Office for Environmental Protection

Progress in improving the natural environment in England 2023/2024

January 2025

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The Office for Environmental Protection is a non-departmental public body, created in November 2021 under the Environment Act 2021. Our mission is to protect and improve the environment by holding government and other public authorities to account. Our work covers England and Northern Ireland. We also cover reserved matters across the UK.

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This report is accompanied by a Methodological Statement and Statement of Compliance with the UK Statistics Authority Code of Practice for Statistics, both available on the OEP website.

Foreword

Foreword

Our third statutory report on progress in improving the natural environment comes at a time of growing challenges for the environment but also a time of opportunity.

The reporting period for our assessment, from April 2023 to March 2024, inevitably reflects trends and progress under the previous government, but our current view of prospects and our next progress assessment will be shaped by the intentions and actions of the current government. Government's work will be guided, and our assessment will be framed, by a revised Environmental Improvement Plan, to be published early in 2025.

Even as we broaden and deepen our analysis and clarify our views, our assessments largely arrive at similar conclusions to those in our earlier reports. This is unavoidable, as the environment recovers slowly from harms and takes time to respond to interventions.

Government remains largely off track to meet its targets and commitments. This is in large part because the scale and pace of the effort being applied is not sufficient to match the government's stated ambitions or to meet environmental targets established in law. Prospects, however, are not fixed and the current government has the opportunity to get progress back on track.

To protect, enhance and restore the environment, our call to government remains that it must scale up and speed up effort, and plans must be shown to stack up to achieve its legally-binding targets and commitments. But with each passing year, with past rates of change, and with global heating progressing apace, the window of opportunity to redress harms is closing while the effort needed and cost to do so increases.

Therefore, government must catch up. Catch up by developing and fully implementing effective plans. And catch up by speeding up progress in improving the environment, if it is to meet its legal obligations. Recent years have seen repeated delays. While the election and the inevitable effects of a change in administration have added to this, it is imperative that the government now takes decisive action.

The government must now show leadership in implementing effective and efficient policies for environmental improvement. The government has ambitious plans for housing development and energy infrastructure, addressing vital national needs. Better regulation is an enabler, not a blocker of development that is environmentally, socially and economically beneficial.

As government reviews regulations, opportunities for improvement in efficiency and in implementation should be taken. Indeed, long term economic prosperity depends on development and growth advancing alongside environmental restoration, where one enables the other. Effective regulation, alongside political leadership, are key means of achieving this.

The government has acknowledged the scale of the challenges and the absence of quick fixes. While welcome steps have been taken in some areas, with unprecedented investment in the water industry and the establishment of the Water Commission, wider and more immediate actions are necessary. That is why our recommendations this year focus on opportunities to address the overarching challenges, as well as specific actions that can be taken now.

Land management remains central to much environmental improvement at scale. This year saw some positive developments such as the increased uptake of agri-environment schemes, but greater participation in higher-tier Environmental Land Management schemes is crucial. The government must redouble efforts to engage positively with farmers and landowners, to encourage and enable their participation so as to deliver national ambitions and commitments. England must farm for food and for nature.

Tree planting rates have been improving but England's Tree Action Plan concluded in 2024 and with associated funding due to end, the loss of capacity in the forestry sector puts delivery on the ground at risk. While Environmental Land Management schemes are foreseen as the primary vehicle for tree planting, the government cannot rely solely on these. The recent announcement of the Tree Planting Taskforce is a welcome step but greater incentivisation and certainty regarding future schemes will be needed to accelerate delivery of tree planting at the scale needed to meet targets for nature and Net Zero.

In conclusion, the forthcoming, revised Environmental Improvement Plan must set a clear direction and ensure that all elements work together cohesively. It needs to front load efforts to catch up and to set out clearly to all, what has to be done and by when. Integration of action to mitigate and adapt to climate change alongside restoring nature on land and at sea is essential for a more prosperous and sustainable future. Only through concerted effort and unwavering commitment can the government hope to achieve the significant environmental improvements that are so urgently needed.

We are grateful to those at the Climate Change Committee, Defra, the Environment Agency, Environmental Standards Scotland and Natural England who have supported our analysis as well as others in government and beyond.

Dame Glenys Stacey
Chair, Office for Environmental Protection

Executive summary and recommendations

Executive summary and recommendations

Three years ago, the Environment Act 2021 established a governance framework for the environment, with four key provisions: legally binding targets to be set under the Act; long-term Environmental Improvement Plans that must set out the steps government intends to take to significantly improve the natural environment; an Environmental Principles Policy Statement (EPPS) that is applicable across central government; and an oversight body, the Office for Environmental Protection that helps ensure this framework works as it should.

With this report, we provide our assessment of the government's progress towards improving the environment in accordance with Environment Act targets and interim targets, and the Environmental Improvement Plan 2023 (EIP23). Our assessment of progress covers the annual reporting period from 1 April 2023 to 31 March 2024.

Our overall assessment spans the terms of two governments. While the EIP23 provides the structure and content against which we assess progress during the reporting period, our assessment of prospects and opportunities for improvement also reflects developments under the current government.

Is England's natural environment improving?

Our assessments of progress are based on available knowledge, evidence and analysis. We take an integrated approach to provide an assessment of issues within and among environmental domains, across geographic scales, and over past, present and future timescales.

We assign distinct ratings to past trends, to progress within the reporting year, and to the prospects of meeting targets, commitments and ambitions. Their different scope and timings mean trends, progress and prospects can have different assessment ratings. For example, long term environmental trends are unlikely to capture progress within the reporting period. In addition, good, or indeed poor, progress within one reporting year will inform but may not change our assessment of longer-term prospects.

Considering the government's aim of signficantly improving the natural environment, our overall assessment is that less progress was made during the annual reporting period 2023/2024 than in the previous period (Table 1). Our overall assessment of the prospects of meeting Environment Act targets and the targets, commitments and ambitions of the EIP23 is unchanged. The government remains largely off track and very substantial challenges lie ahead.

Table 1. The Office for Environmental Protection summary assessment of past trends, progress for the year 2023/2024 and overall prospects of meeting ambitions, Environment Act targets and other commitments of the 10 goal areas of the EIP23.

Environmental Improvement Plan 2023 areas	Environmental Improvement Plan 2023 goals		Past trends	Progress	Overall prospects of meeting ambitions, targets and commitments
The apex goal	Goal 1: Thriving plants and wildlife				
Improving environmental quality	Goal 2: Clean air				
	Goal 3: Clean and plentiful water				
	Goal 4: Managing exposure to chemicals and pesticides				
Improving our use of resources	Goal 5: Maximise our resources, minimise our waste				
	Goal 6: Using resources from nature sustainably				
Improving our mitigation of climate change	Goal 7: Mitigating and adapting to climate change	Mitigation			
		Adaptation			
	Goal 8: Reduced risk of harm from environmental hazards				
Improving our biosecurity	Goal 9: Enhancing biosecurity				
Improving the beauty of nature	Goal 10: Enhancing beauty, heritage and engagement with the natural environment				

Assessment rating	Past trends	Progress	Overall prospects
	Improving trends dominate	Good progress	Largely on track
	Trends show a mixed picture	Mixed progress	Partially on track
	Deteriorating trends dominate	Limited progress	Largely off track
	Not assessed		

Past trends

Our assessment of 59 recent trends shows that 25 are improving, 15 are static, 12 are deteriorating and seven were not assessed due to data availability (Figure 14.1). While there is a lower proportion of trends showing improvement, this is mainly because improvements in data availability mean that we have been able to assess more trends this time around.

Most trends have not changed since our progress report for 2022/2023. Improving and deteriorating trends were observed across most EIP23 goal areas and pressures on biodiversity have not lessened.

In bringing together and summarising trends at the level of the 10 broad goal areas of the EIP23, we conclude that improving trends dominate in the goal area of clean air, and for climate change mitigation. In the goal area of biosecurity, deteriorating trends dominate. In the other seven goal areas, and for climate change adaptation, trends are mixed (Table 1).

Progress in the reporting period

Our assessment of progress towards meeting 43 environmental targets and commitments, including targets set under the Environment Act, is that good progress was made during the reporting period towards 10, mixed progress towards 17 and limited progress towards 15. Progress towards one relating to sustainable management of agricultural soil could not be assessed due to a lack of sufficient evidence (Figure 14.2).

Of the 13 Environment Act targets, our assessment is that good progress was made during the reporting period towards three targets, mixed progress towards nine and limited progress towards one (Figure 14.3).

Our assessment ratings for the majority of targets that were also assessed last year have not changed. Compared to our last progress report, a higher proportion of targets and commitments now show good progress. But a higher proportion also now show limited progress. In both instances, this is mainly due to our assessment having assessed 11 more targets and commitments than last year.

In summarising progress at the level of the ten broad goal areas of the EIP23, we conclude that progress was mixed in five goal areas and limited in the other five (Table 1). Compared to our last progress report, there was less progress in relation to the goals of clean air and of maximising our resources, minimising our waste.

Overall prospects

Informed by our assessment of past trends and progress in the reporting period, our assessment of the prospects of meeting 43 individual targets and commitments is that the government is largely on track towards meeting nine, partially on track towards meeting 12 and largely off track towards meeting 20. The prospects of meeting two targets could not be assessed due to a lack of sufficient evidence (Figure 14.4).

Of the 13 Environment Act targets, our assessment of prospects is that government is largely on track for meeting three, partially on track for four and largely off track for five. The prospects of meeting one target could not be assessed (Figure 14.5).

We did not assign assessment ratings to the prospects of meeting individual targets and commitments in our 2022/2023 progress report, so our first comparison between years will come next year.

At the level of the ten goal areas, we conclude that in three, government is partially on track but in seven government is largely off track (Table 1). Compared to our last progress report, our ratings have not changed, though this year we were able to assess the goal of enhancing beauty, heritage and engagement, which we assessed as partially on track.

What is holding back progress?

England faces persistent environmental problems today, the diverse origins of which extend back over decades. Our integrated approach of looking at past trends, recent progress and future prospects allows us to identify not just challenges and barriers but also many opportunities for improvement.

In our last progress report, we identified factors impeding progress and prospects, including delays in key policies, strategies and regulatory frameworks; actions not addressing all major pressures; resources not being given as needed even when tools and actions are well understood; and a lack of urgency with which positive actions are implemented. These all apply this year as much as last.

Last year, we identified many opportunities for improvement and made recommendations for all 10 goal areas, focused on addressing barriers and harnessing opportunities. Of the total of 52 recommendations, we can identify good progress on only five over the last year, including recommendations relating to nature-friendly farming and invasive non-native species. There has been mixed progress in relation to 16, and limited progress in relation to 31 (Figure 14.6). We hope to see our earlier recommendations followed, as if the government does so we consider it is more likely to achieve statutory targets and to make significant environmental improvements.

Our assessment of progress and prospects continues to be hampered by the level of detailed information made available by the government and gaps in monitoring systems. In particular, the degree of disclosure and transparency of delivery planning information to date is not consistent with that needed for public scrutiny or government accountability.

How can progress be improved?

In many instances, well established solutions exist and their implementation is feasible with sufficient support. But in many areas, the scale and pace of actions are currently falling short. We make a series of specific recommendations to improve the prospects of meeting targets and commitments and drive environmental improvements in each EIP23 goal area and cross-cutting themes in our report.

Achieving ambitions, targets and commitments requires government to speed up and scale up actions. For progress to be improved there is still a need for detailed delivery plans that set out who will do what, how, and by when. These delivery plans also need to show that when individual actions are taken, specified outcomes are achieved and that together plans stack up.

Furthermore, the election has added to repeated delays, meaning that strategic and delivery plans have not kept pace with the real and significant environmental challenges the country now faces, so actions and plans need to catch up and then keep up. Harnessing support from across government is essential as the policy levers needed to deliver targets, commitments and ambitions, are spread across government departments.

The necessary increase in the pace and scale of implementation means monitoring and evaluation becomes more important than ever as a way to understand what is working and when to change course to ensure outcomes are achieved effectively.

Prospects are not fixed. There are many clear opportunities to change trends, make progress towards targets, and deliver significant environmental improvements. Government will need to act quickly to make up lost ground. It has several legally-binding commitments for 2027 and 2030, now only three and six years away. In September 2024, the government announced that it would review the Environmental Improvement Plan, and that findings of the review would be published in early 2025, followed by a revised EIP in spring 2025.

The revised EIP therefore presents the means of achieving all that must be achieved by 2030, and beyond. This is a critical opportunity to strengthen the EIP and the effectiveness of the governance framework for the environment established by the Environment Act.

Carrying on as before is not going to deliver improvements at the necessary speed and scale. Many long-term targets are unlikely to be met with existing policy. The revised EIP should not just add up existing policies and actions but clearly set out how actions will make achieving targets and commitments a reality.

However, the effectiveness of policy measures will be limited if they do not tackle the underlying causes of environmental degradation related to the societal systems that meet the needs for food, energy, mobility and the built environment; and improve policy coherence, harness synergies, and deal with trade-offs.

Like addressing climate change, nature's recovery is a long term and complex challenge. Taking actions that maximise synergies in mitigating and adapting to climate change, alongside restoring nature should be seen as investing in a more prosperous, sustainable future. The Dasgupta Review of the economics of biodiversity[1] and the now longstanding Stern Review on the economics of climate change both conclude that the benefits of strong and early action far outweigh the economic costs of not acting.[2]

Government has responded to the climate challenge with the 'clean energy superpower' mission. A similar mission for nature to drive action would clearly demonstrate that this is a government for Net Zero and nature and that the two are inextricably linked. Government now has a unique opportunity with the EIP revision to take a more integrated approach and improve EIP delivery and integration with climate and wider policies to achieve a significant environmental improvement.

Recommendations

Our previous progress reports made five key recommendations which remain standing and relevant. We recently provided the government with advice on the review of the EIP. In so doing, we identified a number of actions that deliver benefits across EIP goals, government's five environmental priorities and contribute to meeting several Environment Act targets. Greater scale and pace is needed with respect to each of these actions if government is to secure the long-term improvements to which it is committed.

Key recommendation 1: Get nature-friendly farming right. It is essential that the government strengthens engagement with farmers and landowners if it is to achieve Environment Act targets and many other environmental ambitions and commitments. Our analysis shows the latest Environmental Land Management schemes are promising with respect to recovery of landscapes and halting the decline in species abundance on land. However, this is conditional on a significant increase in the uptake of the more environmentally ambitious aspects of Countryside Stewardship and Landscape Recovery schemes, and by making greater use of spatial prioritisation, farm advice and guidance.

We identify limited capacity for reducing water pollution, supporting the government's environmental priority of cleaning up rivers and lakes, without changes to how land is used, the current schemes and regulatory approach, and greater collaboration between delivery partners.

Key recommendation 2: Maximise the contribution of protected sites for nature. Protected wildlife sites contribute towards achieving the set of national biodiversity targets and international commitments, such as 30 by 30, as well as providing wider environmental, economic and social benefits. However, the current framework is not working well enough and the government should enhance and enforce levels of legal protection. Further steps should be taken urgently to correct underinvestment in site designation and management including implementation of conservation measures; improving monitoring and strengthening overall governance and engagement with partners.

Key recommendation 3: Speed up action in the marine environment. The government has not met its commitment to ban all damaging activities in Marine Protected Areas in 2024. The latest data from OSPAR confirm the UK will more than likely not have met the legal requirement of marine good environmental status. The government should deliver the current steps to achieve targets and commitments more rapidly. Overdue Marine Protected Area byelaws urgently need to be put in place. The government should implement a new UK Marine Strategy that focuses action on those descriptors not yet at good environmental status, to maximise progress and minimise the delay in achieving that overall objective.

Key recommendation 4: Set out clear mechanisms for reconciling competing demands for use of land and sea. The ways in which land and sea are used are among the biggest drivers of biodiversity loss. Environmental pressures will become more acute with the need to develop essential clean energy infrastructure and housing, while delivering the government's environmental priorities of food security and protecting communities from flooding. The government needs to progress Local Nature Recovery Strategies (LNRSs), a Land Use Framework, and detailed catchment and marine spatial plans. These can secure coherence between environmental and other priorities but need to be expedited and effectively integrated into planning decisions in practice. However plans on their own are not enough without resources to implement them.

Many issues are context specific, so a place-based approach is also needed to complement national frameworks and guidance. To ensure that infrastructure development enhances rather than degrades nature and people's engagement with it, key spatial tools need to work together. In addition to recent changes to the National Planning Policy Framework concerning LNRSs, the government should also make the Green Infrastructure Framework and emerging LNRSs material considerations for local planning.

In addition, as many environmental pressures are related to how we produce and consume food, the government should use the revision of the Food Strategy to develop more coherent policy interventions to reduce environmental pressures along the whole supply chain going beyond a sectoral approach.

Key recommendation 5: Develop a circular economy framework. Progress in this area has been too slow. The government should update the Resources and Waste Strategy to establish a framework for a circular economy. This would deliver economic benefits and improve environmental outcomes across many areas, including nature recovery, but it requires the efforts to go beyond waste management. This includes the acceleration of a new UK policy and regulatory framework for chemicals, since clean material cycles and

products being sustainable by design are crucial steps to achieving residual waste targets and progress towards the government's environmental priority of a zero-waste economy.

In developing a circular economy framework, the government should consider the EPPS principles, particularly integration, prevention and polluter pays, to help identify opportunities, with extended producer responsibility an important mechanism for securing the resources needed to implement measures.

In addition, there are three cross-cutting areas where government can take steps to enable progress and secure effective implementation of the Environment Act targets and a revised EIP:

Key recommendation 6: Mobilise investment at the scale needed. The government's target of private investment for nature recovery is a key enabling step to close the finance gap, alongside continued and well targeted public investment. Given the scale of the challenge, to achieve this the government needs to provide strong incentives, oversight and regulation, to create the market confidence to deliver rapid, substantial growth in investment, as well as the capability and capacity of the environmental sector to make the most of that investment. In addition, local authorities are a key delivery partner and they need support to build and maintain the capacity needed to mobilise investment.

The government should improve transparency and accountability by publishing sectoral pathways that define the scale and direction of investment required to become nature positive and develop monitoring capability for tracking investment flows over time, from funding sources to desired outcomes. Investment choices have long-term implications so there is a need to ensure that they do not lock society into pathways that limit future options.

In addition, the government should generate resources for public investment through application of the EPPS polluter pays principle and actions taken to achieve the Kunming-Montreal Global Biodiversity Framework Target 18 on environmentally harmful subsidy reform.

Key recommendation 7: Regulate more effectively. Full implementation and enforcement of existing regulations would accelerate progress towards targets and commitments. To achieve this the government should ensure the availability of sufficient resources, build capacity and improve engagement of businesses and citizens as well as coordination of relevant authorities.

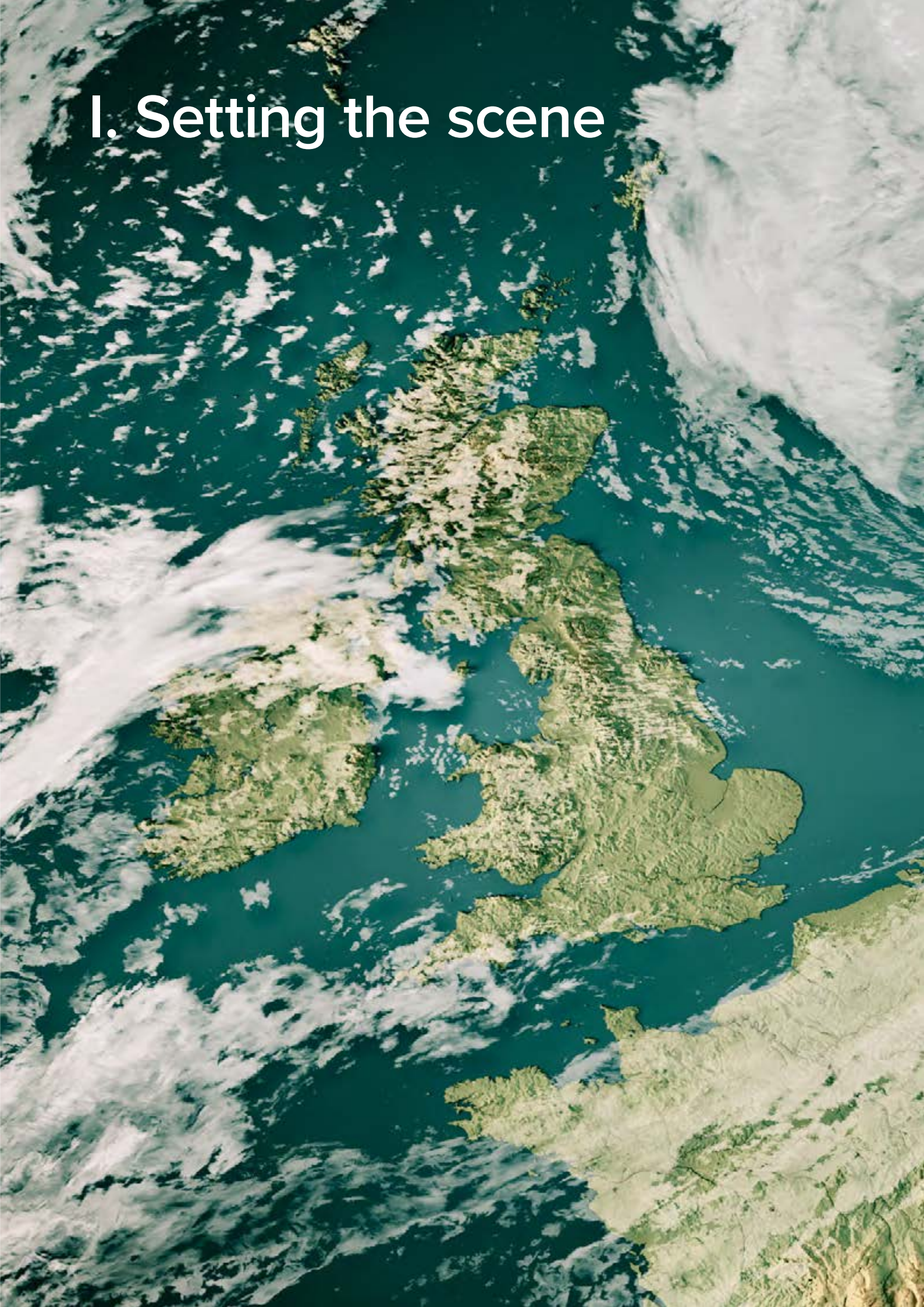
Effective regulation is all about knowing in sufficient detail how things stand and then using regulatory tools and approaches in a considered way to get people to act in ways they may not otherwise choose, for the purpose of addressing root causes or consequences of activities that affect the environment.

Effective regulation is essential to address the numerous market and other failures that have led to environmental degradation at a significant cost to society. It is also needed to ensure economic growth is sustainable, given the reliance of the economy on natural resources, ecosystems and biodiversity. We note Defra's review of its current regulation and regulators, however it should ensure there is regulatory coherence and efficiency in delivering the government's environmental goals, alongside its wider mission on economic growth.

Key recommendation 8: Harness the support needed to achieve ambitions. The government needs to provide clear leadership at the highest level to ensure cross-government delivery and wider stakeholder buy-in. Directly linking the EPPS to statutory targets and their delivery plans and the revised EIP can help secure cross-government delivery of environmental ambitions alongside the government's other priorities.

A revised EIP should be far more transparent and better communicated. It should explicitly state who will do what, how and by when and detail what the intended outcomes of actions are. The government should couple its implementation with greater engagement with non-government bodies and the public to harness their willingness to contribute. There is support for action on the environment with the majority of adults reporting climate change and the environment as an important issue for the UK.[3] Steps in the EIP to enhance engagement are important in building public support for action.

