

1. Employment of a volunteer co-ordinator in each coastal local authority area, to co-ordinate coastal litter collection, working with local authorities, Keep Wales Tidy (KWT), National Trust, SAS, MCS and other eNGOs and community groups. An annual cost of £70,000 per local authority area would include salary, overheads, expenses and communications, amounting to a total of £1.05 million per year across 15 coastal local authority areas.
2. A Wales level communications programme to raise awareness and education regarding the problem of marine litter. With an annual budget of £200,000, this would link to the Blue Flag Awards and other initiatives as well as the volunteer programme and provide educational resources for pupils and teachers.
3. A programme of surveys and monitoring of litter in public spaces, linking together street litter surveys, MCS Beachwatch and other surveys, and filling gaps. KWT has estimated the annual cost at £16,000 per local authority, which would amount to £350,000 across 22 LAs in Wales. These costs are based on the current litter survey model (which surveys 6% of streets in every local authority every year), extending this to a sample of all beaches. KWT currently uses its own in-house app for spatial mapping of litter survey data. There would be benefits from investment in more advanced technology for spatial mapping, at an initial cost of £100,000 for a research and development project.

The total annual cost of 3 actions above would be £1.615 million per year over the period 2023 - 2030.

Habitat restoration and re-creation

Wales should begin an ambitious programme to restore lost coastal habitats and protect the remaining areas around Wales, resulting in a 15% increase of coastal habitats by 2030.



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[The RSPB report Sustainable Shores](#) estimates that 578 ha of intertidal Natura 2000 habitat will be lost in Wales – excluding the Severn estuary – by 2050 – suggesting a need to re-create 19 hectares per year for 30 years just to maintain the current stock of Natura 2000 intertidal habitat. The capital cost of this would be approximately £1.6 million annually, assuming an average per hectare cost of £84,000 (based on a review of recent intertidal habitat creation projects).

Expanding coastal priority habitats by 15%, in line with CBD commitments for ecosystem restoration, would require creation of 575 ha of maritime cliff and slope, 17 ha of coastal vegetated shingle, 1215 ha of coastal sand dunes and 1102 ha of saltmarsh. Applying unit capital and annual costs used by [Rayment \(2019\)](#) gives an estimated cost of coastal habitat creation of £81.6 million over 10 years, or £8.2 million per year for 10 years.

4. Seas		
STOP	REDUCE	START
Unsustainable fisheries.	Conflicts between marine users and threatened wildlife.	Designating offshore Marine Conservation Zones and trialling stricter protection.

Sustainable fisheries

[The 2020 SoNaRR report](#) states that, “for the most part, we don’t have a good enough understanding of stock status and the dynamics of fishing effort, its distribution and resulting catches to be able to determine the sustainability of fisheries resources in Welsh inshore waters. There is consensus across industry, Welsh Government, and NRW on the need to progress with initiatives already underway, and augment with further planned work to better understand both the status of fish and shellfish stocks and environmental impacts of fisheries activities.”

Welsh Government and NRW work together to undertake assessments of fish stocks and the impacts of fishing practices on them and the wider environment. Plans for management of stocks are delayed and need to be brought forward with urgency. In addition, WG and NRW also have a joint [project to evaluate the impacts of fishing on features of Marine Protected Areas in Wales \(the Assessing Welsh Fisheries Activities Project\)](#).

This project started in 2016, but no management measures have yet been introduced and assessments remain to be completed. Investment is needed to accelerate the process and enable the Welsh Government to meet its legal obligations under the Habitats Regulations. Completion of these assessments would be accelerated with the employment of an additional officer at NRW, at an annual cost of £60,000 including overheads.

The delay in the introduction of a bottom-towed order to deal with the high-risk assessments, which were published in 2017, has been attributed to capacity in the Welsh Government’s legal department. In general, there is also a need to increase staff resources on fisheries science.

This is the responsibility of Welsh Government, but the delays to date suggest additional staff resources are required, ideally employing specialists in sustainable fisheries management. Employment of an additional six staff would require an annual budget of £360,000 including overheads.