I. Setting the scene



Chapter 1: Setting the scene

The Environment Act 2021 (the Act, or EA21) established a governance framework for the environment, with four key provisions: an oversight body, the Office for Environmental Protection (OEP); statutory targets set under the Act (EA21 targets and interim targets); a long-term Environmental Improvement Plan (EIP) that must set out the steps the government intends to take to significantly improve the natural environment; and an Environmental Principles Policy Statement that is applicable across central government.

The EA21 introduced statutory reporting requirements. The government must prepare Annual Progress Reports (APRs) on the implementation of the EIP. These reports must consider improvement in the natural environment and progress towards any EA21 targets and interim targets.

We, in turn, make our independent assessment of the government's progress during the annual reporting period in improving the natural environment in accordance with the EIP and towards meeting EA21 targets and interim targets. We must consider the government's APR for that period and the data published by the government that relate to that period, along with any other reports, documents or information we consider appropriate.

Our report is laid in Parliament in response to the government's APR within six months of the APR's publication. The government must then respond to our report and lay before Parliament a response no later than 12 months after our report is laid.

With this report, we provide our assessment of the government's progress, encompassing the annual reporting period, in this instance from April 2023 to March 2024, in response to the government's APR, which was published on 30 July 2024.

1.1. The context for achieving environmental goals

The environmental challenges England faces today are rooted in domestic and global developments going back over decades. The planetary boundaries framework identifies nine processes that are critical for maintaining the stability and resilience of the Earth system as a whole. The latest update found that six of the nine boundaries have now been transgressed confirming that humanity is putting unprecedented pressure on the Earth system and suggesting that the Earth is now well outside of the safe operating space for humanity.[4]

The United Nations Environment Programme warns of a triple planetary crisis of climate change, biodiversity loss, and pollution and waste. The latest major global assessments by the Intergovernmental Panel on Climate Change,[5] Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services,[6] and International Resource Panel[7] all emphasise that current trajectories of social and economic development are degrading the natural resources and ecosystems that sustain humanity, and urgent action is required to change environmental trends.

Natural capital provides a way of understanding, measuring and valuing nature's contribution to people through the benefits it provides.[8] In 2022, the total asset value of natural capital in England was valued at an estimated £1.4 trillion, with the total value of ecosystem services estimated to be £44 billion.[9] This included greenhouse gas regulation

(£214 million), removal of air pollution (£2.5 billion); and health benefits associated with recreation and tourism (£6 billion).

However, England's natural capital – along with the benefits it provides to society - is at risk. For example, degradation of peatlands in England mean they now emit more greenhouse gases than they remove.[9] A recent assessment by Natural England identified those benefits most at risk and highlighted three main ways to reduce that risk: firstly, restoring ecosystems; secondly, reducing the impacts of drivers of change causing nature loss; and thirdly, making natural capital central to decision-making.[8]

The need to integrate the value of nature into national accounting systems and economic and financial decision-making was also a key message from the Dasgupta Review of the economics of biodiversity.[1] The review highlighted that choosing a more sustainable path would require transformative change underpinned by high levels of ambition, co-ordination and political will, but doing so would be significantly less costly than delay. However, it has been nearly 20 years since the Stern Review on the economics of climate change. This also led to a simple conclusion: the benefits of strong and early action far outweigh the economic costs of not acting.[2]

According to the National Audit Office, meeting the government's environment and climate change targets is a significant challenge requiring the government to handle related and complex transitions over similar timeframes.[10] Their review of 38 reports on the government's environment and climate change work highlighted the importance of strong leadership in creating the conditions for securing most value from public and private investment. This includes ensuring an effective and coherent effort across the government to embed environment and climate considerations into the forthcoming spending review in spring 2025.

However, the majority of environmental pressures are linked to the systems that meet society's needs for food, energy, mobility and the built environment. As a result, these drivers of environmental degradation and nature loss are tied in complex ways to jobs and earnings, to infrastructure investments, skills and knowledge, and to lifestyles, public policies and institutions.[11]

As recognised in the EIP, navigating this complexity and enabling strong co-ordination to achieve improved environmental outcomes requires building on and complementing the largely thematic focus of current policy with a systems approach to policy design and implementation.

1.2. Government's environmental targets, goals and commitments

The government has a duty to meet long-term environmental targets set under the EA21. Currently, there are 13 targets covering air quality, biodiversity, water and waste. The most proximate target is to halt a decline in species abundance by the end of 2030, with other target deadlines ranging from 2038 to 2050. There are also 21 interim targets with deadlines ranging from 2027 to 2032, with the majority set for 2028.

The current EIP (EIP23) was published in January 2023 under the previous government with a vision to leave the natural environment of England in a better state than it found it. After the general election in July 2024, the government announced five environmental priorities: (1) cleaning up Britain's rivers, lakes and seas; (2) creating a roadmap to move

Britain to a zero-waste economy; (3) supporting farmers to boost Britain's food security; (4) ensuring nature's recovery; and (5) protecting communities from the dangers of flooding.

In September 2024, the government announced that it would review the EIP23 with findings of the review published in early 2025 followed by a revised EIP in spring 2025. We provided the government with advice on the revision of the EIP.[12]

While EIP23 provides the structure and content against which we assess progress during the annual reporting period April 2023 to March 2024, our assessment of prospects and opportunities for improvement also reflects developments under the current government. Thus, our overall assessment spans the terms of two governments.

The EIP23 is broad in scope and consists of 10 goal areas and several cross-cutting themes (Figure 1.1). It provides a framework for other strategies and policies and identifies 12 strategies, policies or plans that should be considered, among others, alongside the EIP, as they provide more detail of specific policy programmes. However, some of these are not current government policy, or are being revised.

The EIP23 also incorporates a range of international commitments, including a commitment to work towards the restoration of the global environment, with a particular focus on tackling biodiversity loss, climate change, the use of chemicals and pesticides, waste and pollution, and the need for more sustainable supply chains.

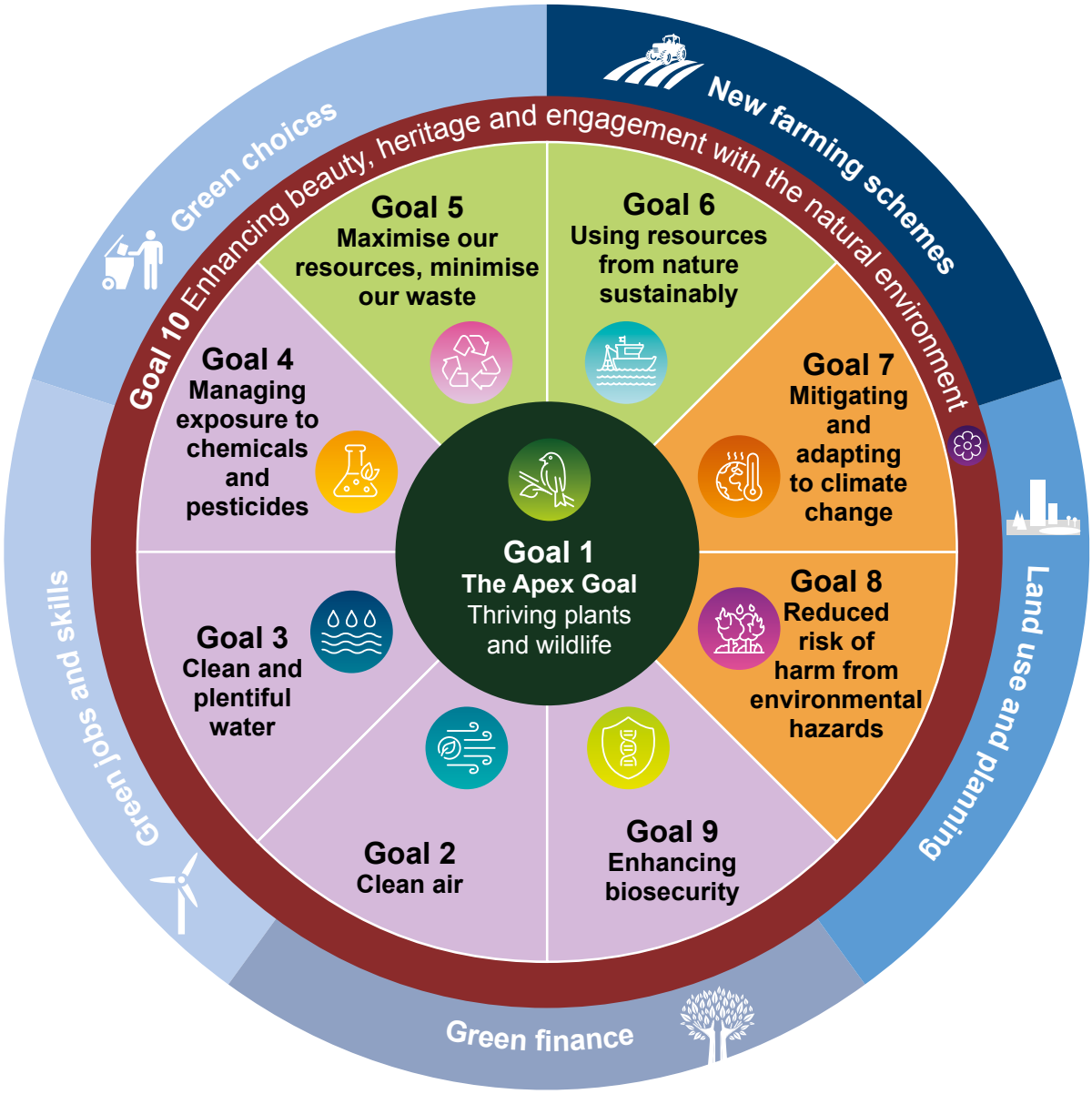


Figure 1.1. The Environmental Improvement Plan 2023 goals and selected cross-cutting themes

1.3. Our assessment approach

Our assessments are based on available knowledge, evidence and analysis. We take an integrated approach to provide an assessment of issues within and across environmental domains, across geographic scales, and over past, present and future timescales.

Our assessment of past trends mainly reflects developments over the five most recent years of data. Our assessment of progress covers the annual reporting period. Our assessment of prospects looks ahead along the timeframes of the government's ambitions, targets and commitments.

We use summary assessments throughout the report to present analyses in a concise, accessible way. We assign assessment ratings to past trends, progress within the reporting year, and prospects of meeting ambitions, targets and commitments. The different timeframes mean they can have different assessment ratings. For example, changes in

long-term environmental trends are unlikely to reflect progress within the reporting year. In addition, good or poor progress within one reporting year will inform but may not change our assessment of prospects over longer timeframes.

Our assessment aims to support decision-making, so we are transparent about our assumptions, uncertainties and the quality of evidence and include this in our summary assessments.

We have assessed progress and prospects in relation to EA21 targets and interim targets and improving the natural environment in accordance with the EIP23. The report is structured in four parts, as outlined below, and we continue with improving nature as the focus for our in-depth assessment.

In **Part I Setting the scene**, we describe the overall policy framework and wider context for achieving EA21 targets and interim targets and EIP23 goals. We introduce the structure and overall approach for our assessment.

In **Part II Progress and prospects**, we provide an integrated assessment of each EIP23 goal area. We assess environmental trends and respond to the APR 2024 by assessing progress during the annual reporting period towards individual EA21 targets and interim targets and EIP23 targets and commitments as well as the prospects of achieving them. For each goal area, we then assess the overall progress and prospects, consider how progress could be improved and provide recommendations on how this could be achieved. In addition, we analyse the selected EIP23 cross-cutting themes of green finance and green choices.

In **Part III A focus on improving nature**, we provide a more in-depth assessment of nature-friendly farming, including the potential effectiveness of environmental land management schemes in contributing to meeting targets and commitments for biodiversity and water.

In **Part IV Taking stock**, we bring together the goal-level summary assessments to provide an overall picture of trends, progress and prospects across EA21 targets and EIP23 goals, drawing out common themes. We also assess progress in relation to the recommendations we made in our 2022/2023 progress report.

We are committed to transparency and accessibility. This report is accompanied by a Methodological Statement, which sets out in detail the data sources we have used, our analytical methods and the stakeholder engagement we have undertaken. In the Methodological Statement, we identify constraints upon our analyses and set out the areas that will be developed in future.

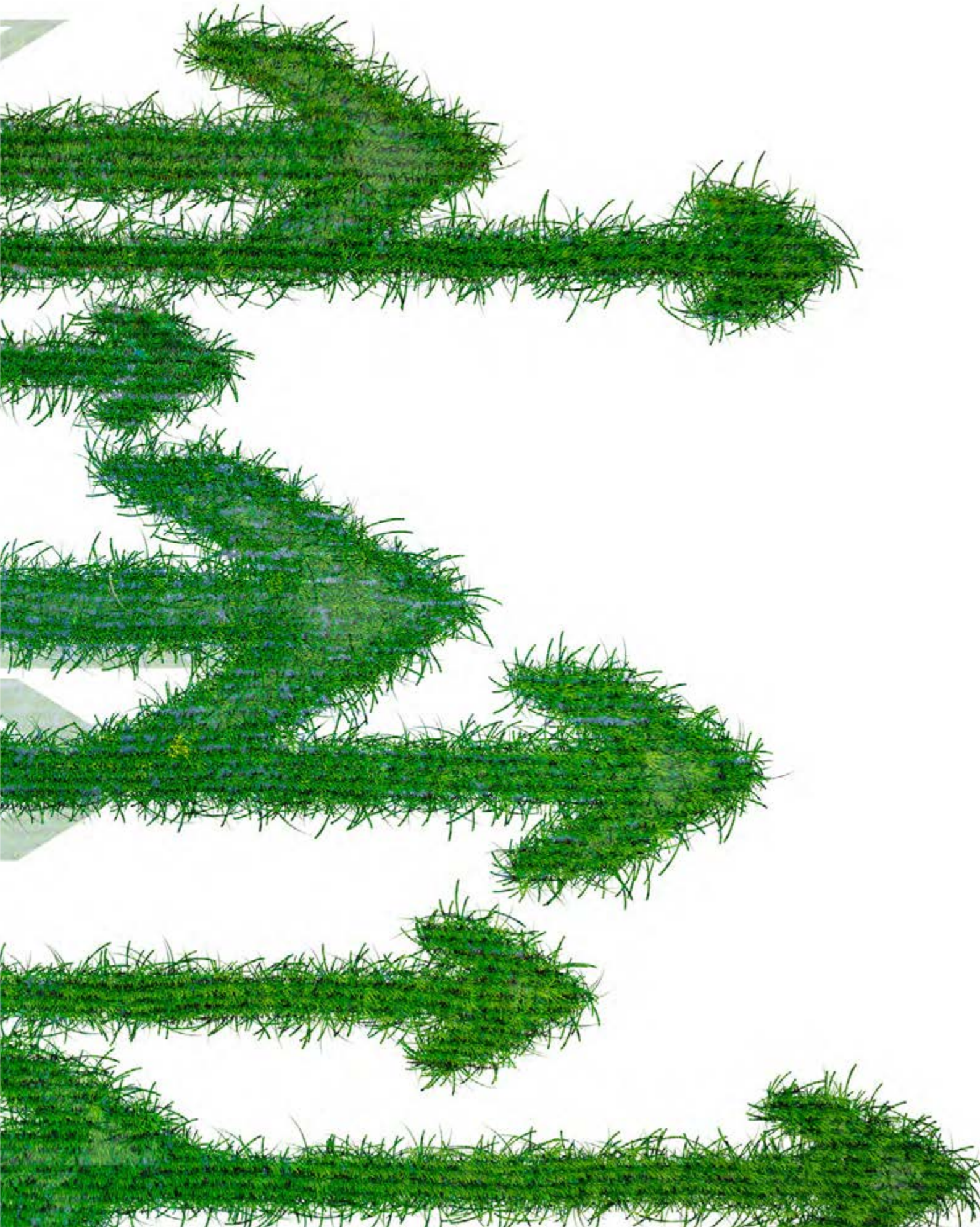
We have voluntarily adopted the Code of Practice for Statistics[13] which is administered by the Office for Statistics Regulation and aims to ensure that statistics have public value, are of high quality and are trustworthy. Our statement of compliance with the Code is provided alongside the Methodological Statement.

In developing our assessment, we consider the government's APR, and data published by the Secretary of State that relate to the reporting period, but also look beyond these. In our view, the APR 2024 provides a very limited overview of actions and plans, rather than an assessment of progress. Our scrutiny of progress has also been hampered by the lack of detailed information made available by the government. Across many EA21 targets and interim targets and EIP23 targets and commitments, this lack of detailed information about

delivery constrains our ability to assess the current and future effects of policy measures and actions.

Our assessment provides a picture of the current situation within a changing political and policy context. It forms part of our contribution to environmental protection and the improvement of the natural environment in England. We will continue to evolve our assessment approach and our next report, about progress during the reporting period April 2024 to March 2025, will reflect the revised EIP and associated developments.

II. Progress and prospects



Introduction

In this section, we present our assessment for each of the 10 goals of the EIP23. The data sources and methods we have used are set out in the Methodological Statement. When we refer to targets and interim targets in this report, we mean either EA21 targets and interim targets or other targets set out in the EIP23, unless specified otherwise.

There are five elements to our summary assessments: trends, progress towards targets and commitments within the annual reporting year, prospects of meeting targets and commitments, an overall table and an account of progress regarding recommendations.

To summarise change in environmental trends and whether this constitutes improvement or deterioration, we use a red-amber-green (RAG) symbol and directed arrows (Table II.1). In general, change is assessed over a five-year period and the percentage increase or decrease assessed using a 3% threshold, with any variation from this approach specified in the Methodological Statement. This is in line with the general approach taken across government and by the Joint Nature Conservation Committee (JNCC). The arrows indicate the direction of change, so improvement can be indicated by either a downwards arrow (for example, a decrease in the emission of air pollutants) or an upwards arrow (for example, increased tree cover). Where we have not made an assessment due to the lack of a time series, we use a grey circle. Where data are not available, we use a grey cross.

Table II.1. Indicator trend assessment categories

Icon	Trend category	Trend direction	Assessment of change
	Improvement	Increasing	Positive developments more prevalent
	Improvement	Decreasing	Negative developments less prevalent
	Little or no change	No change	No change for better or worse
	Deterioration	Increasing	Negative developments more prevalent
	Deterioration	Decreasing	Positive developments less prevalent
	Not assessed	Single data point, or time series too short to adequately assess progress	Only the current state can be evaluated
	Not assessed	No appropriate data to assess progress	Represents a major data gap

To summarise progress towards individual targets at EIP23 goal level and recommendations, we again adopt a RAG approach, where green indicates good progress, amber is mixed and red is limited. If no assessment of progress has been possible – for example, because of a lack of available evidence – this is rated as not assessed.

To summarise prospects at individual target and EIP23 goal level, we also use a RAG approach, where green indicates that the prospects of meeting ambitions, targets and commitments are largely on track, amber means they are partially on track and red largely off track. If no assessment has been possible, this is rated as not assessed (Table II.2).

The overall summary table is based on a combination of available evidence and expert judgement. It provides a summary of past trends, progress and overall prospects of meeting targets and commitments for each goal area. It also provides an assessment of the robustness of the evidence base.

Table II.2. Goal-level summary assessment methodology (adapted from EEA[11]).

Component	Assessment approach	Assessment rating	
Past trends	Assessment of trends is based on available indicators and other data as observed.	**Green**	Improving trends dominate
		Amber	Trends show a mixed picture
		Red	Deteriorating trends dominate
		Grey	Not assessed
Progress in the annual reporting period	Assessment of progress is based on the government's APR, data published by the Secretary of State that relate to the reporting period and any other reports, documents or information we consider appropriate. It is informed by progress towards individual targets and analysis of whether actions are comprehensive (they cover the most important issues), credible (their development and delivery are high-quality) and coherent (they work well together).	**Green**	Good progress
		Amber	Mixed progress
		Red	Limited progress
		Grey	Not assessed
Overall prospects of meeting ambitions, targets and commitments	Assessment of the prospects of meeting selected targets (including EA21 targets and interim targets) and commitments is based on the government's APR, data published by the Secretary of State that relate to the reporting period, distance to target assessments, target detailed evidence reports and impact assessments, other assessments and information, including calls for evidence, policy evaluation and expert judgement.	**Green**	Largely on track
		Amber	Partially on track
		Red	Largely off track
		Grey	Not assessed
Robustness	Assessment of the robustness of the evidence base, identifying key gaps and uncertainties and indicating the degree of expert judgement used.		

Chapter 2:
Thriving plants and wildlife

Chapter 2: Thriving plants and wildlife

2.1. Summary assessment

The government has made ensuring nature's recovery a priority. As well as being desirable in its own right, improving biodiversity underpins the government's objectives of securing economic growth, clean energy infrastructure and housing development, as well as delivering a healthier, fairer and more prosperous society.

There are signs that the downward trajectory in England's species abundance is slowing, but this is no time for complacency. Wider biodiversity trends continue to show decline. Furthermore, a decline in the condition of protected sites prevents the creation of a coherent and resilient ecological network.

Progress on environmental land management (ELM) schemes continues at pace, although it is slower across wider actions and policies essential to nature's recovery, most noticeably in the marine environment. The milestone of halting damaging activities in Marine Protected Areas (MPAs) by the end of 2024 will not be met.

The government is over-reliant on a handful of policies. ELM schemes and the protection of MPAs are essential but won't deliver the desired outcomes on their own. In addition, key targets and commitments do not align sufficiently with the government's planning for nature recovery. A lack of strategic plans prevents stakeholders from effectively contributing to delivery.

Time is running out to implement measures that will effect change in species abundance by 2030 and achieve wider outcomes. The government has an opportunity to maximise prospects of success by setting out sufficiently defined, ambitious and time-bound plans and interim targets to underpin delivery. More attention should be given to how achievement of EA21 targets for species abundance is measured.

Table 2.1. Thriving plants and wildlife – summary assessment

Past trends	The relative species abundance index for England shows signs of stabilising, but it is too early to tell whether this is an established pattern. Uptake of agri-environment schemes continues to increase. Other trends are less favourable. Deteriorating trends dominate in the marine environment.	**Trends show a mixed picture**
Progress in the reporting period	ELM schemes have progressed at pace, although wider policy progress is mixed or limited, particularly in the marine environment. Publication of the updated UK Marine Strategy programme of measures continues to be delayed.	**Mixed**
Overall prospects of meeting ambitions, targets and commitments	Nature-friendly farming has the potential to make important contributions towards many targets and commitments. However, wider opportunities to maximise nature recovery have not been realised. The government is largely off track in achieving marine targets and commitments, mainly due to continued delays and a lack of urgency in implementation.	**Largely off track**
Robustness	The assessment has primarily used publicly available evidence, OEP commissioned research and expert judgement. The completeness, spatial resolution and timeliness of data have limited our analysis.	

2.2. Context and commitments

Biodiversity is essential to people, and preserving and enhancing this natural capital underpins economic prosperity. The government has made ensuring nature's recovery a priority. This requires a growing and resilient network of land, inland waters and sea that is richer in plants and wildlife.

The government has set a single apex target for nature: the 2030 species abundance target (an EA21 target) for halting the decline in species abundance by 31 December 2030. The official statistics in development 'Indicators of species abundance in England'[14] suggest a potential stabilisation in species abundance, but it is too early to tell whether this is an established trend.

The government's ambitions for environmental improvement require not only a halting of the decline, but an eventual increase in species abundance. We consider both the 2030 species abundance target to halt the decline, and the EA21 long-term biodiversity target to reverse the decline of species abundance (so that the overall relative species abundance index by 31 December 2042 is higher than that for 31 December 2022 and at least 10% higher than that for 31 December 2030), to be apex targets for biodiversity.