Marine Development Plan

There is a need for a Marine Development Plan to guide development activity in the seas around Wales. This will be based on comprehensive evidence of the Welsh marine environment, the sectors using the sea (including fisheries, renewable energy, extraction, shipping and tourism) and the priority areas for economic development, built through a call for evidence and shared through a single portal. Prospective developers will be invited to submit proposals regarding sectoral development priorities. The plan will define spatial priorities for development, natural resource use



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and marine conservation over a 20-year time period, informed through extensive consultation with stakeholders, business and the public, and implemented through a legal instrument. The Marine Development Plan would sit alongside the existing Welsh National Marine Plan and its policies.

Developing the plan is likely to take up to five years, employing 6 core FTE staff in WG and NRW (£360,000 per year including overheads), an annual evidence budget of £100,000, and a budget of £50,000 per year for IT, communications and events. The total cost would be £510,000 per year for 5 years. Similar levels of resourcing will be required to oversee implementation.

Marine conservation

The Welsh Government should start designating offshore Marine Conservation Zones (MCZs) by 2023 and trialling stricter protections for Welsh seas.

In announcing the results of its Biodiversity Deep Dive, the Welsh Government reiterated its commitment to protect 30% of Welsh seas by 2030 and stated that it will accelerate action to complete the marine protected area (MPA) network, to ensure the shortfalls in protection of habitats and features are addressed. This would be a significant contribution towards ensuring the MPA network is ecologically coherent.

While MPAs already extend to more than 30% of Wales's marine area, many site features are in unfavourable condition, have insufficient protection and conservation management, and are insufficiently monitored.

WEL has suggested that an appropriate target is that, by 2030, at least 30% of Wales's seas are within fully or highly protected MPAs (as defined by the IUCN), within the context of wider ecologically coherent networks. At least one third of this (i.e. 10% of Wales's seas) should be within areas fully protected by 2030 (based on [IUCN](#) categories).

Further resources are needed to swiftly complete work to designate MCZs, following an extensive process of evidence gathering and consultation, and to define priorities for protection, management and monitoring.

This requires a further 4 staff (2 at WG and 2 at NRW) at an annual cost of £240,000 (including overheads and expenses), as well as an additional £100,000 annual evidence budget and a £100,000 communications budget for 2-3 years. After that similar levels of resources will need to be allocated to implementation, monitoring and enforcement.

5. Peat		
STOP	REDUCE	START
All activities that destroy peatland including burning and tree planting.	Significantly the use of peat by eliminating its use by public bodies and supporting UK ban on sale of peat for horticultural use.	Significantly increasing the scale and pace of peatland restoration.

Peatland protection

There is a need to stop all activities that destroy peatland in Wales, including burning of peat soils (e.g. by farmers and grouse moor managers) and planting of trees on peatlands. This could be achieved by development of appropriate rules and guidance (e.g. for woodland grants and agri-environment schemes) and where necessary legal measures (e.g. to ban burning), as well as appropriate management of publicly owned land (including that of NRW, MoD and others).

Urgent action is needed to end the use of peat by public bodies, and to implement a ban on horticultural use of peat. A Peatland Policy Unit could be established to support this and to protect existing peatlands.

Staff and resources are needed to develop regulations and guidance to prevent burning and tree planting, oversee efforts to eliminate the use of peat by public



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bodies, develop legislation to ban horticultural use, and champion the restoration of peatland in Wales. This unit could employ two staff, at an annual cost of £120,000, including overheads and expenses.

Peatland restoration

There is a need to significantly increase the scale and pace of peatland restoration with a view to restoring 45,000 hectares by 2050.

The National Peatland Action Programme estimates that there are 90,052 ha of peatland in Wales of which 26,222 ha are in near pristine condition, and 63,830 ha require restoration (having been modified or used for agriculture or forestry).

The Biodiversity Deep Dive committed to increase the delivery capacity of the National Peatland Action Programme through a phased approach so that by 2030 the programme will be delivering at a scale capable of reaching the net zero 2050 target of 45,000 ha of peatland restored. To have 45,000ha of properly restored peatland by 2050 would require restoration works to have been completed by 2040, involving an enhanced rate of restoration compared to current plans; restoring 45,000 ha over 18 years would require restoring 2500ha/year. At an average restoration cost of £2,000/ha, the total annual cost of restoration would be £5 million.

The scale of need estimates in 2.2 above include annual costs for priority habitat bog restoration of £2.1 million; the additional costs of this action would therefore be £2.9 million. The rate of peatland restoration could be increased over time to enable peat to play a bigger role in contributing to net zero; private finance could also play an increasing role in this.

6. Grasslands		
STOP	REDUCE	START
The loss of ancient meadows and other species-rich grasslands.	Significantly the use of all harmful chemical pesticides by a minimum of 50%.	Restoring and managing grassland habitats, including public green spaces, for wild plant diversity.

Protection of meadows and grasslands

There is a need to stop the loss of ancient meadows and other species-rich grasslands through legal recognition and protection as irreplaceable habitats and strengthen the protection within the planning system. A similar approach is also needed for other irreplaceable habitats such as ancient woodlands.

This action would involve mapping irreplaceable ancient meadow and woodland habitats, then developing and communicating guidance on their protection through the planning system. This could be achieved through a three-year project, employing 3 staff at a cost of £180,000 per year including overheads. There would also be a need for a £200,000 evidence budget and a £100,000 budget for IT, events and communications. The total cost would therefore amount to £840,000 over 3 years.

Integrated pest management

At the COP 15 Convention on Biological Diversity in December 2022, the Welsh Government agreed to reduce the risk of pesticides by at least 50% by 2030 as part of the Kunming-Montreal Global Biodiversity Framework.

The use of all harmful chemical pesticides should be significantly reduced by adopting Integrated Pest Management in line with NFFN/PAN/RSPB Red Tractor recommendations and consider their expansion to UK domestic sales - including certified year on year usage reductions.

There is much evidence that adoption of integrated pest management can help to reduce costs to farmers as well as delivering benefits for biodiversity and the environment. However, while enhancing uptake of IPM is likely to reduce costs overall, there are barriers to achieving it, linked to farmer awareness, risk aversion and the



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availability of independent agronomic advice. Pesticide use by local authorities should also be reduced substantially, such that pesticides are only used in exceptional circumstances, particularly in public places.

Increasing uptake of IPM is therefore likely to require enhanced awareness raising and provision of advice and guidance to the farming sector. This could be achieved by employing a team of IPM champions to work with the farming sector, food chain and other pesticide users such as local authorities across Wales to champion IPM and issue guidance. A team of three IPM champions, with a budget for communications and publications, would require an annual budget of £300,000.

Grassland restoration

Welsh Government should fund a programme to restore grassland habitats and manage our 30,000 miles of roadside verges and other public green spaces for wild plant diversity.

Action to enhance, restore and create semi-natural grassland habitats (at an annual cost of £65 million), and to enhance biodiversity and the provision of ecosystem services in agricultural grasslands, is included in the costings for farmland in 2. above. This should include wider use of conservation grazing to enhance grasslands and other habitats.

Improving the management of grass verges and public green spaces for biodiversity can be achieved at no net cost, as cutting is reduced, though there are implications in terms of planning and logistics, timing and equipment. These challenges could be addressed by employing a team of champions and advisors to work with local authorities and trunk road agents. These champions would work to raise awareness, liaise and provide guidance to local authorities, public bodies, businesses and the public to improve management of green spaces, road verges, business premises, parks and gardens. Employing a team of 5 would require an annual budget of £300,000 (including staff costs and overheads), as well as a communications and events budget of £100,000 per year. The total annual cost would therefore be £400,000.

7. Protected Sites		
STOP	REDUCE	START
The damage and deterioration of Protected Sites across Wales.	Reliance on poor data available for Protected Sites.	To bring all Protected Sites into favourable ecological condition and scale up to deliver the 30 by 30 target.

Site protection and monitoring

There is an urgent need to direct and resource Natural Resources Wales to stop the damage and secure appropriate management for all Protected Sites. This was recognised among the recommendations of the Climate Change Minister's recent Biodiversity Deep Dive into how Wales can meet the target to protect 30% of land, inland water and sea by 2030 (the 30 by 30 target).

NRW's 2020 Baseline Evaluation project looked to assess the condition of terrestrial and freshwater SSSI features; the first time since 2003 that an assessment exercise had been undertaken at this scale. The results showed that NRW currently has insufficient evidence to determine the condition of around half of the features on these sites (condition classed as unknown). For those features where evidence was available, only an estimated 20% were found to be in favourable condition. 30% were unfavourable, and the remaining 50% were 'not in a desired state'.

Addressing this will require improved staffing and resources at NRW for securing management, monitoring and enforcement. (We anticipate the bulk of the staffing and resource will be required by NRW but other statutory bodies - such as National Park Authorities - will also have an important role).