Even these targets do not provide a universal picture, since marine species are largely absent from the lists currently specified for the indicator for both EA21 species abundance targets. Noting this absence, we consider the requirement under the Marine Strategy Regulations 2010 (MSR) to take the necessary measures to achieve or maintain good environmental status (GES) of marine waters by 31 December 2020, as the apex target for the marine environment. GES comprises 15 ecosystem components across 11 'descriptors', covering species, habitats and pressures.[15]

A three-part UK Marine Strategy (UKMS), each part of which must be reviewed and updated every six years, is published under the MSR. The three parts represent cornerstones of the UK's policy framework for protecting and managing the entire UK marine area. Together, they should form a comprehensive framework for assessing, monitoring and taking action to achieve marine GES.

An update to UKMS Part One (UK Updated Assessment and Good Environmental Status) will mark the start of the next statutory cycle. The update was due at the end of 2024 but has not yet been published. An updated UKMS Part Two (UK Marine Monitoring Programmes) was published in 2022; however, an update to UKMS Part Three (Programme of Measures) is now three years overdue.

In addition to a target for marine GES, there is an EA21 target for the condition of protected features in relevant MPAs, stating that before the end of 31 December 2042, the number of protected features which are in favourable condition is not less than 70% of the total number of all protected features within relevant MPAs, and all other protected features within relevant MPAs are in recovering condition. This EA21 target contributes to marine GES but is focused on protected sites in England. The end of 2024 is a key milestone in achieving the EA21 target for 2042, with the government committed to banning all damaging activities in MPAs by then.[16]

On land, an updated Agricultural Transition Plan was published in 2023.[17] ELM schemes continue to be rolled out at pace, towards the commitment in EIP23 for 65–80% of landowners and farmers to adopt nature-friendly farming on at least 10–15% of their

land by 2030. New agroforestry actions under the Sustainable Farming Incentive (SFI) could provide a welcome boost towards the 2050 target for woodland and trees outside woodland, so that by the end of 31 December 2050 at least 16.5% of all land in England is covered by woodland and trees outside woodland (an EA21 target).

Over half of Sites of Special Scientific Interest (SSSIs) are eligible for agri-environment schemes making ELM an important contributing mechanism for the target in EIP23 to restore 75% of protected sites to favourable condition by 2042. Outside of SSSIs, high-tier schemes can potentially contribute to managing off-site pressures, as well as towards the long-term EA21 target for the restoration or creation of over 500,000 hectares of wildlife-rich habitat between 30 January 2023 and 31 December 2042.

The risks and interdependencies between statutory targets and the domestic implementation of other commitments are unclear. Uncertainty remains regarding how the government will deliver its 30 by 30 commitments and the wider suite of 2030 targets and 2050 goals under the Kunming-Montreal Global Biodiversity Framework (GBF). A component of the 2050 goals is that 'the extinction rate and risk of all species are reduced tenfold'.[18] This level of ambition is not comparable with the EA21 long-term target for a simple reduction in species' extinction risk by 2042, compared to 2022.

2.3. Key environmental trends

Trends in species abundance provide a useful proxy for the state of biodiversity in England. The government has published indicators of species abundance in England[14] as an official statistic in development.[19] These statistics underpin both the 2030 target to halt and the long-term target to reverse the decline of species abundance. The current version of the indicator encompasses 1,177 species in eight broad groupings. This version omits 18 of the 1,195 species, listed in Schedule 2 of the Environmental Targets (Biodiversity) (England) Regulations 2023.

Four groupings (moths, freshwater invertebrates, vascular plants and birds) comprise around 90% of the index by species count. This can incur bias, particularly regarding moths, which account for 38% of the index. However, disaggregation of the index into meaningful groups aids interpretation of the all-species index. For example, it shows that bumblebee and wild bird species assemblages are potentially declining further.

Defra has published a call for feedback on the indicator, providing some opportunity to improve measurement of species abundance (Box 2.1). Given the critical importance of the indicator in assessing progress with EA21 targets and the wider EIP23, Defra should extend the scope for scrutiny before the indicator is finalised.

Figure 2.1 shows two proposed smoothing options for the species abundance indicator published by Defra. Smoothing is used to dampen the year-to-year fluctuations caused by natural variability and external factors such as weather conditions. In both smoothing options, the results show an increase in overall abundance over the short term (2017 to 2022). However, as this change is not statistically significant; we assess little or no change overall. This initial output is consistent with halting a decline and meeting the 2030 species abundance target.

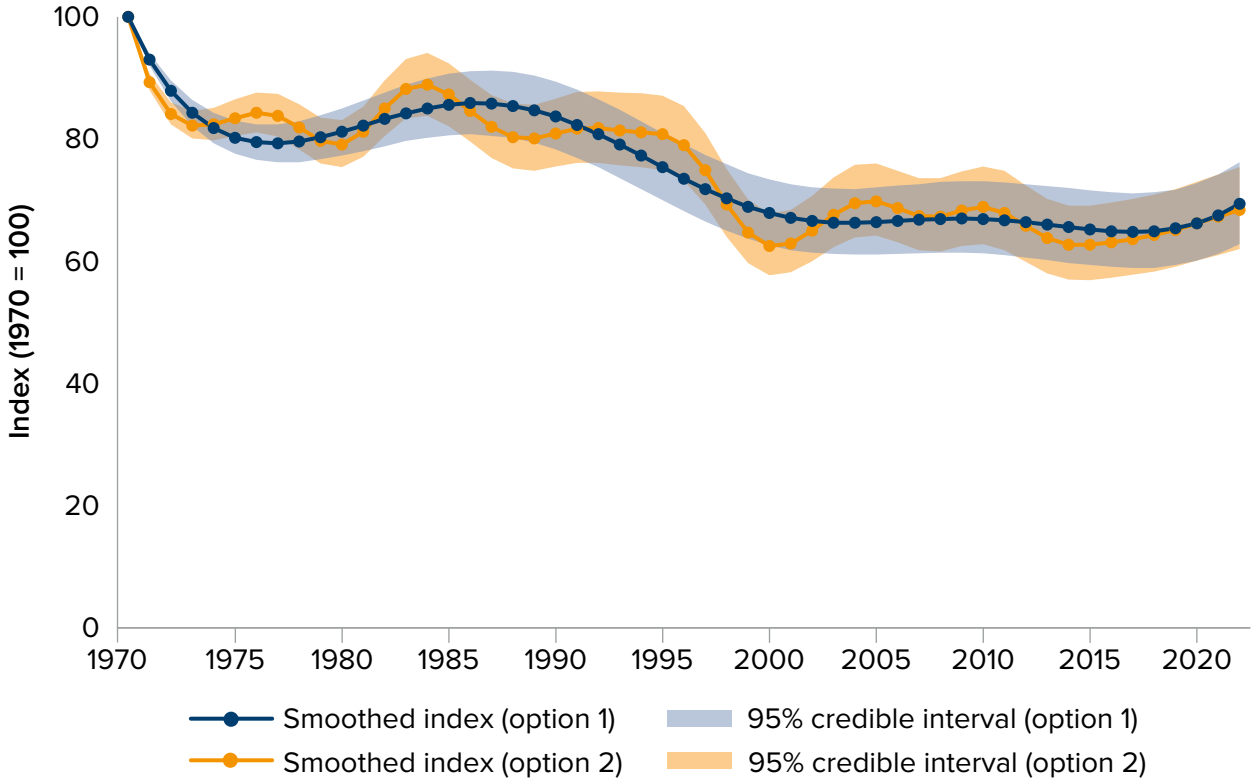


Figure 2.1 Change in relative abundance of species in England, 1970 to 2022, shown as two smoothing options and with 95% credible intervals[19] Index values represent change from the baseline value of 100 in 1970.

A single index does not allow for all biodiversity outcomes to be monitored. Other biodiversity indices from the Outcome Indicator Framework (OIF) provide further context regarding progress towards nature recovery. The relative abundance in England of priority species, a subset of the overall species abundance index identified as the most threatened or declining species, also shows little or no change in recent years.[21] The condition of SSSIs that are in favourable or unfavourable recovering condition[22] continues to decline into 2023.

Box 2.1. Improving measurability of the Environment Act 2021 target for halting the decline in species abundance

To aid interpretation to changes to species abundance, two smoothing options are proposed by Defra (Figure 2.1). Both options dampen multi-annual variability. Option 2 smooths the data to a lesser degree than option 1.

An important component of this variability is driven by anthropogenic climate change, extremes in temperature and precipitation, and large underlying periodic climatic oscillations, such as the North Atlantic Oscillation and the El Niño–Southern Oscillation.[23]

Smoothing is useful when assessing long-term variations in data that contain high levels of variability. However, smoothing can preclude accurate assessments of short-term changes, as required by the 2030 species abundance target.

Box 2.1. Improving measurability of the Environment Act 2021 target for halting the decline in species abundance (cont.)

Under the Environmental Targets (Biodiversity) (England) Regulations 2023, halting the decline in species abundance is assessed across two consecutive years (2029 and 2030). Assessing changes in biodiversity over consecutive years is in itself problematic, as outcomes depend greatly on climate variations. The OIF uses six data points over five consecutive years to assess short-term changes.

When data smoothing is incorporated across consecutive years, this potentially increases uncertainty, since different smoothing options can provide alternative outcomes, as illustrated by the varying smoothed trends in Figure 2.1. Furthermore, smoothing techniques become less accurate close to the end of the time series, in this case the present day, adding to uncertainty.

The measurement of progress towards the 2030 species abundance target would be challenging using the current version of the species abundance index. Significantly greater transparency, scrutiny and stakeholder engagement is required to reduce risks and build consensus on a suitable approach.

A growing and resilient network on land and water that is richer in plants and wildlife

There is a lack of visible improvements required to support the long-term EA21 target to reverse the decline of species abundance. In wider trends, four this year show little or no change, while one trend shows an improvement and another a decline.

The extent of protected areas on land and water requires expansion if they are to support the UK's 30 by 30 commitments. There have been some increases in the extent of National Nature Reserves. For example, in the annual reporting period, Natural England announced the creation of the 'King's Series' of 25 new National Nature Reserves.[24] However, these new reserves are not underpinned by the same level of protection as SSSIs. The extent of SSSIs on land has shown little or no change between 2018 and 2023.[22]

Outside of SSSIs, there is limited monitoring available in consolidated form to track the progress required to achieve both 30 by 30 commitments. Our analysis of headline trend information demonstrates a stalling of progress. For example, our indicator on land cover that is more likely to support large-scale nature-friendly habitats shows little or no change between 2018 and 2023.

The overall area of woodland also shows little or no change between 2019 and 2024, despite large increases in tree planting over the year. The APR 2024 reflects the slow pace of woodland expansion, stating that 'further acceleration in woodland establishment and tree planting will be necessary if the interim target is to be met'. While data describing woodland area do not include trees outside woodland, the rate of increase in woodland area appears not to be enough to meet the 2050 target for woodland and trees outside woodland (an EA21 target).

Shifting baselines complicate progress towards the EA21 target for woodland and trees outside woodland. Preliminary findings from the Natural Capital and Ecosystem Assessment (NCEA) funded project on tree planting outside woodland[25] show that the baseline of trees

outside woodland that was used to set the target was itself an underestimate, thereby reducing the increase and ambition required to meet the target.

The government continues to publish statistics from the Joint Nature Conservation Committee (JNCC)[26] and Defra[27] on the area of land under agri-environment schemes, which show disparities. We have used Defra national statistics for our analysis, which show an encouraging increase in uptake between 2018 and 2023. Around half of usable agricultural land in England is now estimated to be in an agri-environment scheme.

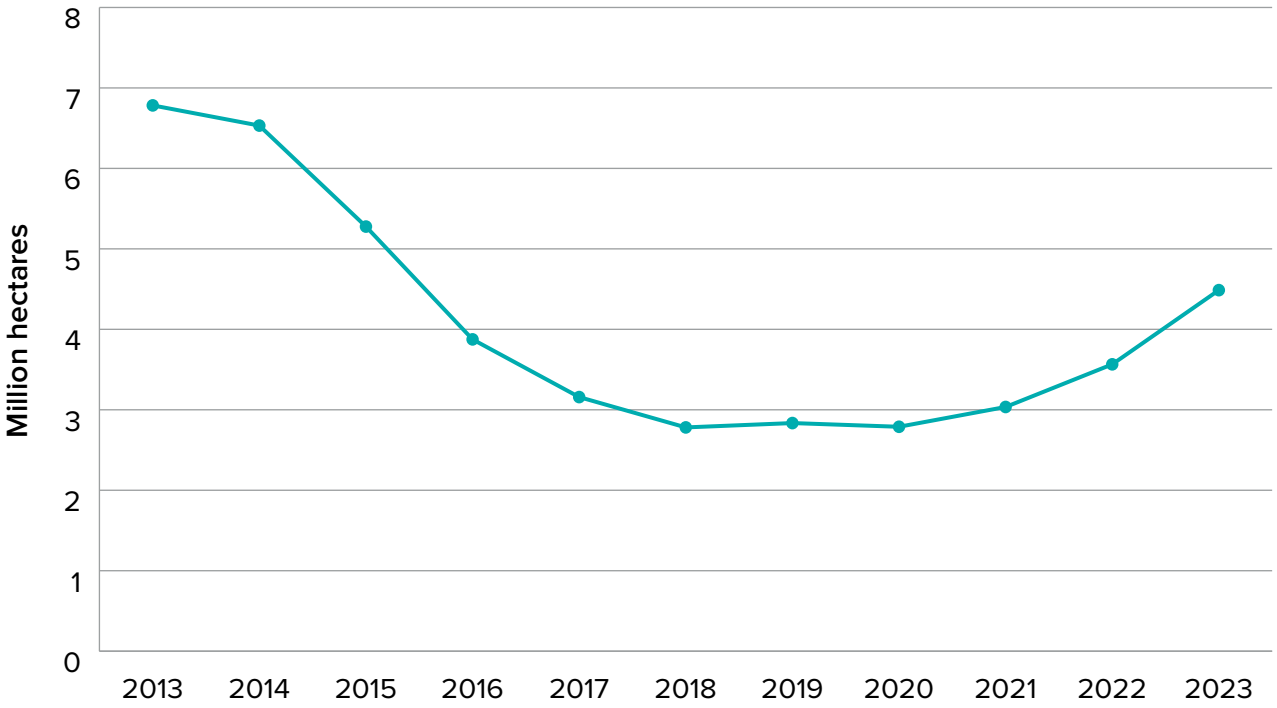


Figure 2.2. Total utilised agricultural area in England in an agri-environment scheme (million hectares)[27]

A growing and resilient network at sea that is richer in plants and wildlife

Overall, our assessment of trends for the marine environment has not changed significantly from our previous two annual assessments. The proportion of the UK marine area designated as a nationally and internationally important protected area has increased by 61.5% over the short term (2018 to 2023), to 38.2% of the total area of seas up to 12 nautical miles.[28] This trend is largely driven by the designation of 41 Marine Conservation Zones in 2019 and has plateaued over the four years between 2020 and 2023. This indicator does not capture site condition or the proportion in effective management but does indicate steps towards achievement of the two GBF 30 by 30 commitments.

There have been some improvements to marine monitoring over recent years. For example, through projects funded by the three-year marine NCEA (mNCEA) programme, which was launched in 2022 to deliver evidence, tools and guidance to improve management of the marine environment. Multiple projects were funded over the reporting period. These include the discovery of new sensitive habitats and improvements to monitoring techniques for MPAs and key species.[29,30,31,32]

However, despite these improvements, we do not have historical data to undertake a trend assessment on the condition of MPAs. Data published in the APR suggest that 44% of designated features in English MPAs were in favourable condition in 2022 and 60% were 'protected from damaging fishing activity through byelaws'.[33] This assessment uses a combination of survey data and vulnerability assessments, which estimate the likely condition based on sensitivity to human activity. A monitoring and assessment strategy is currently being developed to track progress towards the EA21 target for the condition of protected features in relevant MPAs, but will not be in place until at least 2028, when this metric will be updated.

Every two years, JNCC collates a UK-level MPA management status questionnaire, which is submitted in response to the data call to governments of Contracting Parties by the Convention for the Protection of the Marine Environment of the North-East Atlantic (OSPAR) (see Methodological Statement). The most recent data will be published by OSPAR as part of the 2023 biennial MPA network status assessment.[34,35] According to the most recent UK submission, as of 1 October 2023, 13% of relevant UK MPAs were defined as having implemented all the management measures required to achieve conservation objectives, while 17% of MPAs were showing no indication of improvement in the condition of relevant protected features. Confidence in the condition assessment was 'high' for just 3% of MPAs, reflecting a lack of monitoring data.

In terms of trends in the wider marine environment, the last update to the UKMS Part One, published in 2019, suggested that the UK achieved GES in marine waters for 4 of 15 ecosystem components and descriptors (four achieved, five partially achieved, six not achieved).[15] We also conducted our own assessment, based on the more recent data published through OSPAR's Quality Status Report 2023 (QSR23), and responses to our call for evidence on marine GES achievement.[36] The results suggest that, in line with the earlier UKMS reporting, only four of the 15 ecosystem components and descriptors are likely to have achieved GES in 2020 (four likely achieved, two partially, eight unlikely, one unknown) (see Methodological Statement). We expect that the next statutory review and update to UKMS Part One, which was due in 2024, will confirm findings from the OSPAR reporting data.

Overall, QSR23 collective trends point to declining biodiversity and continued habitat degradation across many parts of the OSPAR maritime area, which covers the North-East Atlantic Ocean.[36,37] There is a continuing trend of significant decline in both the breeding productivity and overall population numbers of seabirds, whereas seal and cetacean populations show a mixed picture, with strong regional variation in trends.[38] Despite the improving status of many individual fish stocks over recent years, overall marine fish have not met GES.[39]

A summary assessment of the key trends we assessed is provided in Table 2.2.

Table 2.2. Thriving plants and wildlife – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Relative abundance of species in England		2017–2022
Threat of extinction to UK species		2018–2023
Condition of Sites of Special Scientific Interest (that are in favourable or unfavourable recovering condition)		2018–2023
Extent of land cover more likely to support nature-friendly habitat		2018–2023
Area of woodland in England		2019–2024
Area under agri-environment schemes		2018–2023
Extent of UK area protected for nature on land and water		2018–2023
Achievement of marine ‘good environmental status’		N/A
Condition of marine protected areas		N/A
Extent of UK area protected for nature at sea		2018–2023

2.4. Progress towards ambitions, targets and commitments

Progress towards achieving a growing and resilient network of land, inland waters and sea that is richer in plants and wildlife is mixed. Progress is limited for four targets or commitments. Progress is mixed for six EA21 targets and a further commitment. A summary assessment of the targets and commitments we assessed progress towards is provided in Table 2.3, with further detail provided below.

The government has made limited progress in realising the opportunities identified in our last progress report. Our progress report for 2022/2023 identified an opportunity for the government to synthesise evidence from a wide range of actions to show whether, and how, they are, individually and together, helping deliver targets and ambitions, including the EA21 targets and interim targets. The APR 2024 does not provide such a coherent account of progress.

Important actions over the annual reporting period are omitted from the APR 2024, leading to it presenting an incomplete picture. For example, only two marine actions are identified, which focus on implementation of byelaws to protect MPAs and designation of Highly Protected Marine Areas (HPMAs). This is despite wider actions having been delivered. Our assessment incorporates broader evidence to provide a more comprehensive picture.

A growing and resilient network on land and water that is richer in plants and wildlife

Species abundance and extinction risk

The APR 2024 focuses on actions to establish nature-friendly farming practices. Nature-friendly farming describes a range of actions to manage agricultural land in a way that protects and improves the environment. ELM schemes are an important component, alongside wider grant schemes and the enforcement of farming regulations.

The updated Agricultural Transition Plan[17] provides a key milestone in the evolution of ELM. Uptake of ELM continues to gather pace. SFI has increased substantially in the annual reporting period. We assess progress towards the EIP23 commitment for 65–80% of landowners and farmers to adopt nature-friendly farming on at least 10–15% of their land by 2030 to be generally positive. However, evidence on the roll-out of the scheme does not specify which schemes are important to nature recovery or whether they align spatially with where they are most needed. Nature-friendly farming requires scaling up high-tier actions and spatially prioritising delivery (these issues are covered in greater depth in Chapter 13).

Continued reliance on a small number of policies – predominantly ELM schemes – to make progress towards the EA21 targets to halt and then reverse the decline in species abundance, is a high-risk strategy. Last year we recommended that the government should identify and mitigate the risks associated with high dependency on a small number of key programmes, such as nature-friendly farming. Limited progress in this regard is apparent in the APR 2024, and risks remain high.

Natural England announced two actions towards the EA21 long-term target of reducing species' extinction risk: the launch of further projects across its Species Recovery Programme and additional investment towards the Species Survival Fund. These actions are welcome, but progress is mixed, not least because investment levels remain below those required for threatened species.[40]

Creating and restoring habitats

Progress towards the 2050 target for woodland and trees outside woodland (an EA21 target) in the annual reporting period is also mixed. Tree planting rates have increased, but there is no new or revised Tree Action Plan for England beyond 2024 to steer further progress.[41] The Nature for Climate Fund contributions to planting are also coming to an end.

In the year ending March 2024, tree planting in England increased to 5,529 hectares[42] but rates must increase further if they are to meet the EA21 interim target to increase tree canopy and woodland cover by 0.26% of land area (equivalent to 34,000 hectares) by 31 January 2028. Our analysis of the adoption of ELM schemes up to 2024 indicates that they will make an important contribution towards achieving the 2050 target for

woodland and trees outside woodland through agroforestry, woodland planting, and hedge development and conservation.[43]

Progress towards the EA21 long-term target for wildlife-rich habitat restoration or creation and the underpinning interim target is mixed. Our analysis of the adoption of ELM schemes shows they are also likely to make an important contribution towards achieving this target. Our trend assessment of progress towards the creation of nature-friendly habitat suggests, however, that progress may have stalled.

Protected areas

The condition of protected sites continues to decline, despite a target in EIP23 to significantly improve their condition. We note that limited progress is demonstrated in the annual progress report towards the two EA21 interim targets required to bring protected sites into favourable condition, namely that all SSSIs have an up-to-date condition assessment by 31 January 2028 and that 50% of SSSIs have actions on track to achieve favourable condition by 31 January 2028. Natural England has provided further information to show encouraging progress made towards both EA21 interim targets within the annual reporting period; however, fundamental challenges remain.

We are carrying out a separate, in-depth review of the implementation of England's protected sites laws. We found significant room for improvement in the ways in which these laws are implemented. Making such improvements will be an important step in improving the prospects of meeting EA21 targets for species abundance and extinction risk. Our findings and recommendations will be published in a forthcoming report.

In addition, we are separately investigating Defra and Natural England in relation to possible failures to comply with environmental law in relation to the classification and adaptation of Special Protection Areas and in respect of their general duties to protect and maintain wild bird populations and to preserve, maintain and re-establish wild bird habitat.

30 by 30

In our 2022/2023 progress report, we highlighted the need for the government to transparently set out its international commitments and their relation to national targets and commitments. This includes clearly setting out what action it will take on – and how it will measure progress towards – both 30 by 30 commitments (Global Targets 2 and 3 of the Kunming-Montreal GBF) (Box 2.2). We assess progress on this to be limited.

The government's policy paper 'Delivering 30 by 30 on land in England'[44] appears to omit GBF Target 2. While it identifies over 30% of land and freshwater areas with the potential for achieving Target 3, we assess these estimates to be unrealistic, particularly with regard to the contribution from protected landscapes.