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Because of the scale of the gaps in evidence, the additional resource required to deliver the necessary levels of protected site management, monitoring and enforcement is not known. Following the baseline assessment, NRW will work in partnership with the environmental sector, landowners and communities in Wales to help shape and deliver an innovative action plan designed to improve current approaches to monitoring the health of protected sites in the future. This will inform the development of a more comprehensive terrestrial monitoring strategy for the future and help to address the evidence and site intervention challenges identified.

Current levels of staffing at NRW for the management and monitoring of protected sites are not precisely known but could amount to around 60 people. As a minimum, it is likely that this number would need to be doubled to address the challenges identified. This would require additional staffing costs of £3.6 million (including overheads, at a cost of £60,000 per FTE). There would be additional costs for equipment, evidence and contracted services, suggesting the need for an annual budgetary increase of at least £5 million.

Improving site condition

Investment is needed to bring all Protected Sites into favourable ecological condition by 2030, contributing to resilient ecological networks across Wales.

The costs of actions for European protected sites in Wales was estimated by the [LIFE Natura 2000 project](#) (NRW, 2015) at £144 million. These costs do not include staff time, ongoing maintenance work, or costs for strategic actions in Thematic Action Plans. Most of the actions identified have not yet been implemented. This is equivalent to £173 million at 2022 prices. If it is assumed that the costs of remedial actions for SSSIs as a whole are similar on a per hectare basis to those of European protected sites, the costs of actions across the whole SSSI network would amount to £288 million (since European protected sites comprise approximately 60% of the terrestrial SSSI area). The costs of annual maintenance of SSSIs in Wales were estimated in a [recent report](#) for the Green Finance Institute at £16 million per year. Overall, this suggests that £52 million per year is needed for SSSI restoration and maintenance over the eight years 2023 to 2030.

There is some overlap between these costings and those for sustainable land management (Section 2), diffuse pollution (Section 2), SSSI monitoring (Section 7) and invasive species (Section 10). It is estimated that 50% of management and remediation costs overlap with these other categories and 50% are additional. These additional costs include among others capital and direct management works relating to hydrology and flood/coastal erosion risk management, access and recreation management, investigations, education and awareness raising actions. The estimated additional annual cost for Wales is £26 million per annum.

The Welsh Government has committed to protect 30% of land and freshwater, and seas in Wales by 2030, in line with international commitments, and undertook a Deep Dive into delivery of this target in Wales during 2022. WEL has set out that to be counted towards the 30% areas should be protected for nature in the long term, appropriately managed and monitored, and in good or recovering condition. Achieving it should include designation of new SSSIs, as well as securing equivalent protection, management and monitoring across the remainder of the 30%. A strengthened focus on nature recovery in designated landscapes, as promised through the biodiversity deep dive, will be an important element.

As SSSIs currently account for only 11% of Wales, this would require additional identification of areas over 19% of Wales. The (one-off) costs of designating new SSSIs are estimated at £194 per hectare, based on estimates of staff costs and investigations and development of management plans. Based on this average cost, completion of the 30 by 30 network on land/freshwater would cost £76.6 million over 8 years 2023 - 30, or £9.6 million per annum over this period - although it is acknowledged that not all of the 30% will be established via SSSI designation, there will still need to be consideration of candidate areas and their management needs.

The 30 by 30 target requires that appropriate management should be in place by 2030, and monitoring will be essential to ascertain that areas are in good or improving/recovering condition. Therefore management and monitoring costs will increase in line with the areas identified over the coming years (although, again, it is acknowledged that different management approaches will come into play, and the intensity and cost of these will vary).



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8. Rivers and wetlands

STOP	REDUCE	START
The deterioration of water habitats due to pollution.	The barriers to migratory fish across Wales.	Upscaling deployment of nature based solutions, restoring wetland habitats and species, for flood and pollution management.

Tackling water pollution

There is a need to stop the deterioration of water habitats due to pollution from agricultural activities such as dairy farming, intensive poultry units, from sewage discharges and from chemical pollutants by fully funding the enforcement of existing water pollution regulations, setting new and stronger civil sanctions for pollution offenders in the forthcoming agricultural legislation, and by ensuring that all permits in Wales are legally enforceable.