The government has identified that protected landscapes could contribute to over half of GBF Targets 2 and 3 (Box 2.2). However, government priorities on food production would make it extremely challenging to manage the land in a way that is compatible with the requirements of Targets 2 and 3. Large areas of protected landscapes contain important agricultural land. Around 60% of Areas of Outstanding Natural Beauty and 20% of National Parks (both component parts of protected landscapes) are estimated as having moderate to excellent quality agricultural land.[45]

The Levelling Up and Regeneration Act 2023 strengthened the duty on relevant authorities to 'seek to further' the purposes of protected landscapes. The overall approach proposed in the Protected Landscapes Targets and Outcomes Framework[46] is a useful step forward. It is more specific in setting out how and where important targets, commitments and actions will be delivered through these landscapes.

However, targets for individual protected landscapes – and specific and funded delivery plans for achieving them – remain absent. The government has not exercised its power to make secondary legislation requiring a management plan for a protected landscape to contribute towards meeting EA21 targets and setting out how any such plan must contribute.

Furthermore, wider actions required to progress 30 by 30 commitments are missing. Other effective area-based conservation measures remain undefined, with no detailed management plans for addressing the conservation status of protected sites. The government has recently published a new policy paper. This does not address all the shortcomings of the previous paper, but does provide welcome transparency on the areas that currently count, and outlines further steps to develop a process to enable additional land to contribute towards 30 by 30 in England.[47]

Box 2.2. Summary of the UK targets transposing Global Targets 2 and 3 of the Kunming-Montreal GBF

UK Target 2: The UK will ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration, in order to enhance biodiversity and ecosystem functions and services, ecological integrity and connectivity.

UK Target 3: The UK will ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, especially areas of particular importance for biodiversity and ecosystem functions and services, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures, recognising indigenous and traditional territories where applicable, and integrated into wider landscapes, seascapes and the ocean, while ensuring that any sustainable use, where appropriate in such areas, is fully consistent with conservation outcomes, recognising and respecting the rights of indigenous peoples and local communities, including over their traditional territories.

Planning

Last year we recommended that the government should scale up and accelerate spatial prioritisation actions, such as Local Nature Recovery Strategies (LNRSs), the Land Use Framework and marine spatial plans, to optimise implementation of key policies and ensure local and national scale activity is harmonised. Progress on this in the annual reporting period is limited.

The Land Use Framework remained absent in the annual reporting period. More recently, the government has committed to developing a spatial energy plan through the National Energy System Operator.[48] This is a welcome step, but it will require coherency across an increasing number of spatial strategies and plans.

Under the revised biodiversity duty, by 1 January 2024 all public authorities were required to complete their first consideration of what action they could take to further the conservation and enhancement of biodiversity in England. As soon as practicable after that consideration was complete, public authorities were required to determine such policies and specific objectives as they considered appropriate for taking action to further the general biodiversity objective, and then to take the corresponding actions.

LNRSs present a good opportunity for responsible authorities to act. Our assessment suggests that most will not be ready in time for the March 2025 commitment to have LNRSs in place across the whole of England. Responsible authorities have told us of some of the barriers at a strategic scale that have contributed to delays in progress, including accommodating local democratic processes and ensuring meaningful local engagement, as well as the availability and timely provision of data and guidance. Full analysis of LNRS implementation will be included in our forthcoming report.

Since February 2024, developers in England have been required to deliver 10% Biodiversity Net Gain (BNG) for most new developments unless exempt. BNG schemes alone are unlikely to contribute significantly to nature's recovery, although they are an important enabler in developing a wider green finance market (see Chapter 12).

A growing and resilient network at sea that is richer in plants and wildlife

Overall, progress in the annual reporting period in the marine environment has been limited. The APR 2024 presents only two actions, both of which focus on management of pressures from fishing. No progress towards marine GES against drivers and pressures across the wider marine environment is demonstrated.

Protected areas

There is some indication of progress towards the EA21 interim target of 48% of designated features in relevant MPAs to be in favourable condition, with the remainder in recovering condition, by 31 January 2028.

Over the reporting period, management measures have been implemented through byelaws for 13 MPAs and three HPMAs were designated. HPMAs implement a whole-site approach that limits all damaging activities. A consultation on byelaws to prohibit fishing activity in HPMAs was run in August 2023 but are not yet in place.[49,50]

In 2022, 44% of English MPAs were estimated to be in favourable condition, and 60% were deemed to be protected from damaging fishing activity through byelaws.[33] The Marine Management Organisation and Inshore Fisheries and Conservation Authorities are implementing the management measures over four stages.[51] Two stages are complete and stage three is under way. However, the pace of implementation is insufficient to meet the milestone of introducing all management measures to remove pressures before the end of 2024. This milestone underpinned the supporting evidence for the EA21 target for condition of protected features in relevant MPAs.[16] Overall, progress towards this target is mixed.

Further assessment of progress for the marine aspects of the thriving plants and wildlife goal has been disaggregated by groups of key pressures, which focus on fishing, offshore infrastructure, climate change and pollution. These main pressures were identified through

our analysis of QSR23 and call for evidence on the drivers and pressures affecting achievement of marine GES.

Fishing pressures

The main pressures caused by fishing include bycatch, overfishing, species disturbance, reduced prey availability and habitat degradation from trawling and dredging. Fishing is the greatest pressure exerted on fish and benthic habitats, and has a significant impact on fish, birds, mammals and cetaceans.[36]

There has been mixed progress towards addressing fishing pressures over the reporting period. For protected sites, three of five proposed HPMAs were established in English waters and byelaws were introduced to prohibit the use of bottom-towed gear in 13 English offshore MPAs.[33,52] In addition, the five frontrunner Fisheries Management Plans (FMPs) were published, as committed to in EIP23, and a permanent closure of sand eel fishing grounds was implemented. These actions are discussed in Chapter 6.

Offshore infrastructure

Offshore infrastructure exerts various pressures on the marine environment, including loss and disturbance of physical habitat, disruption of migratory pathways, collision risk and noise pollution.

Habitat loss from the placement of oil and gas and renewable energy structures and associated pipelines and cables on the sea floor is a pressure on benthic habitats, especially in the North Sea.[53,54] Over the reporting period, 82 licences were granted for exploratory drilling by the North Sea Transition Authority.[55,56] Government has stated it does not intend to issue new licenses in new fields.[57,58] Government has also committed to delivering 55 GW of offshore wind by 2030, a quadrupling of current capacity.[59]

Underwater noise from offshore industry remains a significant pressure. Noise is increasingly better monitored and understood, such as through the Marine Noise Registry, and guidance on noise reduction has been followed in the OSPAR area. However, QSR23 found there has not been a significant reduction in noise levels and identified this as a growing concern, with the incidence and intensity of noise pollution expected to increase.[36,60]

There are mechanisms in place to mitigate pressures from offshore industry. For example, the appropriate assessment stage of the Habitats Regulations Assessment for the exploratory drilling licenses concluded that achievement of the EA21 target and interim target on the condition of protected features in relevant MPAs would not be affected.[56,61–66] However, the impact on broader GES ecosystem components and descriptors is not explicitly considered in the assessment. This could have implications for GES achievement if not addressed at a strategic level.

For offshore wind, measures were put in place through the Energy Act 2023, which was brought into force in the reporting year, to reduce consenting times for development whilst protecting the marine environment.[67,68] However, in April 2024 an application was approved by government to extend two North Sea wind farms against advice of planning inspectors.[69]

Overall, particular attention must be paid to scaling up offshore infrastructure to monitor and mitigate increasing pressures. Decisions must be evidence based and consider lessons learned from evaluations of previous measures, such as the Offshore Wind Enabling Actions Programme, to ensure actions are effective.[70]

Climate change

Climate change is impacting the marine environment now. Plankton and fish communities are responding to warming, which is likely to have implications for top predators, such as marine birds.[71] Climate change can also interact with other pressures, creating cumulative effects that are a significant threat to GES.[72]

Regionally targeted tools, such as MPAs and FMPs, are key to enhancing the resilience of the marine environment to climate change. For MPAs to be effective, they must work as an ecologically coherent network.[73] QSR23 found that some progress has been made in improving network coherence, but the poor status of some ecosystem components and descriptors suggests that these measures may be insufficient.[73,74] FMPs are required to ensure fisheries adapt to the impact of climate change and contribute to climate mitigation. However, there are shortfalls that should be addressed to ensure they are effective, which include ensuring all FMPs have specific actions and time-bound targets.

We have previously raised concerns, as has the Climate Change Committee, that the exclusion of the fisheries sector from schemes like Marine Net Gain, and delays in its implementation, could negatively affect ecosystem resilience, as could further delays in implementing an updated and strengthened UKMS.[75,76] These gaps should be addressed to improve resilience to climate change. Overall, QSR23 found that further measures are needed from the OSPAR Contracting Parties to tackle climate change and ocean acidification.[77]

Pollution

Reduction in the pollution of the marine environment is an area of relative progress in the OSPAR area. The sources of pollution pressure are largely terrestrial. Actions taken across EIP goals are therefore key to achieving marine targets (see Chapters 4, 5 and 6).

Table 2.3. Thriving plants and wildlife – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

EA21 targets	Progress
By the end of 2030, we will halt the decline in species abundance (2030 species abundance target).	**Mixed**
By the end of 2042, we will increase species abundance so that it is greater than in 2022 and at least 10% greater than in 2030 (long-term target to reverse the decline of species abundance).	**Mixed**
By the end of 2042, we will improve the Red List Index for species extinction compared to 2022 levels (long-term species extinction risk target).	**Mixed**
By the end of 2042, we will restore or create in excess of 500,000 hectares of a range of wildlife-rich habitats outside protected sites, compared to 2022 levels (long-term wildlife-rich habitat restoration or creation target).	**Mixed**
By the end of 2050 at least 16.5% of all land in England is covered by woodland and trees outside woodland (2050 target for woodland and trees outside woodland).	**Mixed**
Ensure that 70% of designated features in marine protected areas (MPAs) are in favourable condition by 2042, with the remainder in recovering condition (target for the condition of protected features in relevant MPAs).	**Mixed**
Other targets or commitments	
Restore 75% of protected sites to favourable condition by 2042.	**Limited**
65–80% of landowners and farmers adopting nature-friendly farming on at least 10–15% of their land by 2030.	**Mixed**
Take the necessary measures to achieve or maintain good environmental status of marine waters within the marine strategy area (deadline passed on 31 December 2020).[78]	**Limited**
Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration.[79]	**Limited**
Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures.[79]	**Limited**

2.5. Prospects of meeting ambitions, targets and commitments

We assess overall prospects of meeting ambitions in the thriving plants and wildlife goal to be largely off track. This is largely due to continued delays and a lack of urgency in the implementation of important actions in the marine environment. A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 2.4, with further detail provided below.

A growing and resilient network on land and water that is richer in plants and wildlife

We assess the prospect of achieving the government's commitment for 65–80% of landowners and farmers to adopt nature-friendly farming on at least 10–15% of their land by 2030 to be partially on track. Recent annual trends for the uptake of land in agri-environment schemes (AES) are encouraging, although greater uptake of higher-tier schemes is required for farming to be nature-friendly in line with the government's ambition (see Chapter 13).

We assessed the prospect of achieving the 2030 species abundance target to be entirely achievable but largely off track in our last assessment. A major uncertainty was the effectiveness of nature-friendly farming. The government has since published a comprehensive review on the effectiveness of AES and land management actions, which has further aided analysis.[80] We now consider the target to be partially on track.

The new evidence and our subsequent analysis provide assurance that the government's commitments and plan with regard to nature-friendly farming have potential to make important contributions to the 2030 species abundance target. However, the long-term target to reverse the decline of species abundance is largely off track without a focus on high-tier-type schemes and addressing a lack of strategic direction and advice and guidance (see Chapter 13). We also note a need to deploy wider actions at scale beyond farming.

Nature-friendly farming is expected to play a major role in improving SSSIs. The EIP23 states that farming could contribute at least 50% to the target of bringing protected sites into favourable condition by 2042. Whilst our analysis finds AES to be potentially effective in improving biodiversity, our review of protected sites laws identifies a need for further tailoring of farming schemes to manage pressures on protected sites. Off-site pressures also require management.

The condition of most SSSIs remains poor and shows signs of further decline, reducing the prospect of meeting the long-term target in the EIP23. The APR 2024 does not clarify how achieving the EA21 interim targets for all SSSIs to have an up-to-date condition assessment, and for 50% of SSSIs to have actions on track to achieve favourable condition, provides a substantive contribution towards the 2042 target. We consider the target to be largely off track.

Our forthcoming report on the implementation of protected sites laws will identify areas for improvement relating to governance arrangements, resourcing, designation, monitoring, management and regulation.

A lack of progress in improving the condition of SSSIs will directly reduce the prospect of meeting the long-term species' extinction risk target. While farming schemes can support here, we consider the target to be largely off track if wider measures that specifically address threatened species are not further scaled up.

Prospects of meeting both the 2050 target for woodland and trees outside woodland and the long-term wildlife-rich habitat restoration or creation target remain difficult to assess without clear delivery pathways. For example, in Chapter 4 we identify a need to set an interim target for freshwater wildlife-rich habitats. Furthermore, a lack of national monitoring data for wildlife-rich habitats constrains prospective analysis.

Our progress assessments identified conflicting evidence on progress towards meeting both EA21 targets. A common constraint is the lack of strategic spatial plans. For example, while new agroforestry actions under the SFI and delivery of actions for trees and woodland within Countryside Stewardship are expected to make significant contributions towards both targets, there is no revised England Tree Action Plan to steer delivery. Despite the lack of a new plan, woodland and trees outside woodland are expanding at relative pace recently, and we assess prospects to be partially on track for the 2050 target.

There is a lack of transparency on how the government intends to achieve either of its 30 by 30 commitments on land. The government's submission of UK targets to the Convention on Biological Diversity clearing-house mechanism[81] does not provide further clarity. The main commitments, policy measures and actions thus far submitted in the clearance process for England do not clearly exceed 3.9 million hectares, equivalent to 30% of the land area of England.

To further illustrate the point, UK Target 2 identifies the long-term wildlife-rich habitat restoration or creation target and 2050 target for woodland and trees outside woodland as key commitments on land, alongside the implementation of nature-friendly farming schemes. Even assuming all three of these commitments contribute to their full extent and do not overlap, this would fall far short. Without a clear delivery plan in place, we assess prospects to be largely off track.

A growing and resilient network at sea that is richer in plants and wildlife

Overall, collective trends point to declining marine biodiversity, continued habitat degradation and overall poor health of marine ecosystems. Our analysis suggests that the delivery of management measures must increase substantially in pace and scale. In addition, the lack of a coherent strategy in place to support achievement of GES is a significant risk to delivery.

Some progress has been made towards the EA21 target for the condition of protected features in relevant MPAs, mainly through partially implementing MPA management measures through byelaws and the publication of FMPs. However, byelaws are not being implemented quickly enough to meet the government's 2024 milestone which underpinned the targets' supporting evidence, and FMPs are also not being produced in line with the proposed timeline.[16,82]

Due to uncertainties around feature recovery rates and challenges in implementation, the target level was set relatively conservatively, and Defra has outlined that the target could be achieved if byelaws are in place by as late as 2030. However, this assumes there are no continuing pressures from other industries. In addition, a monitoring framework for MPAs is being developed by the government but will not be in place until 2028, when the EA21 interim target for the condition of protected features is due, leaving little time to adapt plans.

Overall, we consider the prospect of meeting this EA21 target to be largely off track until new evidence is published which indicates that achievement is feasible with an alternative delivery timeline, and fully accounting for growing pressures from sectors such as offshore wind.

Our analysis of OSPAR's QSR23 indicates that marine GES is unlikely to have been achieved by 31 December 2020 for most descriptors, although it remains an ongoing duty. The lack of clear signs of improvement for many descriptors suggests that policy progress and current measures have been inadequate or ineffective. Our findings are consistent with the overall conclusions of QSR23: firstly, that additional measures are required to change the trajectory of nature decline to nature recovery; and secondly, that existing measures need to be more effective. At present, there does not appear to be a sufficiently coherent strategy or credible delivery plan for achieving GES. Until this is in place, the likelihood of achieving marine GES is low and other marine targets are put at risk.

For the marine aspects of the two GBF 30 by 30 commitments, significant progress has been made in expanding the UK MPA network area. Approximately 40% of England's marine area is designated as an MPA and therefore Target 3 of the GBF to conserve 30% of land and seas has been partially achieved. However, this target specifies that management must be effective. The government has not met the milestone of implementing all management measures by 2024, and JNCC's latest OSPAR MPA management status questionnaire suggests 58% of relevant UK MPAs are either not, or only partially, moving towards conservation objectives (see Methodological Statement). GBF Target 2 also has a broader focus than MPAs alone, requiring 30% of all degraded ecosystems to be under effective management by 2030, and progress towards GES in the wider marine environment is limited. Therefore, overall, we consider the two 30 by 30 commitments to be largely off track in the marine environment.

Table 2.4. Thriving plants and wildlife – summary assessment of prospects of meeting targets and other commitments

EA21 targets	Prospects
By the end of 2030, we will halt the decline in species abundance (2030 species abundance target).	**Partially on track**
By the end of 2042, we will increase species abundance so that it is greater than in 2022 and at least 10% greater than in 2030 (long-term target to reverse the decline of species abundance).	**Largely off track**
By the end of 2042, we will improve the Red List Index for species extinction compared to 2022 levels (long-term species extinction risk target).	**Largely off track**
By the end of 2042, we will restore or create in excess of 500,000 hectares of a range of wildlife-rich habitats outside protected sites, compared to 2022 levels (long-term wildlife-rich habitat restoration or creation target).	**Not assessed**
By the end of 2050 at least 16.5% of all land in England is covered by woodland and trees outside woodland (2050 target for woodland and trees outside woodland).	**Partially on track**
Ensure that 70% of designated features in marine protected areas (MPAs) are in favourable condition by 2042, with the remainder in recovering condition (target for the condition of protected features in relevant MPAs).	**Largely off track**
Other targets or commitments	
Restore 75% of protected sites to favourable condition by 2042.	**Largely off track**
65–80% of landowners and farmers adopting nature-friendly farming on at least 10–15% of their land by 2030.	**Partially on track**
Take the necessary measures to achieve or maintain good environmental status of marine waters within the marine strategy area by 31 December 2020.[78]	**Largely off track**
Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration.[79]	**Largely off track**
Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures.[79]	**Largely off track**

2.6. Opportunities for improvement

The government has largely not realised opportunities to improve prospects of meeting ambitions, targets and commitments. Repeated delays have meant that strategic plans required to drive targeted delivery, maximise outcomes and minimise trade-offs are either incomplete, absent or already (or soon to be) out of date.

The government's increasingly competing priorities and opportunities for coherent delivery only makes these plans more important. The forthcoming EIP revision provides an opportunity to bring order and address gaps.

The marine environment in particular requires more attention. It is essential to provide transparency on how the plethora of marine programmes, policies and strategies collectively contribute to achieving marine GES and the overarching vision of clean, healthy, safe, productive and biologically diverse oceans and seas.

There is an opportunity to improve prospects for the marine environment through the forthcoming refresh of the UKMS. The UKMS Part Three programme of measures is long overdue and the UKMS Part One assessment was due to be updated by the end of 2024. The government should use the publication of these updated reports to set out a fully evidenced, resourced and time-bound delivery plan that demonstrates how GES will be met in the shortest possible time. A key element of this could be, through the update to the UKMS Part One assessment, strengthening current operational targets designed to support GES achievement, by ensuring they cover the highest-priority actions, are set at an ambitious and achievable level, and are specific and time-bound.

The government should ensure that offshore development is used as an opportunity to support achievement of marine GES where possible, rather than inhibiting it, through careful marine spatial planning of competing demands. Strategic-level planning of offshore wind expansion should be evidence based and consider the impacts of development on GES descriptors and ecosystem components, not just MPA features. This should be a priority for the new Mission Board for Clean Power.

The government should also ensure that all remaining MPA management measures are promptly put in place and publish analysis that evidences the achievability of the EA21 interim target for the condition of protected features in relevant MPAs as the 2024 milestone for their implementation has been missed. The government should expedite development of the MPA monitoring and assessment strategy, which is currently not due to be finalised until 2028, when the EA21 interim target is due, and address shortfalls in key supporting policies, such as FMPs.

On land, getting nature-friendly farming right is essential. The government has progressed at pace with delivering nature-friendly farming schemes, although further changes are required to maximise outcomes and minimise competing demands. Wider action is also needed. For example, managing threatened species may be more effective through scaling up tailored programmes, such as the species recovery programme and species survival fund.

The 30 by 30 plans on land published in the annual reporting period are over-optimistic in what could be achieved. Strengthening the management of protected landscapes and protected sites would reduce risks. Furthermore, the expansion of well-managed protected sites would reduce dependencies on less certain actions towards both 30 by 30 commitments.

In our 2022/2023 progress report, we recommended that the government develop further, suitably ambitious, EA21 interim targets to form direct milestones on the route towards species recovery. This would provide clarity and specificity and should include interim steps for species abundance and wildlife-rich habitat sub-groupings (see Chapter 4). New interim targets to address missed MPA milestones may now also be needed to correct the pathway towards the target for the condition of protected features in relevant MPAs.

Using two consecutive years to assess progress with the 2030 species abundance target will make it difficult to determine if the EIP has delivered significant environmental improvement. In finalising the official statistic, providing greater opportunity for scrutiny and engagement with the wider scientific community will go a long way to reduce risks and increase transparency.

In our 2022/2023 progress report, we made seven recommendations relating to targets, delivery plans, risk management, spatial prioritisation, and monitoring and evaluation. Progress during the reporting period regarding these issues has either been mixed or limited. Therefore, they all remain relevant. This year we focus on the development of targets and commitments. We will make additional recommendations on the management and expansion of protected sites in our forthcoming environmental law report.

Thriving plants and wildlife recommendation 1: Defra, working with devolved policy authorities, should urgently publish and implement a fully evidenced, resourced and time-bound delivery plan that sets out how the good environmental status of marine waters target will be achieved as quickly as possible.

Thriving plants and wildlife recommendation 2: Defra should improve prospects of meeting EA21 targets in the Environmental Targets (Biodiversity) (England) Regulations 2023 and the Environmental Targets (Marine Protected Areas) Regulations 2023 by clearly defining in a revised EIP a set of interim targets which together are consistent with the overall trajectory of environmental improvement required to meet the relevant EA21 targets.

Thriving plants and wildlife recommendation 3: Defra should increase confidence in the methodology for measuring the 2030 species abundance target (EA21 target) by inviting further scrutiny and engagement on the indicator in development that underpins the species abundance index, through a public consultation.

Chapter 3: Clean air

Chapter 3: Clean air

3.1. Summary assessment

Air pollution is a major pressure on the natural environment and is considered by the government to be the largest environmental risk to public health. It has an effect equivalent to 26,000 to 38,000 deaths per year in England.[83,84]

Improving trends have dominated across indicators of pollutant emissions and ambient air quality over the last five years. The UK met its 2022 emissions reduction commitments for all five pollutants. It also met target levels for the two EA21 interim targets for fine particulate matter ($PM_{2.5}$) concentration and population exposure. However, exceedances of nitrogen dioxide, ozone and nickel standards persist, as do damaging levels of nitrogen deposition across all sensitive habitats in England.

Progress has been made in implementing actions to reduce air pollution from domestic combustion and road transport, but less so in other sectors, such as agriculture and active travel. The reporting period saw a weakening of environmental protection, continued delays across key sectors, reduced ambition of key policy milestones and gaps in support for local authorities.

The UK's targets are partially on track. The two EA21 $PM_{2.5}$ targets are likely to be met. However, two of the five 2030 emissions reduction commitments are not, and exceedances of nitrogen dioxide standards will persist beyond 2030.

The government should review the pollutants considered and standards set in current regulations, ensure delivery partnerships are effective by identifying and removing barriers, and address delays. Revocation of the National Emission Ceilings Regulations 2018 provisions relating to the National Air Pollution Control Programme (NAPCP) left an accountability and transparency gap, which the government should address to facilitate adaptive decision-making and keep progress on track.

Table 3.1. Clean air – summary assessment

Past trends	Emissions of all five pollutants with emissions reduction commitments decreased and in general, ambient air quality in England improved between 2017 and 2022. Nitrogen deposition rates have improved but remain at damaging levels.	**Improving trends dominate**
Progress in the reporting period	There was a lessening of ambition and persistent delays across key sectors over the reporting period, including revocation of statutory provisions relating to the NAPCP, cuts to active travel funding, delays to a consultation on intensive beef and dairy sector permitting, and withdrawal of the air quality grant scheme.	**Limited**
Overall prospects of meeting ambitions, targets and commitments	Government projections suggest that two of five 2030 emission reduction commitments will not be met, and exceedances of nitrogen dioxide standards will persist beyond 2030. The two EA21 targets for $PM_{2.5}$ annual mean concentration and population exposure are largely on track. The commitment to reduce nitrogen deposition by 17% by 2030 is largely off track.	**Partially on track**
Robustness	The UK has well-established monitoring networks and data are readily available, alongside pollutant inventories, projections and annual progress reports. However, some pollutants, such as microplastics, are not as well monitored.	

3.2. Context and commitments

Nationally, air pollution is thought to present a challenge similar in scale to the Covid-19 pandemic in terms of annual mortality and morbidity, and costs the economy billions of pounds per year through impacts on human and environmental health and productivity.[83] Research suggests that humans and the natural environment are suffering impacts at ever lower levels of pollution.[85–88]

On a national scale, outdoor air quality in the UK has improved significantly over the last 50 years as pollutant emissions have been reduced through regulation of source sectors and technological developments. However, this can mask local-level challenges. The distribution of air pollution impacts on human health is not uniform across the UK. Groups who experience the highest levels of socio-economic deprivation and the most vulnerable frequently live with the poorest air quality.[89–92]

The UK government's overarching vision is to make the air healthier to breathe, protect nature and boost the economy. To control emissions, the National Emission Ceilings Regulations 2018 (NECR) set national emission reduction commitments (ERCs) relative to a 2005 baseline, transposed from EU legislation for five key pollutants, including fine particulate matter ($PM_{2.5}$), nitrogen oxides (NO_x), sulphur dioxide (SO_2), non-methane volatile organic compounds (NMVOCs) and ammonia. There are ERCs to cover the period from 2020 to 2029 and from 2030 onwards, which were designed to halve the health impacts of air pollution compared with 2005.[93,94]

The NECR previously required the government to prepare and implement the NAPCP, to set out government's intended actions and how they could stack up towards meeting ERCs, and to update and consult on an update when plans were off track. However, the relevant statutory provisions were revoked under the Retained EU Law (Revocation and Reform) Act 2023. The non-statutory Clean Air Strategy 2019 also set out the government's plans to reduce emissions, which were updated by EIP23, and established a commitment to reduce nitrogen deposition on sensitive habitats by 17% between 2016 and 2030.

For pollutant concentrations in ambient air, the Air Quality Standards Regulations 2010 (AQSR) set standards for 12 pollutants to protect human health and vegetation. These include limit values that must not be exceeded, as well as target values and two ozone long-term objectives, towards which all necessary measures not entailing disproportionate costs must be taken. Where limit values are exceeded, the Secretary of State must produce an air quality plan to ensure compliance in the shortest possible time, such as the 2017 air quality plan for tackling roadside NO_2. More recently, in 2023 two EA21 targets were introduced in relation to $PM_{2.5}$ in England: a population exposure reduction target and an annual mean concentration target. Currently, all standards are weaker than World Health Organization (WHO) guidelines and revised equivalent EU standards.[95,96]

The national air quality strategy, published under the Environment Act 1995, previously focused on UK-wide outdoor air quality, and was rescoped in 2023 as an England-only framework for local authority delivery.[97,98] Local authorities, key delivery partners for the government, have associated duties under the Environment Act 1995 to monitor air quality in their areas and put action plans in place to address exceedances of standards. Thirty-seven local authorities have also been separately directed by the government to develop and implement local plans under the national 2017 plan for NO_2. Measures in local plans fall into two categories: clean air zones (CAZs) and non-charging measures (such as traffic modifications).[99,100]

3.3. Key environmental trends

We have assessed trends on the emissions of air pollutants, concentrations in ambient air and impact on the natural environment. A summary assessment of the key trends we assessed is provided in Table 3.2.

Emissions of air pollutants

We have assessed emissions for the UK rather than England only, as the Secretary of State must ensure (subject to certain derogations) that UK emissions do not exceed the ERCs, which EIP23 identifies as key targets for the clean air goal. England's emissions show similar trends to aggregated UK data (Figure 3.1).

Since 1970, emissions of $PM_{2.5}$, NO_x, SO_2 and NMVOCs have been reduced by 88%, 78%, 98% and 69% respectively, largely driven by the phase-out of coal and improved road transport fleet and fuel standards.[101] From 2017 to 2022, emissions of all five pollutants showed improving trends (Figure 3.1). This is an improvement on our previous progress report, where trends in emissions of two of the five ($PM_{2.5}$ and ammonia) showed little or no change and the 2021 $PM_{2.5}$ ERC was missed.[102]

$PM_{2.5}$ has been linked with many serious health impacts, such as dementia, stroke, diabetes and mental health issues.[89] From 2017 to 2022, emissions reduced by 11%. However, progress in some source sectors has been offset by increases in others, and so the overall rate of reduction has declined over the last decade.[103] For example, emissions of $PM_{2.5}$ from domestic wood burning have increased by 56%, contributing 29% of total emissions in 2022, while burning of biomass-based fuels now contributes 6% of total $PM_{2.5}$ emissions compared less than 1% in 2005.[104]

NO_x and SO_2 can have a direct impact on human health, causing airway inflammation, while NO_x affects the natural environment through deposition of excess nutrients. Both can also react to form secondary pollutants, such as $PM_{2.5}$ and ozone. From 2017 to 2022, emissions of NO_x and SO_2 decreased by 27% and 36% respectively. For NO_x, road transport emissions have reduced faster than any other source, although they still represent the largest individual source, contributing 30% of the total in 2022.[105]

Ammonia has direct impacts on human health and the environment and reacts with other gases to form secondary $PM_{2.5}$.[106] From 2017 to 2022, emissions reduced by 6% (excluding non-manure digestate spreading), but have been relatively stable since 2008. In 2022, the agricultural sector contributed 87% of total emissions. Over the last decade emissions have increased from dairy cattle (by 15%) and from non-manure digestate spreading, a by-product of biogas generation (by 237%).[101,106] These increases have offset improvements in other areas, such as road transport.[107]

NMVOCs can react with other gases to form secondary pollutants such as ozone and $PM_{2.5}$.[108] From 2017 to 2022, emissions decreased by 12%, largely due to improvements in emissions standards for road transport and industrial processes. However, emissions from domestic solvents, such as cosmetics and detergents, have increased by 3% since 2005 and these products were the largest source of emissions in 2022 (22% of the total), also posing a hazard to indoor air quality.

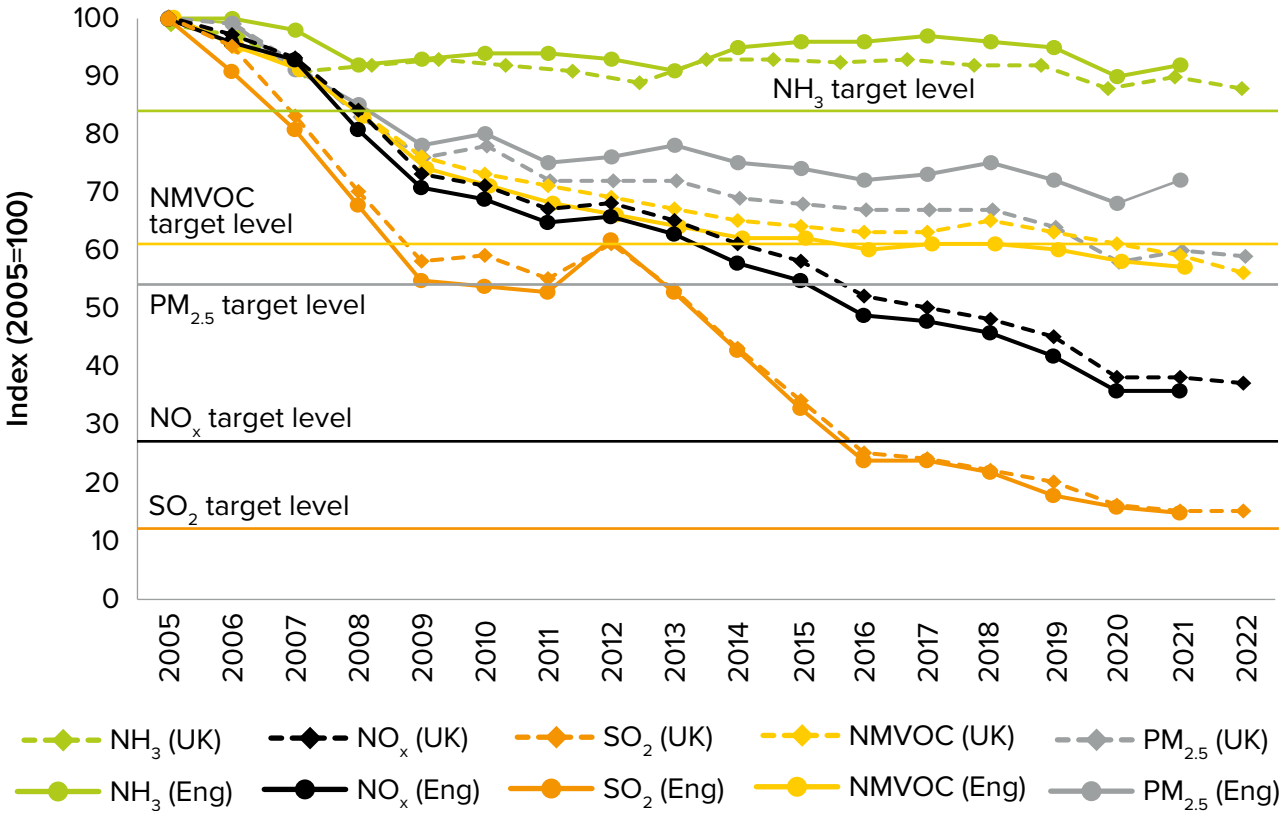


Figure 3.1. Emissions of five key air pollutants reported relative to 2005, the National Emission Ceilings Regulations 2018 baseline year (NH_3 – ammonia, NO_x – nitrogen oxides, SO_2 – sulphur dioxide, NMVOC – non-methane volatile organic compounds, $PM_{2.5}$ – fine particulate matter)[101] Diamonds are UK emissions, circles are England-only. Horizontal 'target level' lines represent the 2030 UK emissions reduction commitments for each pollutant, set out in the National Emission Ceilings Regulations 2018.

Concentrations in ambient air

For the purposes of compliance reporting against AQSR standards, the UK is divided into 43 air quality zones. From 2017 to 2022, the total count of zone-level exceedances of standards decreased by 24.5%, indicating improvements to air quality on a national average scale (Figure 3.2). Standards of five pollutants (lead, carbon monoxide, benzene, sulphur dioxide, coarse particulate matter (PM_{10})) have been met across England's 31 zones for 15 years.[109]

In 2022, there were 54 reported zone-level exceedances in total, compared with 49 in 2021.[109] Forty-two of these were against the two long-term objectives for ozone, set for the protection of human health and vegetation, which has been increasing since 2021 (Figure 3.2). The long-term objective for ozone set for human health has not been met in any of England's zones since 2017, which is reflected in an over 8% increase in rural background ozone concentrations between 2017 and 2022.[110]

Two zones still exceed the target value for nickel due to local industrial emissions. Nine zones in England continue to exceed the annual mean limit value for NO_2, down from 25 in 2019, partially reflecting the impact of the pandemic lockdown restrictions. This impact can also be seen in UK annual average roadside NO_2 and $PM_{2.5}$, which decreased by 26% and 20% respectively between 2019 and 2020 respectively.[111]

The Automatic Urban and Rural Network (AURN) monitoring stations measure ambient $PM_{2.5}$ concentrations. Since 2018, the number of stations has increased by 46% and expansion is continuing. Between 2018 and 2023, the proportion of stations in England measuring an exceedance of the EA21 target for annual mean $PM_{2.5}$ concentrations of equal to or less than 10 µg/m^3 reduced by 96%. Of 42 stations, 38 measured an improvement in their annual mean concentration over the same period, with one deteriorating (see Methodological Statement). There was also a 22% reduction in the $PM_{2.5}$ population exposure indicator between 2018 and 2023.[90]

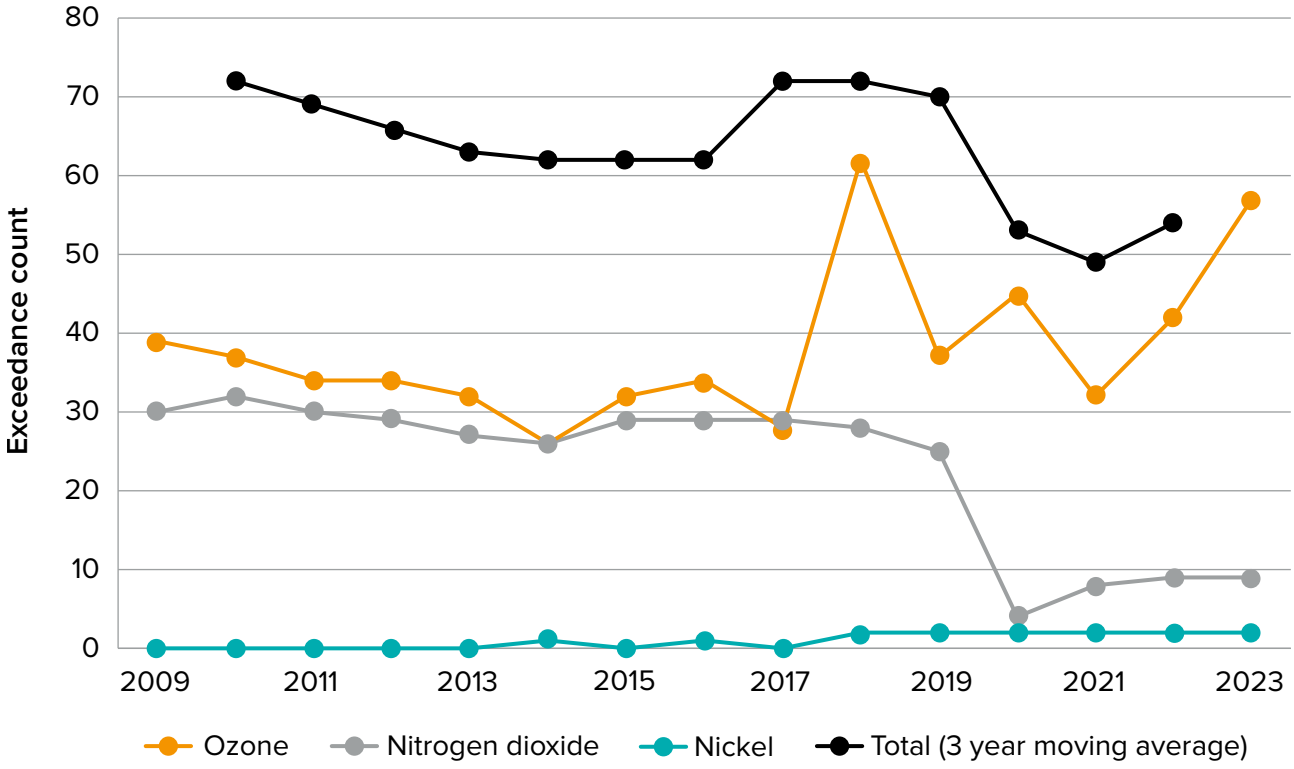


Figure 3.2. Count of incidences of exceedance against all standards (limit values, target values and long-term objectives) and pollutants set out in the Air Quality Standards Regulations 2010 across England's 31 air quality zones. There are multiple standards for some pollutants, such as ozone, so the total count can exceed the number of zones. The total count is calculated as a three-year moving average to limit inter-annual variability, so only has data to 2022 (an average for 2021 to 2023).

Impact on the natural environment

Deposition of excess nitrogen can damage plant health. The threshold for harmful effects is known as the 'critical load'. From 2016 to 2020, deposition of nitrogen onto sensitive habitats reduced by 9.4%, an improvement on our previous assessment due to a reduction in deposition in 2020, partly reflecting pandemic lockdown restrictions.[112] However, the percentage of sensitive habitats where nitrogen deposition exceeds critical loads has remained at 99.9%, reflecting the 2022 review and revision of critical levels.[85,86] This is unchanged since 2003.

From 2016 to 2020, the area of England exceeding the ammonia concentration threshold for sensitive non-vascular plants such as mosses increased from 88.6% to 90.5%.[112] All zones in England currently meet the AQSR NO_x and SO_2 standards set for vegetation, whereas 26 zones exceeded the long-term ozone objective in 2023.[113]

Table 3.2. Clean air – summary assessment of trends

Indicator	Indicator trend	Trend time period
UK emissions of five key air pollutants	NO_x ↓	2017–2022
	SO_2 ↓	
	NMVOC ↓	
	$PM_{2.5}$ ↓	
	NH_3 ↓	
Incidents of exceedances against Air Quality Standards Regulations 2010 in England	↓	2017–2022
Percentage of monitoring stations above 10 µg/m^3 annual mean $PM_{2.5}$ concentration	↓	2018–2023
$PM_{2.5}$ population exposure indicator	↓	2018–2023
Exceedance of damaging levels of nutrient nitrogen deposition in England	→	2015–2020

3.4. Progress towards ambitions, targets and commitments

Despite some examples of tangible progress, overall policy progress towards targets and commitments was limited over the annual reporting period. This is due to a weakening of levels of environmental protection through revocation of provisions of the NECR relating to the NAPCP, as well as a lessening of ambition and persistent delays across key sectors. Just seven actions are reported in the APR 2024, despite many other actions having been delivered.

Progress towards the two EA21 targets on $PM_{2.5}$ annual mean concentration and reduction in population exposure specifically was slightly more promising. Mixed progress was observed, with EA21 interim target levels met in both areas and implementation under way of specific actions that will contribute to target achievement. These include implementing the zero-emission vehicle pathway in legislation, carrying out work towards improvements to the government's public communications and continued expansion of the monitoring network to improve data coverage. A summary assessment of the targets and commitments we assessed progress towards is provided in Table 3.3, with further detail provided below.

Road transport

Between 2019 and 2020, total estimated traffic mileage in Great Britain decreased by 21.5% due to pandemic lockdown restrictions, leading to a decline in UK annual average roadside NO_2 concentrations of 26%.[111,114] Between 2020 and 2023, roadside NO_2 further decreased by 5%, despite traffic mileage rebounding to 2% below pre-pandemic levels. This likely reflects the increasing proportion of zero-emission vehicle registrations and implementation of measures such as CAZs.[115,116]

There are seven active CAZs in England, implemented between March 2021 and February 2023 as part of the local plans developed under the previous government's 2017 plan for roadside NO_2.[113,117,118] Research suggests CAZs in Newcastle, Bristol, Bath and Birmingham, as well as the London Ultra Low Emission Zone, are having positive impacts on pollution levels.[119,120] However, nine air quality compliance zones in England, some of which have CAZs in place, are still in exceedance of the NO_2 limit value. Of the 37 local authorities directed to develop and implement local air quality plans for NO_2, 12 do not have finalised local plans in place. This includes 10 local authorities in Greater Manchester, whose proposed clean air plan is still under review by the government.[118,121]

New legislation implementing the zero-emission vehicle mandate came into force in the reporting period, which sets out the percentage of new zero-emission cars and vans manufacturers will be required to produce each year until 2030 (80% of cars and 70% of vans).[122–124] Progress has also been made in the rollout of the UK's charging infrastructure, with a 45% increase in public charging points between 2023 and 2024.[125–127] These actions are welcome. However, the proportion of new zero-emission vehicles registered remained at 16% in 2022 and 2023.[116] Major barriers to uptake remain, such as upfront costs and low levels of public confidence.[127] The milestone for the 100% phase-out of the sale of new combustion vehicles was extended by five years to 2035, but is not yet enshrined within legislation, which signals reduced ambition and could further undermine consumer and industry confidence.[128] The current government's election manifesto included a commitment to reinstate the 2030 milestone.[57]

Although increased uptake of electric vehicles will reduce tailpipe emissions, non-exhaust emissions are the largest source of $PM_{2.5}$ from road transport and a major source of microplastics in the environment.[104,129,130] The net balance between increased $PM_{2.5}$ emissions due to greater vehicle weight causing tyre and road wear and regenerative braking reducing brake wear is not adequately quantified, but non-exhaust emissions are not included in existing UK vehicle standards.[131,132] The government consulted on updating vehicle standards during the reporting period, and commissioned analysis on the potential impacts of Euro 7, which introduces non-exhaust standards, although has not yet committed to adopting them.[133]

On active travel, the Department for Transport's progress towards objectives has been slow. For example, there has been no sustained increase in cycling rates.[134] Overall cuts of £233 million in dedicated funding up to April 2025 were announced in March 2023.[33] Over the reporting period, Active Travel England announced £60 million in funding for children's cycle training and £101 million to support local authorities in delivering cycling and walking schemes. This is welcome, although the APR 2024 does not confirm whether these schemes reinstate the cut funding.

Domestic combustion

The government has delivered most of the actions set out in the Clean Air Strategy 2019 to reduce emissions of $PM_{2.5}$ from domestic combustion, including improving stove and fuel standards, amending smoke control area legislation and the emissions restrictions within them, and developing a communications campaign. Despite this, emissions of $PM_{2.5}$ from this source are 8.6% higher than they were in 2005, largely due to the increasing use of wood-burning stoves.[104,135]

More could be done to incentivise a shift from the older, more polluting wood-burning stoves that are already in place towards newer, compliant devices, as committed to in the national air quality strategy. For example, change of property ownership schemes have been effective in other countries, where non-compliant stoves must be upgraded or decommissioned after the sale of a property.[136,137] A similar scheme would build on the progress already made in implementing the Clean Air Strategy 2019.