Urgent action is required to improve the condition of freshwater habitats in Wales. The 2021 WFD Classification data shows that only 40% of waterbodies in Wales are at Good Ecological Status, with a target of 100% by 2027. This is despite the current monitoring of water quality to be very likely under-estimating the overall degradation of our freshwater habitats.

NRW Compliance Reporting showed that 5 of the 9 SAC rivers in Wales are now failing for phosphate pollution.

The costs of additional staffing to increase enforcement are estimated in Section 2 above.

Migratory fish

Action is needed to reduce the barriers to migratory fish across Wales. Currently under WFD 2021 classification, barriers to migration are impacting 108 waterbodies, although it is suspected that there are a significantly higher number. In July 2022, NRW published its stock assessments for Salmon and Sea trout in Wales, internationally protected species alongside lamprey, shad and bullhead. The report concluded that 'This represents the worst level of salmon and sea trout stock performance ever recorded in Wales and is of major concern indicating that many stocks are now in serious trouble and at risk of failing to maintain sustainable populations in the future'. All rivers are now at risk of extinction of these iconic species. The [NRW Plan of Action for Salmon and Sea Trout](#) details resolution of barriers to migration as one of its top priorities, but at the current rate of delivery across Wales designated fish species will be lost before river restoration is achieved.

In 2018, NRW published 'A review of the economic value of angling in Welsh rivers'. This showed that based on historical studies, the net value of all river fishing in Wales to Welsh anglers is estimated as £3 million annually, capitalised at £30 million. The fishing industry was supporting directly 700FTE in Wales. In 2017, Lesley Griffiths, at the time Welsh Minister for the Environment, speaking in the Senedd referred to the value of fishing to the Welsh economy as £38 million. This included the economic benefit to Wales from associated income from tourism activities and significant support to rural communities in Wales.

Afonydd Cymru and NRW have mapped barriers to migratory fish in Wales and made some progress in assessing the costs of measures to resolve them. This agenda is evolving, as new barriers are found, costs are increasing through inflation, and as progress is being made in resolving existing barriers on some rivers (for example through the LIFE Dee River and 4 Rivers for LIFE projects). The current best estimate is that a further £25 million needs to be spent to resolve migratory fish barriers on Welsh rivers (£3.1 million per year over 8 years).



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Wetland restoration

Investment is required to restore wetland habitats and species through nature-based solutions for flood management and pollution abatement.

Restoration and re-creation of wetlands have an increasingly important role to play in delivery of flood management and other nature-based solutions including pollution abatement, delivering multiple benefits for people and wildlife, often more cost-effectively than built infrastructure. However, natural flood management currently accounts for a small proportion of the Welsh Government's flood defence programme, which involves expenditure of £214 million over 3 years.

Welsh Government is trialling the wider application of natural flood management methods, using techniques such as tree-planting, leaky dams, salt marsh and dune restoration, the re-introduction of meanders and natural flood plains to reduce or slow the rate of run-off into rivers and hold back water where it is safe to do so or lessen the impact of coastal inundation and storm damage. In 2020 a [£2 million pilot scheme](#) was announced, with funding to be allocated over 2 years.

The full potential of NFM is difficult to predict and requires a case-by-case approach to assess the feasibility of nature-based solutions and integrate them into flood management proposals. However, as an illustration, allocating 10% of the flood defence budget to natural flood management techniques could generate funding of £7 million per year for habitat creation and restoration - this would not be an additional cost as it would reduce current hard defence investments.

9. Woodland and trees		
STOP	REDUCE	START
The ongoing loss of veteran trees.	The loss of woodland biodiversity.	Increasing the pace of restoration and recovery of native woodlands and Celtic Rainforest.

Protection of veteran trees

Action is needed to stop the ongoing loss of veteran trees by improving their care and protection.

The Ancient Tree Inventory records 169,967 ancient/veteran/notable trees in the UK of which 5.3% are in Wales, suggesting there are 9,000 recorded trees in Wales (Nolan et al, 2020). However, the authors suggest that the actual number of such trees is much larger than that recorded and could be as many as 2 million in the UK.

Based on advice from the Woodland Trust, the required actions for ancient and veteran trees are as follows:

- Develop the Ancient Tree Inventory (ATI), fully mapping ancient and veteran trees in Wales. Cost - £173,000 per year, ongoing until at least 2030 (and including staff time, volunteer expenses, equipment and contracted surveys).
- Analysis of ATI data - to assess distribution of ancient trees and identify threats and conservation priorities - one off research study with cost of £100,000.
- Risk assessment fund - to finance risk assessments and inform conservation strategies for trees in high-risk areas (those threatened by development of buildings and infrastructure, and pressure from people) - £100,000 per year to deliver risk assessments for 100 trees annually.
- Farm advice service - advisory visits to inform farmers about measures to protect ancient trees from machinery, livestock and chemicals. This would be delivered through the farm advisory service costed in Section 2.
- Fencing of ancient hedgerow. The SoNaRR report estimates the extent of hedgerows in Wales at 120,000km. According to [Buglife](#), 42% of hedgerows in the UK are estimated to be ancient or species-rich. A [2011 survey](#) of farmers in England and Wales found that 73% had fenced hedgerows in the previous five years to exclude livestock. Double-fencing of just 5% of ancient hedgerows, targeting those most valuable and those most at risk, could require 2,500 km of hedgerows to be fenced, or 300 km per year for 8 years. At a cost of £12 per metre, the annual cost would amount to £3.6 million in Wales.



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The total cost of these actions would amount to £3.9 million per year over the period 2023-2030, in addition to farm advisory actions costed in Section 2.

Restructuring conifer forests

The loss of woodland biodiversity in Wales should be reduced by diversifying the composition and structure of conifer forests and managing open space for wildlife (increasing the requirement for species diversity and properly funding ride and riparian management).

The value of Wales's conifer forests for biodiversity could be greatly enhanced by diversifying their composition and structure when they are replanted, creating more open-space habitats and improving ride and riparian management. This could be achieved through incentive measures for private forest management, and habitat enhancement measures in the public forest estate, to be introduced when forests are replanted.

Typical costs of management of open ground habitats (lowland heathland and grassland) are £250 per hectare per year (from Rayment, 2019).

The UK Forestry Standard currently requires 10% of forest to be managed as open ground habitat for biodiversity, and this is a condition of grants. The area of coniferous woodland in Wales in 2021 was 152,000 hectares - 96,000 public and 56,000 ha private. Managing an additional 10% of this area as open ground habitats would create 15,000 hectares of open ground habitats in forests, at an annual management cost of £3.75 million, gradually phased in over the life of the forest rotation. Costs between 2023 and 2030 would amount to £2.7 million, or an average of £342,000 per year.

Further changes in woodland structure could be achieved through amendments to woodland standards and grant conditions. This could be achieved without additional costs, as [Forestry Commission analysis](#) indicates that financial returns from broadleaved and coniferous woodlands are comparable, while broadening the species mix also enhances resilience to climate, pests and diseases.

Woodland restoration

Investment is needed to increase the pace of restoration and recovery of ancient woodlands, especially those converted to conifer plantation, and threatened Celtic Rainforest across Wales and make this central to the delivery of the National Forest for Wales.

SoNaRR data indicate there are 95,000 ha of ancient woodlands in Wales, of which at least 41,790 are Ancient Semi Natural Woodlands (ASNW, 3,467 publicly owned) and 25,750 Plantations on Ancient Woodland Sites (PAWS, 11,433 ha publicly owned). A reasonable aspiration would be to bring two thirds of ancient woodlands in Wales into suitable protective and restorative management by 2030. This suggests a need for restoration of at least 53,600 ha (27,900 ha of ASNW + 25,750 ha of PAWS).

A Woodland Trust restoration project in England, funded by the Green Recovery Challenge Fund, involves restoration management work across 64 sites, and is considered broadly comparable of the type of restoration work needed across Welsh woodlands. The project has average restoration costs of £4089 per hectare overall, with those for PAWS averaging £2236 per hectare and ASNW £4959 per hectare.

Applying these unit costs suggests the total cost of restoration in Wales would amount to £196 million across both public and private land, an average cost of £24.5 million per year over 8 years 2023-30.

These costs are included within the estimated annual scale of need for environmental land management of £273 million included in Section 2. The scale of need figures estimate annual woodland restoration needs of £50 million, covering a wider area of priority habitat native broadleaved, mixed and yew woodlands and not just ancient woods.



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10. Species		
STOP	REDUCE	START
The direct mortality of species caused by humans.	The impact of Invasive Non-Native Species (INNS) on native wildlife.	Bending the curve of wildlife populations through a fully funded, long-term national species recovery programme.