Over the reporting period, Defra launched the 'Burn Better, Breathe Better' communications campaign, which offers advice on how to burn efficiently and safely.[138] It also published guidance on outdoor burning best practice, including how to limit wildfire risk, as committed to in the EIP23.[139] This is welcome, as most previous guidance has focused solely on indoor burning. A relatively small amount of funding (£2 million) was also made available through the Small Business Research Initiative to develop products to reduce emissions from domestic burning and agriculture.[140]

It is not clear how the government's public communications campaigns and resources are tracked to ensure they are used most effectively. Work is under way to carry out a comprehensive review of how air quality information is communicated to the public and improve accessibility of information – for example, through the Air Quality Information System Review and the Air Quality Digital Services Project. However, the findings of the review were not published in early 2024 as originally planned.[141]

Industry and agriculture

To reduce emissions from the industrial sector, roll-out of the Best Available Techniques scheme continued. The framework was updated in the previous reporting period and is used by specific installations to meet emissions standards.[142] A second phase of review was also carried out and updates made to the environmental assessment levels, which tightened the benchmarks used to inform risk assessments for emissions from industrial processes.[143]

Agricultural emissions could be reduced using existing technologies,[89] but there has been little progress on this since 2010.[106] This could have implications for meeting EA21 targets on $PM_{2.5}$ annual mean concentration and reduction in population exposure, as secondary

formation from agricultural ammonia may contribute a significant portion of ambient $PM_{2.5}$ in urban areas.[144–146] New funding scheme rounds were announced to support emissions reduction through the acquisition of nature-friendly farming equipment, including the Farm Equipment Technology Fund and a second round of the Slurry Infrastructure Grant.[33] Uptake of environmental land management (ELM) schemes has also progressed (see Chapters 2 and 13). ELM schemes include some measures that could significantly reduce ammonia emissions, but the measures are voluntary and in many cases there is limited evidence on potential effectiveness.[80,147]

There was no progress in the reporting year in delivering on the commitment to launch a consultation to bring intensive beef and dairy installations into the environmental permitting regime. Emissions from pig and poultry farms reduced by about one-third after their inclusion.[148] The government has excluded emissions from the spreading of anaerobic digestate from its compliance reporting against the ammonia ERC on the basis that this source was not included within its inventory when the ERCs were agreed.[106] Regardless, emissions from this source continue to climb and are projected to offset anticipated progress in reducing other emission sources into the year 2040.[106,107,149]

Local authorities

'Driving effective local action through local authorities' is a key element of the EIP23 clean air goal. A statutory update to the national air quality strategy was published by the previous government during the reporting period under the Environment Act 1995 as a framework for local authority delivery. It sets out the government's expectations regarding the responsibilities, powers and actions of local authorities to support objectives. The strategy has a much-needed focus on domestic combustion awareness and planning, and the strategic focus on local authorities is logical, given their importance as delivery partners for some key sources.[150]

However, the updated strategy does not fully address concerns, raised by local authorities, that a focus on local delivery is impeded by the lack of support to enable effective action. Local authorities have reported that enforcement can be difficult due to a lack of capacity and resources, and therefore actions implemented at a national level, such as changes to domestic burning regulations, are less likely to be effective.[119] Currently, there is also a reliance on competitive bidding for air quality grant funding. This limits long-term certainty for planning, can preclude investment in ambitious schemes and favours larger, better-resourced authorities.[134,151,152]

Over the reporting period, the air quality grant scheme was revoked by the previous government, which cited concerns it was not delivering effectively.[153] The scheme has awarded £92 million in grants since 1997. While this is a relatively low amount compared with the £883 million provided through the NO_2 programme,[153] the revocation is contrary to the government's commitment to provide more funding through the grant for burdens imposed by recent regulatory changes.[154] It is not clear whether an impact assessment was completed or what the specific concerns on delivery were. Officials have been asked to consider redesigning the scheme, but there is no firm commitment to reinstate it.[155] The previous government committed in the EIP23 to carrying out an audit of local authority powers and barriers to the delivery of improved air quality. Over the reporting period, Defra has engaged in a series of visits and webinars with local authorities to understand how they might be better supported. Defra has addressed gaps in available guidance by publishing factsheets on the Air Quality Hub, a knowledge-sharing platform for local authorities which

Defra recently took ownership of.[156] While these actions are welcome, they do not constitute a formal, comprehensive audit.[157]

Overall, the rescoping of the national level strategy, when considered alongside the revocation of the provisions of the NECR relating to the NAPCP, has weakened the UK's air quality policy framework. The EIP23 is now the only strategy publicly setting out the government's national-level plans that must be reviewed, and in certain cases revised, on a statutory basis. The government established a UK-wide Emissions Reduction Subgroup as a non-legislative alternative to the NAPCP policy planning framework. This is a promising development, as it will enable UK-wide collaboration. However, it does not completely fill the accountability and transparency gap due to the lack of commitment to publishing outputs for public scrutiny and the lack of clarity on the scope of the planning and analysis to be performed.[158]

Table 3.3. Clean air – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

EA21 targets	Progress
By the end of December 2040, the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10 µg/m^3 (annual mean concentration target for $PM_{2.5}$).	**Mixed**
At least a 35% reduction in population exposure to $PM_{2.5}$ by 31 December 2040 compared to the 2016–2018 baseline period (population exposure reduction target for $PM_{2.5}$).	**Mixed**
Other targets and commitments	
National Emission Ceilings Regulations emission reduction commitments.	**Limited**
Air Quality Standards Regulations limits, targets and long-term objectives.	**Limited**
Reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030 (Clean Air Strategy).	**Limited**

3.5. Prospects of meeting ambitions, targets and commitments

Overall, the government is partially on track to achieve the overarching vision to make the air healthier to breathe, protect nature and boost the economy. A summary assessment of the targets and commitments we assessed prospects towards is provided in Table 3.4, with further detail provided below.

Emissions of air pollutants

Despite reductions in emissions of all five NECR pollutants between 2017 and 2022, ammonia, SO_2 and $PM_{2.5}$ emissions are projected to reduce by 14.5%, 87% and 44.8% by 2030. This means falling short of their respective ERCs of 16%, 88% and 49%[149] so the prospects of meeting them are partially on track. While this is an improvement from 2022/2023, where the UK was also off track for the NO_x 2030 ERC (making four out of five off track), it is clear further action is needed to achieve the 2030 ERCs beyond firm and funded policies.[102]

There are significant uncertainties in the projections, for example for road transport, where measures to phase out combustion engine vehicles up to and from 2035 onwards are not currently accounted for due to 'a lack of planned pathways'.[122] The outlook could, therefore, improve, particularly for NO_x and $PM_{2.5}$. However, unless an effective alternative is developed, revocation of the provisions of the NECR relating to the NAPCP presents a risk to delivery, as it reduces the impetus for adaptive decision-making.

Concentrations in ambient air

Current trends suggest the government is largely on track to achieve the two EA21 $PM_{2.5}$ targets, as the 2028 interim target levels have been met. However, this assessment is provisional until the full monitoring network is in place in 2027.

The EA21 interim $PM_{2.5}$ target levels have been met, despite the UK missing the 2021 $PM_{2.5}$ ERC and projections suggesting the 2030 ERC is largely off track. The modelling that underpinned the EA21 targets suggested that achieving an annual mean concentration target of 10 µg/m^3 by 2030 was unlikely under multiple scenarios, but in 2023 only one monitoring station was above this level. This could suggest the modelling scenarios were too conservative or that the monitoring network is not yet sufficiently representative of local hotspots (see Methodological Statement). The government's monitoring of this target should be accompanied by an assessment of public health outcomes, to ensure it is driving real-world progress.[159] This is important, as in terms of exposure, the increasing age and urbanisation of the population in the UK could offset some of the health gains made from reducing emissions and ambient concentrations.[160–162]

Conversely, the government's 2017 plan for tackling roadside NO_2 is largely off track in ensuring full compliance with the annual mean limit value for NO_2 set out in the AQSR in the 'shortest possible time'. The 2017 plan originally estimated compliance across all zones by 2026, 16 years after the legal compliance deadline passed in 2010.[163] However, nine zones in England remain non-compliant. National Highways has also identified two sections of the road network that will not meet the limit value until beyond 2030, with 30 sections exceeding the limit value in 2022.[117,164] While there are procedures in place to ensure National Highways assesses measures to address NO_2 exceedances, there is no strategy that publicly sets out a delivery plan, and nor have all local authority plans required under the 2017 plan for roadside NO_2 been implemented. These gaps present risks to delivery.

Impact on the natural environment

The government is currently off track to achieve the Clean Air Strategy 2019 target to reduce nitrogen deposition on sensitive habitats by 17% between 2016 and 2030. A reduction was observed in 2020, but this was likely related to pandemic lockdown restrictions. Projections suggest ammonia emissions will not meet the 2030 ERC, which is critical as sensitive habitats are often situated in rural areas where ammonia contributes a greater proportion of deposited nitrogen than NO_x.[165]

Table 3.4. Clean air – summary assessment of prospects of meeting targets and other commitments

EA21 targets	Prospects
By the end of December 2040, the annual mean level of $PM_{2.5}$ in ambient air must be equal to or less than 10 µg/m^3 (annual mean concentration target for $PM_{2.5}$).	**Largely on track**
At least a 35% reduction in population exposure to $PM_{2.5}$ by 31 December 2040 compared to the 2016–2018 baseline period (population exposure reduction target for $PM_{2.5}$).	**Largely on track**
Other targets and commitments	
National Emission Ceilings Regulations emission reduction commitments.	**Partially on track**
Air Quality Standards Regulations limits, targets and long-term objectives.	**Partially on track**
Reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030 (Clean Air Strategy).	**Largely off track**

3.6. Opportunities for improvement

There are multiple opportunities for the government to show leadership and increased ambition to deliver improved outcomes for the environment and public health. Evidence of negative environmental and human health impacts at ever lower levels of pollution necessitates greater ambition and urgency.[85–87] The government can improve prospects by delivering the sector specific actions outlined in this assessment and re-establish the UK as an international leader in tackling air pollution by strengthening the domestic policy framework and reviewing targets and standards.

Some sector specific actions that the government could deliver include addressing in situ non-compliant wood-burning stoves, consulting on bringing the intensive beef and dairy sectors into environmental permitting, addressing increasing emissions from non-manure digestate, ensuring all local plans are in place to tackle NO_2 limit values and committing to Euro 7 standards.

For local authorities, the government should complete a full audit of powers and barriers to delivery. This should include a review of the current grant-funding model to ensure it enables delivery of long-term outcomes. To ensure information is communicated to the public as effectively as possible, the findings and recommendations of the Air Quality Information Systems Review should be published and addressed. Lessons learned should be applied to sectors where greater public support is needed, such as on active travel and roll-out of zero-emission vehicles.

The government also has opportunities to re-establish the UK as an international leader in tackling air pollution. Firstly, it should strengthen the role of the new Emissions Reduction Subgroup by committing to making outputs available for public scrutiny when projections suggest ERCs are off track or inventories show they are missed. This will help to address the accountability and transparency gap left by revocation of the provisions of the NECR relating to the NAPCP.

Secondly, the removal of the NAPCP from statute, alongside the rescoping of the national air quality strategy to a framework for local authority delivery has left a gap in the government's strategic framework. The EIP is now the only strategy document that must be reviewed, and in some circumstances revised, on a statutory cycle that publicly sets out the government's plans to reduce pollutant emissions. It alone does not provide sufficient detail.

We welcome the government's decision to revise the Clean Air Strategy 2019.[166] As part of this revision, the government should consider how it will maintain key elements of transparency and accountability previously provided by the NAPCP, either in new legislative provisions or in other suitably robust ways, to avoid a weakening of environmental protection. This could include committing to an adaptive decision-making framework, publishing underpinning projections demonstrating how plans stack up to meet the ERCs and wider targets, and making outputs of the Emissions Reduction Subgroup available for public scrutiny.[167] The new Clean Air Strategy should also update and strengthen the 2030 nitrogen deposition target set out in the 2019 iteration, by setting new, ambitious long-term commitments to protect the natural environment.

Thirdly, the government can show leadership and improve public health outcomes by reviewing the current targets framework and committing to doing so periodically to account for the most current evidence. The two EA21 targets on $PM_{2.5}$ annual mean concentration and reduction in population exposure are more ambitious than AQSR $PM_{2.5}$ standards. However, as both EA21 2028 interim target levels have already been met, the government should consider whether the long-term targets set sufficiently ambitious deadlines to drive improvement. We recommended a 2030 deadline in our response to the consultation on EA21 targets.[168] The government should also review the regulatory framework for wider pollutants to consider whether to bring standards more in line with WHO guidelines, and current evidence on damaging levels of pollution for the natural environment.[95,96] Doing so would raise ambitions to standards set by the EU and meet the UK's G7 Turin commitment to set ambitious domestic ambient air quality standards.[96,169] Such a review would provide an opportunity to consider emerging pollutants and sources that do not have standards, such as ultrafine particulate matter and micro and nanoplastics.[89,170]

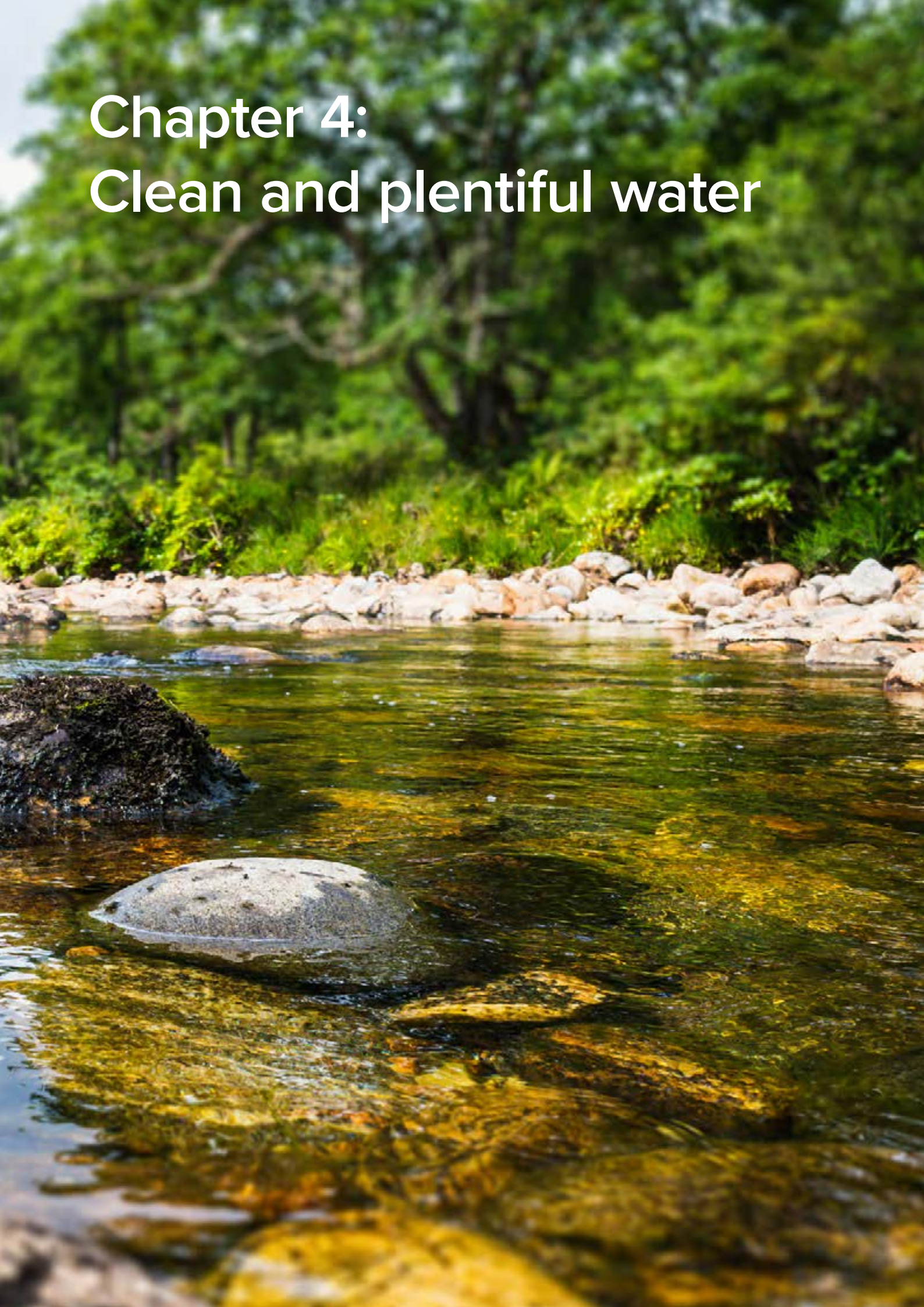
In our 2022/2023 progress report we made four recommendations relating to information and engagement, local authorities, accountability, and the policy framework including limit and target values. Progress during the reporting period regarding these issues has been good, mixed and limited. Therefore these issues remain relevant and are reflected in the recommendations below.

Clean air recommendation 1: The government should assess and remove barriers to improvements to local air quality by working collaboratively with local authorities to carry out and publish a comprehensive audit of barriers to local authority delivery of air quality improvements, as committed to in the EIP23. The audit should ensure that the necessary structures and forums are in place to foster effective partnerships, monitoring, evaluation and learning, and that sufficient powers and resources are in place to enable effective action.

Clean air recommendation 2: The government should further support achievement of the five national emissions reduction commitments that apply from 2030 by updating the Clean Air Strategy. As part of this review, the government should consider how it will maintain the levels of transparency and accountability that were previously provided by the National Air Pollution Control Programme, if weakening of levels of environmental protection is to be avoided.

Clean air recommendation 3: If legal air quality standards are to better protect public health, the government should consider reviewing those standards set out in current legislation and appraise options to bring them more in line with World Health Organization guidelines and equivalent legal standards recently adopted by the EU. This review could also consider whether the two EA21 targets on $PM_{2.5}$ annual mean concentrations and reduction in population exposure set sufficiently ambitious deadlines to drive improvement, given the two EA21 interim target levels have been met.

Chapter 4:
Clean and plentiful water



Chapter 4: Clean and plentiful water

4.1. Summary assessment

The government has made cleaning up Britain's rivers, lakes and seas a priority. Clean and plentiful water is essential for human health and wellbeing, biodiversity and the economy. Achievement of this ambition remains far off.

Public dissatisfaction with the state of the water environment remains high. Environmental trends are mixed. Although there are reductions in pollution from sewage treatment works, wider trends are dominated by a lack of improvement. Water pollution incidents have increased, and the quality of bathing waters has stagnated. Overall improvements in the state of the water environment are limited.

Progress in addressing pressures from the water industry and legacy mining is encouraging, but greater clarity is needed on how the planned investment by the water industry contributes towards key targets and commitments in the EIP. There is less action in areas reliant on the development and update of catchment-specific plans. Action on physical modification pressures, and on the key sources of urban diffuse pollution are both lacking.

The prospect of meeting the objectives set under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD Regulations) and wider international commitments on reducing pollution pressures remains largely off track. It is important to maintain momentum on reducing water industry pressures while significantly scaling up delivery to address wider pressures.

There is an opportunity for the government to improve and balance delivery by developing further steps and actions where scale and pace are currently falling short. Actions that enable landowners and farmers to reduce agricultural diffuse pollution and increase wildlife-rich waters are essential.

Table 4.1. Clean and plentiful water – summary assessment

Past trends	Trends on the state of the water environment are varied. Soil nutrient balances are improving and water leakage is reducing, but overarching trends on the state of the water environment remain static.	**Trends show a mixed picture**
Progress in the reporting period	Pressures where established planning and delivery programmes exist show noticeable progress. Progress against wider pressures, however, are hampered by a lack of detailed delivery plans.	**Mixed**
Prospects of meeting ambitions, targets and commitments	Overall, there is insufficient action directed towards achieving good ecological status or potential by 2027. Actions to reduce agricultural diffuse pollution require expansion beyond voluntary agri-environment schemes.	**Largely off track**
Robustness	The assessment has primarily used publicly available evidence, commissioned research on agricultural diffuse pollution actions, expert judgement and our implementation review of the WFD Regulations 2017 and Bathing Water Regulations 2013. The lack of recent data means that the overall assessment of trends has not changed significantly from the 2022/2023 report.	

4.2. Context and commitments

The state of the water environment remains challenging and broadly static. There has been a noticeable increase in recorded pollution incidents over the last year, in part due to improved monitoring but also from ongoing vulnerability of water infrastructure and the natural environment to extreme weather events.

The government has made cleaning up Britain's rivers, lakes and seas a priority. The existing investigations by Ofwat[171] and the Environment Agency[172] into sewage treatment works are a positive step towards improvements in this area.

Moreover, the government has committed to carrying out a review to shape further legislation to achieve this. As a first stage in this review, the government has introduced to Parliament a new Water (Special Measures) Bill which contains provisions about the regulation, governance and special administration of water companies, including strengthened powers for the water industry regulators. The government has set up an independent commission on the water sector regulatory system to carry out the wider review.[173]

The EIP23 includes a commitment to restore 75% of water bodies to good ecological status, which is directly related to the 2027 environmental objectives for water bodies set under the WFD Regulations. Achieving the WFD Regulations environmental objectives will be the foundation for delivering this EIP23 commitment. EA21 targets and interim targets have been set addressing pressures in the water environment, relating to potable water demand and leakage, and pollution from wastewater, agriculture and abandoned metal mines.[174]

The Storm Overflows Discharge Reduction Plan sets out further targets to tackle sewer overflows.[175] The Bathing Water Regulations 2013[176] require the Secretary of State and Environment Agency to exercise their functions in England both to ensure that all classified bathing waters are at least of 'sufficient' standard, and to take reasonable and proportionate measures to increase the number which are classified as 'good' or 'excellent'.

The next Water Industry Asset Management Plan period of 2025 to 2030 (AMP8) is a component in achieving important targets and commitments for the goal of clean and plentiful water. The scale of planned investment will be larger than for AMP7, providing further opportunity to protect and improve the natural environment.

The updated Agricultural Transition Plan[17] and the roll-out of environmental land management (ELM) and other grant schemes provides for further targeted actions towards tackling agricultural diffuse pollution, a major constraint on achieving good ecological status.

The UK government's adoption of the Kunming-Montreal Global Biodiversity Framework Target 7 to reduce pollution risk and the negative impact of pollution from all sources by 2030[79] further adds to the importance of developing more ambitious domestic commitments.

4.3. Key environmental trends

Overall state of the water environment

Our assessment of the overall state of the water environment remains unchanged from 2022/2023. The next comprehensive update of classifications in WFD Regulations water bodies, due in 2025, will provide new monitoring data to assess progress. As of 2019, 16% of water bodies were at good ecological status or potential (or higher), with 79% of individual elements underpinning the classification also at 'good'.[177] We consider trends in chemical status under the WFD Regulations further in Chapter 5.

There is evidence that, while polluted rivers are improving, the most diverse and least impacted streams are declining in quality.[178] Furthermore, trends in small waters, which make up a significant proportion of the water environment, are poorly understood.[179]

The WFD Regulations cover a wide range of surface water bodies, including rivers, lakes, estuaries, coastal waters and groundwater. Of the 4,658 surface water bodies, rivers account for over four-fifths of the total in number, dominating the overall classification results. River and lake water bodies have the lowest proportion (14%) of water bodies at good ecological status or potential (or higher).[177,180]

Proportionally, coastal waters have almost three times the number of water bodies at good ecological status at 45%. Unlike rivers and lakes, where nutrient pollution is a major constraint on achieving good ecological status, 71% of coastal water bodies are classified as being certain there is no problem with regard to eutrophication pressures limiting good ecological status or potential.

Groundwater bodies have an objective under the WFD Regulations to meet good chemical status and good quantitative status. Similarly to freshwaters, nutrients are a major cause of failure for overall objectives not being met in 55% of groundwater bodies. Figure 4.1 presents a breakdown of the number of surface water bodies at good ecological status or potential (or higher). The chemical status of groundwater bodies is also provided.