Species protection

Action is needed to stop the direct mortality of species by raising awareness and enforcement action to address persecution, disturbance, development, habitat damage and other pressures.

Wales has appointed a Rural & Wildlife Police Crime Coordinator, who co-ordinates action across the four police forces. This includes species action through groups dealing with Bird Crime and Mammals & European Protected Species. As well as legal enforcement, action is taken to raise awareness of the pressures on species through disturbance and accidental damage, and to train stakeholders to alleviate these impacts. For example, Operation Seabird has addressed impacts on seabirds, seals and other coastal wildlife from disturbance by boats, cliff walkers, climbers and other groups and activities.

This provides a good framework for action. However, effective action is constrained by limited resources, and funding is needed for publications (leaflets and posters for awareness raising), a website, training and events, travel and equipment, as well as employment of a part time communications and administrative assistant to support current and planned activities, at a total annual cost of £100,000.

Invasive Non-Native species

There is a need to increase resources for management to reduce significantly the presence of invasive non-native species (INNS). Action is needed to control invasive species in rivers and waterways, as well as in the terrestrial environment, and to implement biosecurity measures to prevent the further spread of invasive species.

[A report by Wildlife and Countryside Link](#) estimated the costs at UK level of biosecurity measures, as well as the employment of a national labour force for INNS control. The WCL report called on Government to commit to the recommendation of the Environmental Audit Committee (October 2019) report on invasive species, tripling the invasive species biosecurity budget to £3 million and providing a further £3 million to form a dedicated invasive species inspectorate. Additional annual costs are estimated at £5 million in the UK, of which £425,000 would be in Wales (based on share of land area).

The WCL report calls for additional investment in people to undertake management of widespread invasive species at a strategic scale. Scaling up the Local Action Group network to full capacity across the country would require an estimated 4,000 LAG staff, working with 75,000 volunteers and 2,000 contractors. Employing extra 340 staff in Wales (assuming recruitment is proportionate to land area) would cost £15.8 million (assuming £30k per FTE plus 55% mark-up for overheads). A volunteer budget would amount to £3.2 million (assuming annual expenses of £500 per volunteer per year) and contracting budget £1.7 million (assuming average expenditure of £10,000 per contractor). The total cost of IAS control would amount to £20.7 million per year in Wales.

Species recovery

Investment is needed to reverse the decline of wildlife populations through a fully funded, long-term national species recovery programme, involving the expertise and passion of people in Wales, to ensure that large-scale habitat restoration projects provide a resilient home for nature.



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The recovery of species in Wales depends on action to restore, re-create and improve the management of habitats, and to manage farmland for widespread species. In addition, there is a need for dedicated species recovery programmes, to deliver actions targeted at the needs of individual threatened species and groups of species. These include research, surveys, monitoring, advice and communications, species policy and licensing, and targeted site management actions.

The EU LIFE Nature Fund played an important role in funding species recovery projects in Wales, as well as large scale habitat restoration projects. An evaluation by ICF (2019) found that the total value of LIFE Nature and Biodiversity projects amounted to EUR 104 million between 2014 and 2017, an average value of EUR 26 million (£23 million) per year. Wales's share of this was approximately 12%, or £2.8 million annually, equivalent to £3.2 million at 2021 prices.

The [report](#) for the Green Finance Institute on the finance gap for nature estimated the cost of a programme to prevent extinction of red listed species in Wales at £86 million over 10 years 2022-31, an average of £8.6 million per year.

The cost of agri-environment actions to maintain the abundance of more widespread species were estimated at £41 million annually, based on the Rayment (2019) scale of need work. This estimate is included in Section 2 above.



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Table 2: Summary of total costs of nature recovery actions (£m p.a.)