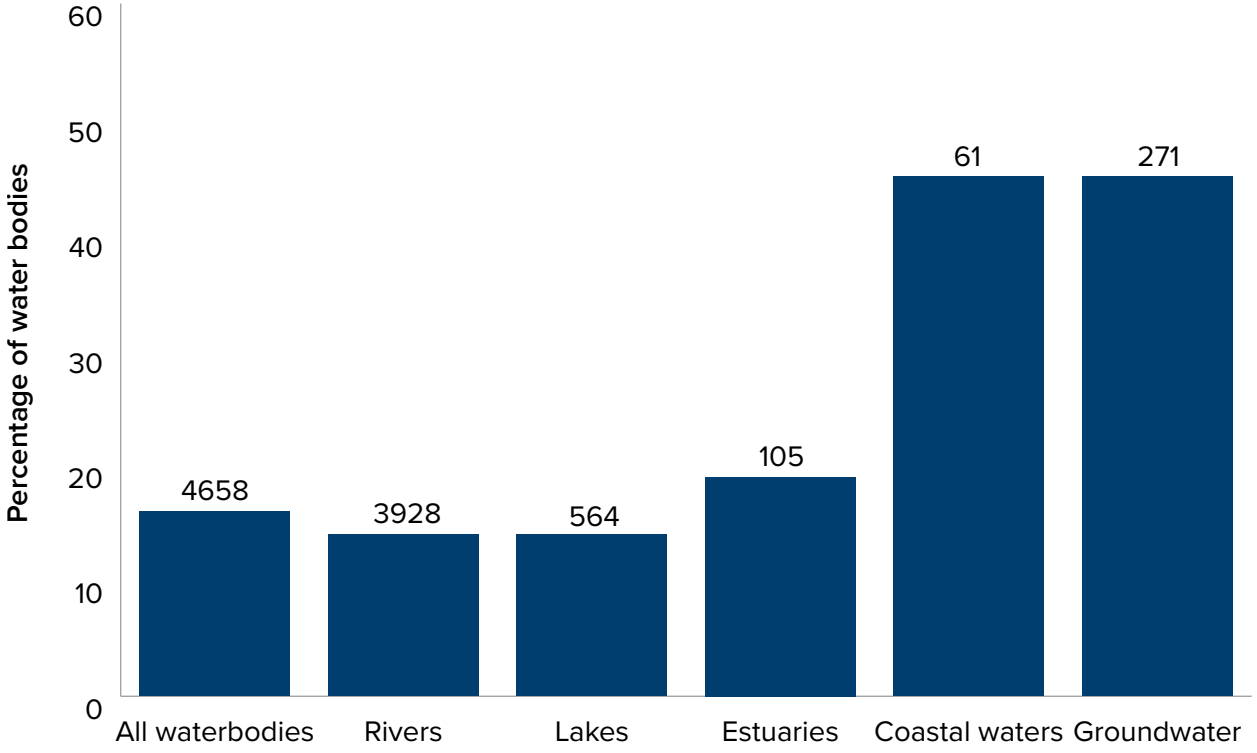


Figure 4.1. Percentage of surface water bodies at good or higher status or potential, and percentage of groundwater bodies at good chemical status. The number of water bodies is denoted above each bar.[177]

Clean water

The trend over the last five years for the number of pollution incidents has increased. Pollution incidents come from varied sources, including sewage and agricultural as well as from oil and fuel spills (Box 4.1). The year 2023 was one of the wettest years on record[181] and is likely to have contributed to observed trends in pollution incidents and the performance of bathing waters.

The condition of bathing waters continues to remain relatively stable, with 96% in 2023 achieving at least 'sufficient' status.[182] Of note is the decline in the number of bathing waters at 'excellent', from 72% to 66% in the last year. The number of sites at 'excellent' status is far lower than in most other European countries. The government announced that 27 new bathing waters will be designated this year,[183] but the total number of bathing waters in England is far lower than in other European countries, especially for inland sites.

Box 4.1. Pollution incidents in the water environment

Details of environmental incidents within the remit of the Environment Agency are held on the National Incident Recording System (NIRS2). Data on pollution incidents from the system are extracted and reported on a quarterly basis.[184] The system identifies 12 broad types of pollution sources, with sewage (materials) accounting for 23% of the recorded number of incidents between March 2001 and June 2024. To provide a comprehensive understanding of pollution risk across the water environment, our assessment of trends in pollution incidents includes all pollution incident types monitored by the Environment Agency. With increased reporting on sewer overflows from event duration monitoring (EDM),[185] the proportion of sewage pollution incidents reported in the near future may increase.

Proportion of pollution incidents (category 1–3), classified by pollution type, recorded as impacting the water environment from March 2001 to June 2024

The EDM now deployed across all sewer overflow locations[185] in England illustrates the responsiveness of these overflows to rainfall. Analysis in Figure 4.2 shows that the amount of spills is strongly and positively correlated with rainfall, with small variations in rainfall leading to changes in spill occurrence. The Storm Overflow Assessment Framework assesses whether spills have been caused by exceptional rainfall and what measures are required to address them.[186]

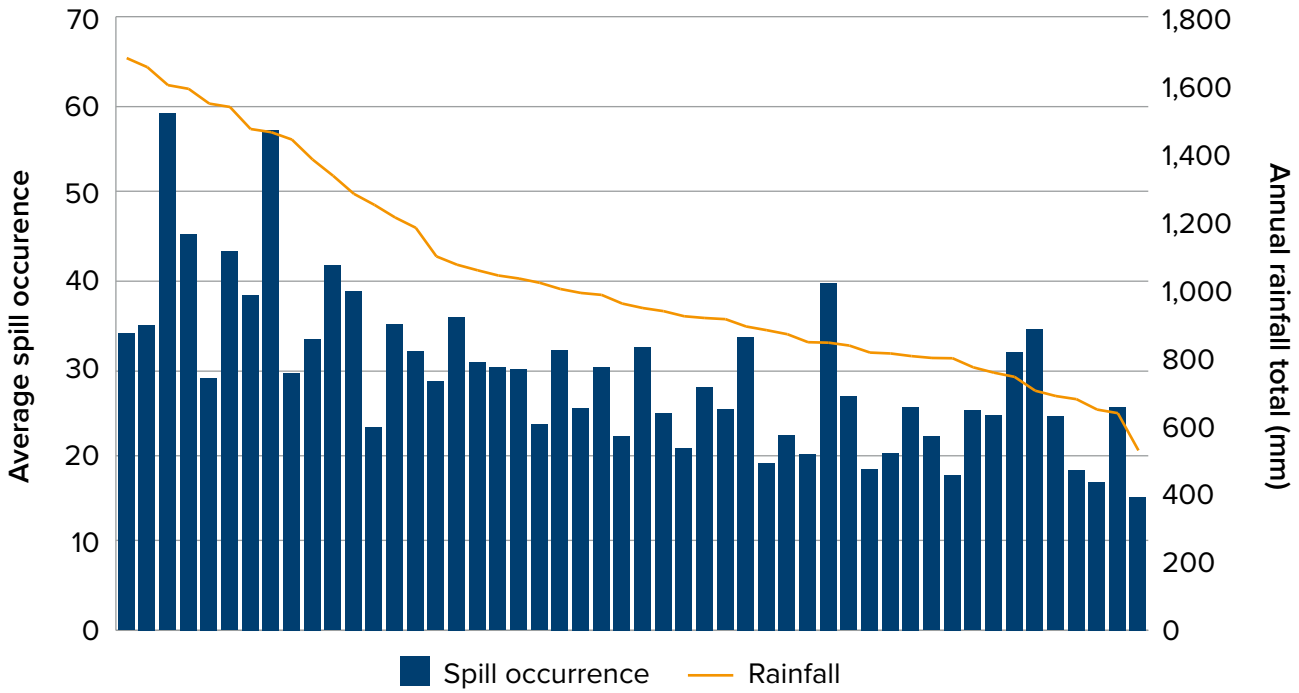


Figure 4.2. Average sewer overflow spill occurrences, per overflow, in each water and sewage company area[185] from 2019 to 2023, compared against annual rainfall totals in each company area

There is no new data on the continuous loads discharged to rivers from water company sewage treatment works in England through consented sewage treatment discharges.[187] Our assessment therefore remains the same as 2022/2023, showing a reduction in loads. We expect additional data to be made available to monitor progress through AMP7 in 2025.

No national datasets are publicly available to describe changes over time in pollution discharge from agriculture. Defra's statistics of estimates of nutrient inputs of nitrogen and phosphorus to agricultural soil[188] provide a partial proxy for the associated risk of nutrient pollution run-off into the wider environment. Trends in nutrient inputs from 2017 to 2022 show improvements in nutrient balances, with reduction in the surplus of nutrient available in agricultural soils for leaching and run-off. The APR 2024 outlines that this has strongly been driven by increases in energy and inorganic fertiliser prices.

Monitoring of pollution from metal mines is not available as an indicator in the Outcome Indicator Framework (OIF). However, analysis using the indicator on exposure and the adverse effects of chemicals on wildlife in the environment provides evidence.[189] Although, in general, downward trends dominate for heavy metals in freshwater, over the period from 2014 to 2022 for waters affected by abandoned metal mines, the trends are variable.

Plentiful water

Water demand use from water treatment works into the supply system consists of three principal components: household demand, non-household demand and leakage. From 2017/2018 to 2022/2023, household water consumption, the largest component of potable water, has increased, although consumption has stabilised over the last three years of record.[190]

From 2017/2018 to 2022/2023, water leakage representing approximately one-fifth of supply distribution continued to reduce, although this has stalled over the last two years.[190] Similarly, non-household water consumption from industry and businesses (also approximately one-fifth of supply) showed little or no change from 2017/2018 to 2022/2023. A change in work habits led to a reduction in this consumption type during the Covid-19 pandemic, with levels subsequently returning to pre-pandemic levels.

More recent evidence for the period 2023/2024 shows a slightly more positive picture of reducing water demand overall, but this is in part attributed to wet weather conditions reducing water requirements.[191] The Environment Agency has reported that 'the amount of water put into supply by water companies in 2023-2024 was more than we would expect to be needed, given the weather conditions'.[191]

Trends for water company security of supply performance provide a broader understanding of water company resilience to extreme weather events.[192] Between 2020/2021 and 2022/2023 there was little or no change in performance across England.

A summary assessment of the key trends we assessed is provided in Table 4.2.

Table 4.2. Clean and plentiful water – summary assessment of key trends

Indicator	Indicator trend	Trend time period
State of the water environment (Water Framework Directive Regulations good ecological status)		2015–2019
Loads discharged to rivers from water company sewage treatment works (of three key pollutants)		2015–2020
Condition of bathing waters		2018–2023
Pollution incidents to water (Environment Agency categories 1–3)		2017–2023
Water leakage in England (from water company potable water supply)		2017/2018–2022/2023
Non-household water demand		2017/2018–2022/2023
Per capita potable water consumption in England		2017/2018–2022/2023
Water company security of supply performance		2020/2021–2022/2023
Soil nutrient balance		2017–2022

4.4. Progress towards ambitions, targets and commitments

Our 2022/2023 progress report highlighted the need to ensure that all major pressures on the water environment are addressed proportionately, requiring the government to address imbalances in delivery and scale up actions across all major pressures. This year we consider the degree to which this is addressed.

Overall, 19 actions are presented in the APR 2024,[33] covering a wider range of areas than in previous annual reporting periods. The APR 2024 generally reports an increase in actions on delivery and funding. However, it omits important actions undertaken during the reporting period, providing an incomplete picture of progress.

Progress towards meeting targets and commitments is mixed (see Table 4.3). While large-scale action is observed in tackling pollution from the water industry, along with some progress observed in addressing agricultural pollution, there has been limited progress in scaling up actions that address other major pressures. The extent to which record investment by the water industry contributes to key targets and commitments remains uncertain.

Furthermore, there has been limited progress in the government engaging with the wider public, businesses and other stakeholders to secure their participation in actions to address major pressures.

Overall state of the water environment

There has been limited progress reported in enhancing monitoring and evaluation of the state of the whole water environment. The fitting of EDMs will monitor progress with the Storm Overflows Discharge Reduction Plan.[175] However, such a focus on one aspect of the water environment risks skewing understanding of risks from other pressures. Progress in publishing a comprehensive and transparent monitoring programme for the water environment, to fulfil obligations under the WFD Regulations, wider ambitions as well as maintain adequate monitoring of current and emerging major drivers is absent.

The APR 2024 reported limited action to tackle pressures from physical modifications to rivers, lakes and coastlines. Physical modifications can directly impact water quality and ecological responses to wider pressures and directly impact ecology through changes to physical habitat. The APR 2024 presents some actions, such as the establishment of the Water Environment (Improvement) Fund. However, it is unclear to what extent the level of action and investment addresses pressures across the 41% of water bodies where physical modifications are identified as a significant water management issue.[193]

A summary assessment of the targets and commitments we assessed progress towards is provided in Table 4.3, with further detail provided below.

Clean water

Sewage and wastewater pollution

Actions reported in the APR 2024 continue to focus largely on actions from the water industry, in particular water pollution from sewage. Water and sewage companies submitted their business plans in 2023, which included £105 billion of investment across water supply and wastewater infrastructure over the next five-year planning period.

Ofwat published its draft determinations in July 2024 with an £88 billion investment proposal. The range of investment submitted by water and sewage companies to proposals from Ofwat represent a substantial increase in investment.[194]

This increase includes £35 billion enhancement expenditure, around three times the level of the previous five-year planning period. We understand that the majority of this expenditure comes from such statutory drivers as the WFD objectives and EA21 targets. Around two-thirds of this expenditure is planned to reduce wastewater pollution.[194]

An increase in investment will support the achievement of water industry oriented targets and commitments, including the EA21 wastewater target, that the load of total phosphorus discharged into freshwaters from relevant discharges is, by 31 December 2038, at least 80% lower than the 2020 baseline. The EA21 interim target of a 50% reduction by 21 December 2038 will also benefit. However, the coherency of achieving these outcomes with other important targets and commitments such as the WFD Regulations environmental objectives is not transparent.

Water industry investment is also relevant both to achievement of the WFD Regulations environmental objectives and to delivery of the obligation to ensure that all classified bathing waters are at least of 'sufficient' quality while seeking to increase the number which are of 'good' or 'excellent' quality. An expansion of Catchment Sensitive Farming (CSF) advice, and grants for slurry infrastructure and farm equipment should also support improvement in these waters, where these are spatially targeted (see Chapter 13).

Diffuse pollution

The previous government published an Agricultural Transition Plan update in March 2024.[17] This sets out the outcomes for food, farming and the environment and revised proposals on ELM. It focuses particularly on making them more effective and workable alongside wider regulation. As set out in Chapter 2, the progress in the adoption of ELM actions is broadly welcome.

There is a large uptake of the Sustainable Farming Incentive (SFI) soil management measures.[195] These are potentially important in supporting the EA21 agriculture water target (that the load of each of total nitrogen, total phosphorus, and sediment, entering the water environment through agricultural diffuse pollution is, by 31 December 2038, at least 40% lower than the 2018 baseline year). However, our analysis in Chapter 13 shows an over-reliance on ELM schemes to deliver the EA21 target. In addition, we assess a lack of strategic spatial prioritisation in implementing measures to reduce pollution from agriculture. Our assessment of progress against the EA21 agriculture water target is therefore mixed.

Another diffuse pollution source is road run-off. National Highways published their 2030 Water Quality Plan in August 2023.[196] It identifies 1,236 potential high-risk polluting outfalls. Of these, National Highways have told us they plan to mitigate those outfalls verified as high risk, estimated to be around one-fifth of total outfalls, by 2030. They aim to address further outfall risks over the fourth Road Investment Strategy period (2031–2035). While this initial assessment is welcome, further monitoring and evaluation is required to address and mitigate pollution risk from all outfalls, including cumulative impact from multiple lower-risk outfalls. Roads managed by local authorities require similar action.

Metal mine pollution

The government has progressed at pace towards the EA21 abandoned metal mines water target that the length of relevant waters polluted by arsenic, cadmium, copper, lead, nickel and zinc from abandoned metal mines is, by 31 December 2038, at least 50% lower than the baseline year of 2022. This amounts to a baseline of approximately 1,500km and reduction of approximately 750km. As a result of the ongoing development of catchment plans by the Environment Agency and the design and implementation of treatment solutions by the Coal Authority, a new minewater treatment scheme in Cornwall and 11 interventions to control diffuse metal pollution have been built since the target was set in January 2023.[33]

Plentiful water

The APR 2024 does not report specific actions towards the water demand target to reduce the volume of potable water supplied per day per head of population in England, by 31 March 2038, to at least 20% lower than the baseline financial year of 2019. Trends on the three components of water demand (household demand, non-household demand and leakage) show a mixed picture, but plans are being put in place to address shortfalls.

Water and sewage company business plans and Ofwat's published draft determinations present proposals for further investment to reduce demand and manage water resources. Ofwat has proposed funding £6 billion of improvements to water supply and demand,[197] including the construction of nine new reservoirs and a further 12 water recycling plants as part of a £12 billion enhancement expenditure to manage water resources. Furthermore, a water efficiency fund is being introduced in 2025.[198]

High non-household business demand is being partially addressed, with water companies currently aiming to deliver a 9% reduction in business demand by 2037/2038.[199] However, managing non-house demand is a responsibility which extends beyond water companies and OFWAT. Coherence with wider growth strategies will be necessary to ensure that water is managed in a sustainable way whilst minimising trade-offs with wider commitments such as regional economic growth.

Table 4.3. Clean and plentiful water – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

EA21 targets	Progress
Reduce nitrogen (N), phosphorus (P) and sediment pollution from agriculture into the water environment by at least 40% by 2038 compared to a 2018 baseline (agriculture water target).	**Mixed**
Reduce phosphorus loadings from treated wastewater by 80% by 2038 against a 2020 baseline (wastewater target).	**Good**
Halve the length of rivers polluted by harmful metals from abandoned mines by 2038, against a baseline of around 1,500km (abandoned metal mines water target).	**Good**
Reduce potable water demand in England per head of population by 20% from the 2019/2020 baseline reporting figures by 31 March 2038 (water demand target).	**Good**
Other targets and commitments	
Each body of surface water to achieve or maintain good ecological status or potential by 2021 or the revised objective date of 2027 for 77% of surface waters.[200]	**Limited**
[By 2050] water companies will only be permitted to discharge from a sewer overflow where they can demonstrate that there is no local adverse ecological impact.[175]	**Good**
Ensure that all bathing waters are classified at least as 'sufficient' (deadline passed at the end of the bathing season in 2015).[176]	**Mixed**

4.5. Prospects of meeting ambitions, targets and commitments

A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 4.4, with further detail provided below.

Overall state of the water environment

Overall prospects of meeting the WFD Regulations objectives are largely off track. Actions within the reporting period, the Plan for Water and the EIP23 do not provide a clear pathway or plan for achievement.

At the time of writing, the planned increase in investment through the recent water industry price review is broadly in line with the investment requirements previously identified by the Environment Agency.[201] However, greater clarity is needed on the expected outcomes associated with these investments.

Moreover, wider investment and action still do not appear to be adequate or sufficiently balanced to address all major pressures (see Chapter 10 for our assessment of invasive non-native species). For example, physical modifications along and next to watercourses, lakes and coastal areas are important pressures on the water environment. Tackling and mitigating these pressures holistically through longitudinal, horizontal and vertical measures is essential to enable water bodies to function naturally and adapt to climate change.

The top three areas identified as constraining outcomes regarding physical habitat modifications are agriculture, local and central government, and urban and transport. Hydrological barriers and impoundments, agricultural land drainage and flood defences are major causes of the pressure. Until recently almost half of all activities causing physical modification pressures were not identified.[193] This has prevented stakeholders from understanding their role.

Catchment partnerships, from source to sea, could have an important role to play in addressing these pressures. We welcome the further development and update of catchment-specific plans[202] however, it is highly unlikely these plans will be operationalised in time to contribute to the EIP23 commitment of restoring 75% of water bodies to good ecological status by 2027.

We have previously recommended that the government, in seeking to extend the reach of catchment-based approach partnerships, more clearly define their role and functioning, and then organise and fund them so they can deliver as intended.[203] There is an opportunity for the government to embed locally tailored catchment solutions through Local Nature Recovery Strategies (LNRSs).

The Kunming-Montreal Global Biodiversity Framework (GBF) Target 7[204] adds to the importance of achieving clean and plentiful water. The target aims to reduce pollution risks and the negative impact of pollution from all sources and is broadly in alignment with the 2027 WFD objectives, albeit with a target date three years later. Despite this alignment, England's commitments to Target 7 do not appear to include the achievement of WFD objectives and EA21 targets related to Target 7 have misaligned deadlines.[81]

In relation to bathing waters, since 2015 the number of bathing waters classified as at least sufficient has ranged from approximately 96–99%. The government is close to achieving the target that should have been met in 2015 of having all bathing waters at this level. However, nearly a decade has passed since the target deadline. We assess the prospect of meeting the target to be partially on track, as pressures beyond the water industry need to be tackled at scale.

Our review of implementation of the Bathing Water Regulations 2013 in England[205] states that the regulations are reasonably well implemented in terms of compliance with specific provisions in the regulations. There is room for improvement in a number of areas to enable the regulations to better align with the requirements of today's water user – in particular, a clearer, more ambitious and purposeful approach to setting and pursuing objectives for bathing waters and a need for greater coherence between the Bathing Waters Regulations 2013 and other laws and policies to address all relevant sources of pollution, including from agriculture as well as the water industry.

Clean water

Sewage and wastewater pollution

Progress in the reporting period aligns with both the investment and delivery trajectory requirements of the EA21 wastewater target (and corresponding EA21 interim target), meaning the prospect of meeting this target is largely on track. Nevertheless, delivery challenges remain regarding the scale of action. The APR 2024 shows that, for prospects to remain on track, 783 improvement schemes are required in the financial year 2024/2025. This is a major step up from the 118 schemes delivered over the previous four years.

Similarly, the investment that was set out in the price review[197] for reducing sewer overflows appears proportionate to the government's Storm Overflows Discharge Reduction Plan.[175] The overarching target is that, by 2050, 'water companies will only be permitted to discharge from an overflow where they can demonstrate that there is no local adverse ecological impact'.

The government's progress report on the implementation of the plan, due in 2025, will help clarify the degree to which the target is achievable. A review of the plan itself is due in 2027. Ahead of this review, it is not possible to conclude whether the plan will fully deliver the target, and we assess prospects to be partially on track.

Diffuse pollution

There were downwards trends in nitrogen and phosphorus between 2017 and 2022. However, our assessment of the prospect of achieving the EA21 agriculture water target shows that, in the long term, this target will be difficult to achieve without substantial increases in compliance with farming regulations and further changes in how land is used and managed. The prospect of meeting the EA21 long-term and interim agriculture water target are largely off track given current policies and measures deployed by the government (see Chapter 13).

We support the recommendations set out in the government's Nutrient Management Expert Group report,[206] in particular that 'ambitious government targets for the environment must be supported by substantially increased public and private investment in innovation, mitigation and adaptation in the food system and sustainable land management, if they are to be realised'.

Pollution from urban areas, roads and cities is another pressure where progress is slow. Road run-off is only part of the pollution from urban areas, roads and cities. Of the 33 areas identified in the Reasons Not at Good database[193] as causing this type of pollution, the general public are identified as the second-largest source of pollution, mostly as a result of mis-connections and private sewage treatment outfalls.

Metal mine pollution

In relation to minewater pollution, there is an EA21 interim target to construct eight minewater treatment schemes and 20 diffuse interventions to control inputs of target substances to rivers by 31 January 2028. Diffuse interventions, composed of simpler measures to limit metals being washed out of contaminated mine wastes by rainfall and river erosion, can be installed relatively quickly compared to large, complex minewater treatment schemes. Treatment schemes require extensive scoping, planning, design and construction.

The Coal Authority has previously been able to construct up to four minewater treatment schemes per year, which would allow for the number of schemes required to achieve the interim target. With two schemes on track to be constructed this year, the prospect of meeting the EA21 interim target is largely on track.

However, further progress towards the EA21 abandoned metal mines water target requires the Environment Agency to complete additional catchment monitoring studies by 2030 to identify priority sources of metal pollution, alongside steady design and construction of remediation measures by the Coal Authority.

We support the government's ambitious plan to prioritise addressing pollution in rivers with high levels of arsenic, cadmium, copper, lead, nickel and zinc. This approach is likely to yield the greatest environmental benefit, but it will be technically challenging to achieve the EA21 abandoned metal mines water target, which requires pollution levels to meet a fixed standard set out in the Water Framework Directive (Standards and Classification) Directions (England and Wales) 2015.[207]

In some rivers, natural metal concentrations prior to mining activity are much higher than the fixed standard. This makes the prospect of meeting this target uncertain and we assess prospects to only be partially on track without greater confidence in scheme delivery. In view of the uncertainty of meeting this target, the government should undertake further monitoring and evaluation to increase certainty on the prospect of meeting the EA21 abandoned metal mines water target.