Theme		Action	£m	Total (£m)
1. Access and public participation	Wildlife rich green spaces	Invest in new urban green spaces	39.3	48.2
		Increase urban tree cover to 20%	4.3	
		Network of green space champions	2.2	
	Co-operative action	Pilot community empowerment projects	0.2	
	Environmental justice	Environmental standards body	2.2	
2. Farmland	Regulatory enforcement	Enforce pollution regulations	12.0	285.0
	Environmental land management	Support nature friendly food system	273.0	
3. Coasts	Habitat protection	Seagrass project	0.4	11.8
	Reducing plastic pollution	Measures to reduce plastics litter	1.6	
	Habitat restoration	Creation of coastal habitats	8.2	
		Intertidal habitat recreation to offset climate losses	1.6	
4. Seas	Sustainable fisheries	Fisheries assessments and management plans	0.4	1.3
	Conflict avoidance	Marine development plan	0.5	
	Marine conservation	Designate offshore MCZs	0.4	
5. Peat	Peatland protection	Peatland Policy Unit	0.1	5.1
	Peatland restoration	Peatland restoration programme	5.0	
6. Grasslands	Habitat protection	Ancient meadows mapping and guidance	0.1	66.3
	Pesticide reduction	Champion Integrated Pest Management	0.3	
	Pollinators	Pollinator Champions	0.4	
	Grassland restoration	Grassland restoration, creation, maintenance	65.5	
7. Protected sites	Monitoring and implementation	Additional staff and resources for SSSI monitoring and management programme	5.0	66.6
	Site restoration and maintenance	SSSI restoration and maintenance	52.0	
	New site designation	Designate new protected areas by 2030	9.6	
8. Rivers and wetlands	Migratory fish	Resolve barriers on rivers	3.1	10.2
	Nature based solutions	Implement NBS through flood management budget	7.1	
9. Woodlands and trees	Veteran trees	Map and protect ancient trees	3.9	28.7
	Forest restructuring	Expand management of open ground habitats in coniferous woodland	0.3	
	Woodland restoration	Restoration of ASNW and PAWS	24.5	
10. Species	Species protection	Awareness and enforcement measures	0.1	74.0
	Tackling IAS	Actions to control IAS	20.7	
		Increase biosecurity measures to combat IAS	0.4	
	Species recovery	Threatened species recovery programme	8.6	
		Replacement LIFE Nature Fund for Wales	3.2	
		Farmland actions for species abundance	41.0	

Table 3: Summary of net additional funding needs of nature recovery actions, after deducting current spending and double counting (£m p.a.)

Theme		Action	£m	Total (£m)
1. Access and public participation	Wildlife rich green spaces	Invest in new urban green spaces	39.3	48.2
		Increase urban tree cover to 20%	4.3	
		Network of green space champions	2.2	
	Co-operative action	Pilot community empowerment projects	0.2	
	Environmental justice	Environmental standards body	2.2	
2. Farmland	Regulatory enforcement	Enforce pollution regulations	12.0	12.0
3. Coasts	Habitat protection	Seagrass project	0.4	11.8
	Reducing plastic pollution	Measures to reduce plastics litter	1.6	
	Habitat restoration	Creation of coastal habitats	8.2	
Intertidal habitat recreation to offset climate losses		1.6		
4. Seas	Sustainable fisheries	Fisheries assessments and management plans	0.4	1.3
	Conflict avoidance	Marine development plan	0.5	
	Marine conservation	Designate offshore MCZs	0.4	
5. Peat	Peatland protection	Peatland Policy Unit	0.1	3.0
	Peatland restoration	Peatland restoration programme	2.9	
6. Grasslands	Habitat protection	Ancient meadows mapping and guidance	0.1	0.8
	Pesticide reduction	Champion Integrated Pest Management	0.3	
	Pollinators	Pollinator Champions	0.4	
7. Protected sites	Monitoring and implementation	Additional staff and resources for SSSI monitoring and management programme	5.0	40.6
	Site restoration and maintenance	SSSI restoration and maintenance	26.0	
	New site designation	Designate new protected areas by 2030	9.6	
8. Rivers and wetlands	Migratory fish	Resolve barriers on rivers	3.1	3.1
9. Woodlands and trees	Veteran trees	Map and protect ancient trees	3.9	4.2
	Forest restructuring	Expand management of open ground habitats in coniferous woodland	0.3	
10. Species	Species protection	Awareness and enforcement measures	0.1	33.0
	Tackling IAS	Actions to control IAS	20.7	
		Increase biosecurity measures to combat IAS	0.4	
	Species recovery	Threatened species recovery programme	8.6	
Replacement LIFE Nature Fund for Wales		3.2		

Total additional funding needs (£m p.a.)

158.0

Wales Environment Link (WEL) is a network of environmental, countryside and heritage non-governmental organisations in Wales.

WEL is a respected intermediary body connecting the government and the environmental NGO sector. Our vision is a thriving Welsh environment for future generations.

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