Plentiful water

The current water resources plans are projected to deliver a 22% reduction in water use per person by 2038,[199] exceeding the EA21 water demand target. This requires all three components of demand (household demand, non-household demand and leakage) to reduce, although projections show only water leakage to be largely on track to deliver the EA21 interim target to reduce leakage by 20% by 31 March 2027 and by 30% by 31 March 2032.

Progress towards the wider EA21 interim target to reduce the use of public water supply in England per head of population by 9% by 31 March 2027 and 14% by 31 March 2032 is more challenging without the wider demand components substantially reducing.

Household demand, the largest component of distribution input, remains stubbornly high. Furthermore, there are a lack of EA21 interim targets to support the reduction in non-household demand management. The Environment Agency have previously identified that further measures are needed.[199] We therefore assess prospects to be partially on track.

Table 4.4. Clean and plentiful water – summary assessment of prospects of meeting targets and other commitments

EA21 targets	Prospects
Reduce nitrogen (N), phosphorus (P) and sediment pollution from agriculture into the water environment by at least 40% by 2038 compared to a 2018 baseline (agriculture water target).	**Largely off track**
Reduce phosphorus loadings from treated wastewater by 80% by 2038 against a 2020 baseline (wastewater target).	**Largely on track**
Halve the length of rivers polluted by harmful metals from abandoned mines by 2038, against a baseline of around 1,500km (abandoned metal mines water target).	**Partially on track**
Reduce potable water demand in England per head of population by 20% from the 2019/2020 baseline reporting figures by 31 March 2038 (water demand target).	**Partially on track**
Other targets and commitments	
Each body of surface water to achieve or maintain good ecological status or potential by 2021.[200]	**Largely off track**
[By 2050] water companies will only be permitted to discharge from a sewer overflow where they can demonstrate that there is no local adverse ecological impact.[175]	**Partially on track**
Ensure that, by the end of the bathing season in 2015, all bathing waters are classified at least as 'sufficient'.[176]	**Partially on track**

4.6. Opportunities for improvement

In its forthcoming review of the EIP, River Basin Management Plans and the water sector, the government has the opportunity to improve prospects of meeting targets and commitments. Our review of the WFD Regulations 2017 and Bathing Water Regulations 2013 in England provides 27 recommendations to the government on the implementation of the regulations and the legal, governance and policy framework.

A common theme in the implementation of both regulations is a lack of a coherent approach to addressing major pressures, preventing the achievement of objectives. Insufficient investment has also impacted progress.

With the pace and scale of implementation beginning to increase, monitoring and evaluation becomes more important than ever to ensure outcomes are achieved effectively. Currently, the coherency of investment with overarching commitments, such as WFD objectives, international commitments and the EA21 targets on species abundance, are unclear.

To maximise the prospects of cleaning up rivers and lakes, the government should extend focus beyond sewage pollution. All three components of water demand (household demand, non-household demand and leakage) require more attention to reduce impacts on the environment, in particular non-household demand.

Reducing metal mine pollution is progressing well and can be further secured by completing catchment monitoring studies by 2030. More widely, funding, development and implementation of detailed catchment delivery plans will address shortfalls across wider pressures.

We consider investment to address physical modifications, a major pressure, to have been inadequate. Floodplains cover around 10% of England's land area. Tackling modifications within floodplains provides an opportunity to create or restore wildlife-rich open-water and river habitats and support the achievement of WFD objectives.

Relying predominantly on ELM to reduce agricultural diffuse pollution will not achieve the EA21 agriculture water target. Enabling significantly larger levels of compliance with farming regulations is necessary (see Chapter 13). Compliance with the law requires the regulators to appropriately enforce the law.

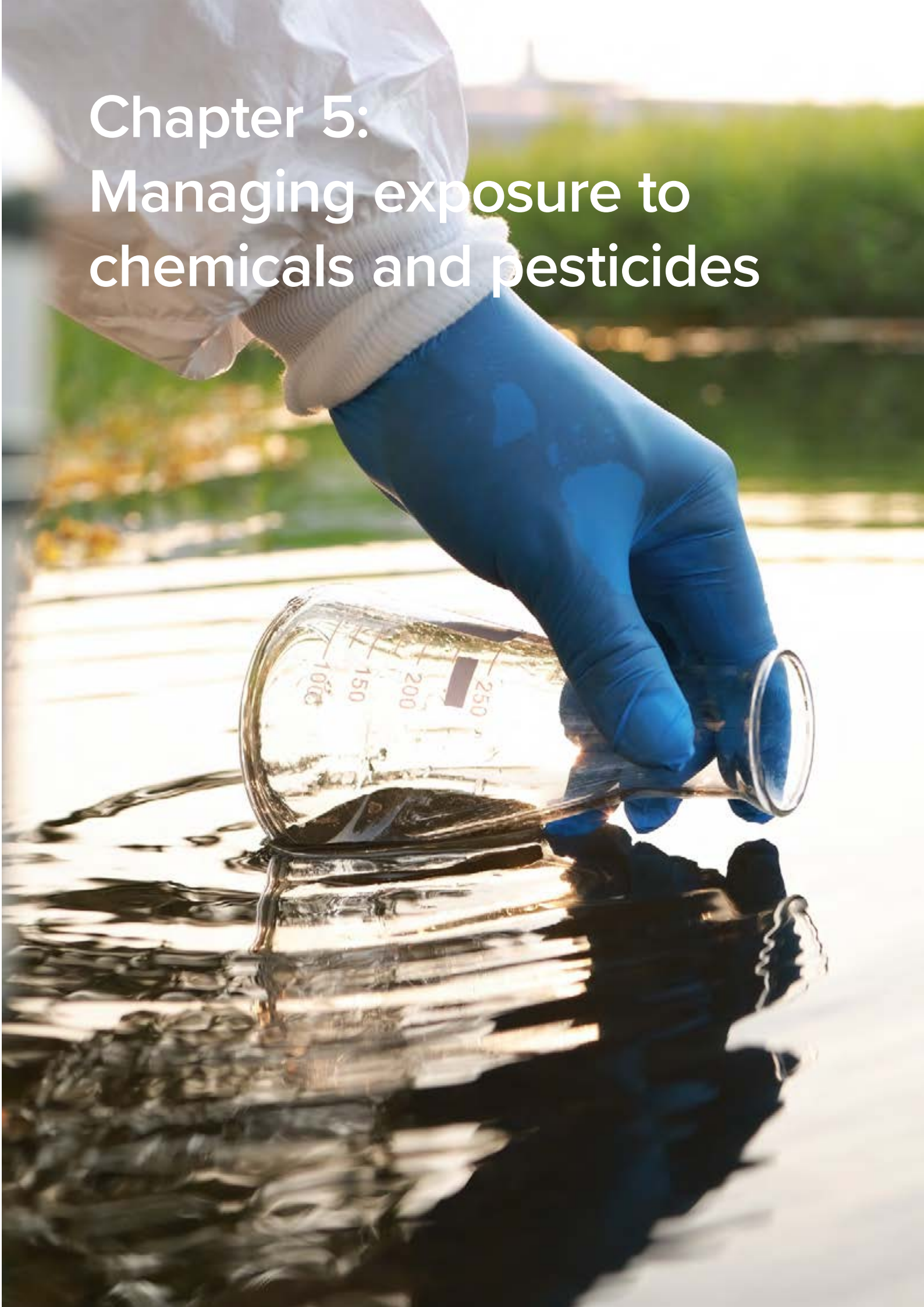
The OEP has investigated the regulation of network combined sewer overflows by the Secretary of State for Environment, Food and Rural Affairs, the Environment Agency and Ofwat. We have identified failures to comply with environmental law by all three public authorities which we have set out in decision notices to each of them.

In our 2022/2023 progress report we made two recommendations relating to addressing all major pressures and the need for a transparent monitoring programme. Progress in addressing them has been limited. Therefore they remain relevant. This year we focus recommendations on clarifying steps and delivery plans addressing major pressures and underpinning key targets.

Clean and plentiful water recommendation 1: Defra should improve the prospects of meeting EA21 targets for water by clearly setting out in a revised EIP interim targets that are consistent with the overall trajectory of environmental improvement required to meet those targets and the steps for meeting them – more specifically: interim targets to complete metal mine catchment monitoring studies by 2030, reduce non-household water demand, and create or restore wildlife-rich open-water and river habitats.

Clean and plentiful water recommendation 2: Defra should publicly set out how delivery plans and investment align with meeting key targets and commitments, including WFD Regulations environmental objectives, Global Biodiversity Framework Target 7, and the 2030 species abundance target and long-term target to reverse the decline of species abundance.

Chapter 5: Managing exposure to chemicals and pesticides



Chapter 5: Managing exposure to chemicals and pesticides

5.1. Summary assessment

Exposure to chemical pollution can negatively affect human health, the environment and the economy. The government's ambition is to ensure that chemicals are safely used and managed, and that the levels of harmful chemicals entering the environment, including through agriculture, are significantly reduced.

Past trends show reductions in the emissions of certain chemicals, especially when linked to international agreements. However, most chemicals are not monitored and trends in exposure to and adverse effects of chemicals on wildlife in the environment show little or no change. Significant knowledge gaps on the sub-lethal impacts of chemicals and their mixtures on UK public health and environment remain.

Tackling pollution at source is key to reducing the risk of harmful chemicals entering the environment. The lack of a UK Chemicals Strategy makes it difficult for stakeholders to understand their role and enable effective delivery of UK priorities.

Overall, the government is largely off track in achieving its ambition with regard to chemicals. Although good progress has been made in some areas since the UK's exit from the EU, key national policies, strategies and legislative changes have been continually delayed. In part this is due to the inheritance of a regulatory system designed for collaborative delivery by multiple countries.

The UK has the potential to be a global leader in chemicals management, building on its strong chemical science skills base and industry. Successful implementation of a coherent and credible chemical regulatory system will be crucial to maintaining or increasing levels of environmental protection and delivering a zero-waste economy.

Table 5.1. Managing exposure to chemicals and pesticides – summary assessment

Past trends	The emissions of persistent organic pollutants and mercury show long-term declines. However, short-term emissions of some persistent organic pollutants show little or no change. Trends in wildlife exposure to chemicals in the environment show a mixed picture.	**Trends show a mixed picture**
Progress in the reporting period	Good progress has been made in the annual reporting period towards polychlorinated biphenyls and mercury commitments and with some specific policies. However, overall progress has been limited, with delays to the publication of a UK Chemicals Strategy and the implementation of UK REACH.	**Limited**
Overall prospects of meeting ambitions, targets and commitments	The government is on track to meet its commitment to reduce mercury emissions. However, the prospect of meeting other EIP commitments alongside delays in key policies and regulatory frameworks means that, overall, the government is largely off track in achieving its ambitions.	**Largely off track**
Robustness	Data on emissions to air, water and land cover very few chemicals out of the thousands released to the environment. Little information is available on emissions to land and data are often historical or too limited to assess trends. The assessment of prospects relies primarily on expert judgement.	

5.2. Context and commitments

The commercial and environmental lifecycles of chemicals are complex, with diverse stakeholders, regulations and trade-offs. Chemicals are a part of everyday life, providing benefits to society as well as causing pollution and environmental damage. The challenge is to manage chemicals in a way that retains their societal benefits while avoiding impacts to human health and the environment.

A chemical's hazardous properties in combination with the level of exposure determine the risk to the environment and human health. Environmental inputs may occur through many routes, including point and diffuse sources, and organisms tend to be exposed to a mixture of chemicals from different sources, which can have a cumulative impact. The magnitude of exposure will be determined by the input, transport and fate of chemicals in the environment, which are controlled by complex processes. This makes it challenging to define and quantify the impacts of chemicals and, especially in the case of diffuse pollution, their respective sources.[208]

While some chemicals quickly degrade in the environment, others can persist, be transported long distances and accumulate in organisms. As such, chemical pollution can result from a mix of local, national and global sources. The UK is a signatory to four multilateral environmental agreements of particular relevance including the 2001 Stockholm Convention on Persistent Organic Pollutants (POPs) and the 2017 Minamata Convention on Mercury.[209] The UK has committed to substantially increase the amount of POPs being destroyed or irreversibly transformed by 2030, to make sure there are negligible emissions to the environment, and to eliminate the use of polychlorinated biphenyls (PCBs) by 2025. The UK also has a commitment to reduce land-based emissions of mercury to air and water by 50% by 2030.[148] The UK has agreed to the Kunming-Montreal Global Biodiversity Framework (GBF), which includes as Target 7 to reduce pollution to levels that are not harmful to biodiversity.[79] These international agreements link to the EIP23 goal of ensuring that chemicals are safely used and managed, and that the levels of harmful chemicals entering the environment, including through agriculture, are significantly reduced.

The Water Environment (Water Framework Directive) Regulations 2017 (WFD Regulations)[200] include an environmental objective in relation to surface water and groundwater to achieve good chemical status by 2021, which can be extended to 2027 (or 2033 or 2039 for certain priority substances) or later dates if certain statutory tests are met. The WFD Regulations also include an environmental objective for surface water to progressively reduce pollution from certain substances and cease or phase out emissions, discharges or losses of other substances – and for groundwater, to prevent or limit the input of pollutants.

The WFD Regulations[200] and the Marine Strategy Regulations 2010[78] provide frameworks for monitoring surface water, groundwater and in the marine environment. The Environment Agency's water quality monitoring programmes are further supported by water industry monitoring programmes such as under the water industry national environment programme, the UK Chemical Investigations Programme and, increasingly, the deployment of event duration monitoring for storm overflows.[210] Data for the marine environment also come through reporting commitments under the OSPAR Convention.[211]

The socio-economic costs associated with exposure to harmful chemicals in the UK are significant.[212] It can be difficult to remediate chemical pollution once it is in the environment. Therefore, tackling pollution at source, including through regulatory action, can have economic benefits since it prevents the costs and complexities that arise from remediating environmental and human health impacts.

After the implementation period for the UK's withdrawal from the European Union ended on 31 December 2020, the UK has been in a transitional phase and the government has recently indicated a desire to explore closer alignment on chemicals with the EU. Regulations used to control the use, disposal and emissions of chemicals in the UK are complex and numerous. The governance arrangements to manage such legislation are also complex, with responsibility for policy and operational delivery dispersed across government.

In 2018, the 25 Year Environment Plan committed to publish a new UK Chemicals Strategy.[213] This was reiterated in the EIP23, which committed to publishing a new Chemicals Strategy in 2023 to set out the government's priorities for addressing risks from chemicals, how the UK will use regulation, and how the government can encourage a move to more sustainable use of chemicals.[148]

5.3. Key environmental trends

Although improving, the evidence base on the impact of chemicals and chemical mixtures on the environment and human health is still limited.

Total bank of in-use PCBs remaining in the UK

A decrease in the amount of in-use PCBs has been observed in the short, medium and long term. Since 1990, the amount of PCBs in use in electrical equipment in the UK has declined by 98.5%. Most of this reduction had occurred by the mid-2000s, but since 2017 the total bank of in-use PCBs decreased by 45%.[214]

Emissions of POPs

POPs are toxic organic compounds that adversely affect the environment and human health. They are persistent in the environment, as they are resistant to degradation through chemical, biological and photolytic (absorption of light) processes.[215] The UK has committed to ensuring there are negligible emissions of POPs to the environment.

From 2016 to 2021, emissions of four out of seven POPs to the environment have decreased. While emissions of polychlorinated naphthalene, pentachlorobenzene and hexachlorobenzene have stabilised. Although hexachlorobenzene emissions in 2021 show little or no change from 2016, the trend has positively reversed over that time period, now decreasing after several years of increasing emissions.[216]

Emissions of mercury to air, land and water

From 2016 to 2021, mercury emissions decreased by 13%. At a UK level, crematoria and large industrial sites account for approximately 85% of total mercury emissions. Other emissions come from consumer products, waste and contaminated sites.[216] In 2021, the largest single source of mercury in England was a power plant which has since ended coal-fired generation. After coal-fired power generation, the next biggest sector was crematoria, where progress has been made to reduce emissions.[217]

Mercury does not degrade over time and local concentrations may even increase due to remobilisation from land or sediment. It is difficult, therefore, to accurately estimate how reductions in emissions will be reflected in changes in concentration in the environment, although limiting further inputs by reducing emissions is essential.[218]

UK pesticide load indicator

The UK pesticide load indicator (PLI) is a multi-component indicator, which combines data on the use of different pesticides in UK agriculture with information on their tendency to persist, bioaccumulate, be lost via surface run-off or leaching and/or their relative toxicity to wildlife. The PLI consists of four environmental fate and 16 ecotoxicity metrics (see Methodological Statement). The relative trends are all decreasing, illustrating a reduction in the potential pressure on the environment arising from the use of pesticides.[219] However, this indicator does not quantify harm or reflect environmental outcomes, as it does not calculate exposure or take into account mitigation actions.

State of the water environment

Regarding the achievement of good chemical status under the WFD Regulations, no surface water bodies met the criteria for achieving good chemical status in 2019. This reflects the fact that new assessments for ubiquitous persistent, bio-accumulative and toxic (PBT) chemicals were included for the 2019 chemical classifications, as well as new standards, improved techniques and methods. Groundwater bodies fared better, with 45% meeting the criteria for achieving good chemical status, but still need further improvement.[180]

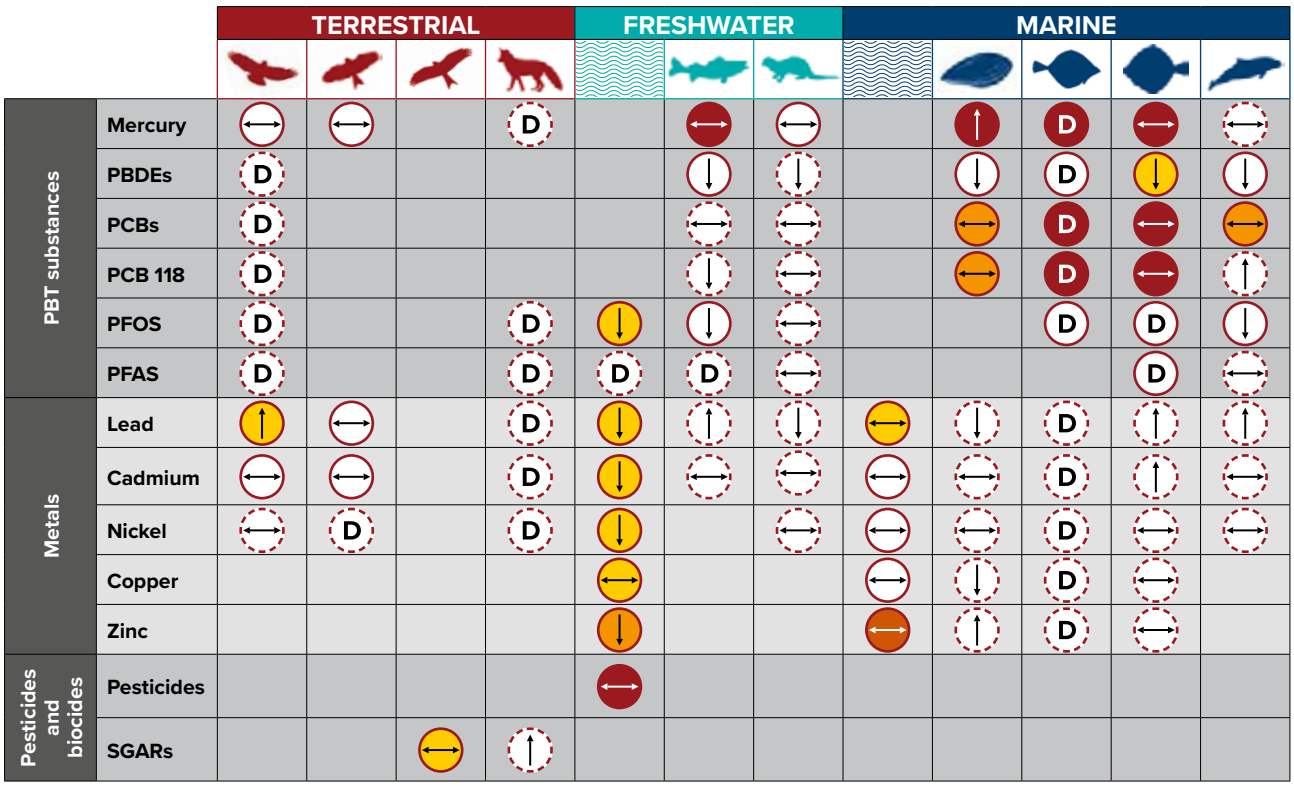
Exposure to and adverse effects of chemicals on wildlife in the environment

The Outcome Indicator Framework 'exposure and adverse effects of chemicals on wildlife in the environment' indicator provides additional information on trends and wildlife exposure to chemicals in the environment. There is a mix of trends across the different chemical groups and terrestrial, freshwater and marine environments, with the majority showing little or no change (Figure 5.1).[220] However, there are still significant data gaps, especially in relation to terrestrial species.

For PBT substances, downward trends for polybrominated diphenyl ethers (PBDEs) and perfluorooctane sulfonate (PFOS) can be observed in freshwater and marine wildlife, except for PFOS in otters, which shows no observed change in concentrations. No overall trends are observed for PCBs as a group. However, for the congener PCB 118, concentrations are decreasing in freshwater fish but increasing in harbour porpoise. The percentage of sites or samples exceeding thresholds is very high for mercury, although this is either not observed or unknown for all top predators included in the indicator.

For metals, trends are varied, with downward trends observed for lead, cadmium, nickel and zinc in freshwater, for lead in otters, and for lead and copper in mussels. However, there are also upward trends in lead concentrations in buzzards, freshwater fish, offshore fish (common dab) and harbour porpoise. The lack of thresholds for the many species included in the indicator means it is often not possible to assess the potential risks that metals pose to wildlife.

Pesticides in freshwater and the biocidal second-generation anticoagulant rodenticides (SGARs) in red kites show no statistically significant changes in concentrations over time. For SGARs in red foxes, a statistically significant upward trend is seen, although data for some years are few, increasing the uncertainty.[189]



Key

Data sources

Buzzard | Sparrowhawk | Red kite | Red fox | Freshwater | Freshwater Fish | Otter | Estuarine/costal waters | Blue mussel | Estuarine/costal fish | Offshore fish (common dab) | Harbour porpoise

Acronyms

PBT: persistent, bioaccumulative and toxic; PBDEs: polybrominated diphenyl ethers; PCBs polychlorinated biphenyis; PFOS: perfluorooctanesulfonic acid; PFAS: per- and polyfluoroalkyl substances; SGARs: second-generation anticoagulant rodenticides

Trends

Increased concentrations | No observed change in concentrations | Decreased concentrations | D Data available; not currently able to assess trends

Only statistically significant trends in environmental concentrations are shown for upward and downward arrows; no arrow indicates minimum requirements for trend assessment are not met. Available year ranges for assessing trends vary and trends are only assessed for data sources with at least 5 full years of changes (6 independent sampling years).

Risk

More than 75% sites/samples above threshold (very high) | 50 to 74% sites/samples above threshold (high) | 25 to 49% sites/samples above threshold (medium) | 1 to 24% sites/samples above threshold (low)

All sites/individuals or population average below threshold (no risk) | No threshold available; not currently able assess risk

Assessment is based on comparison of concentration data for the most-recent year, 2 years of offshore fish and 3 years for PFOS and metals in water.

Notes

1. Data cover up to and including 2022 where available; the exception is data for PBTs and metals in buzzard, sparrowhawk, red fox, otter, and harbour porpoise, and SGARs in red kite, which cover up to the end of 2021.
2. The PCB assessments include PCB 118; results for this substance alone are also given as a representative substance common to all PCB data sets. The PFAS assessment does not include PFOS. The results for PFOS and those for other PFAS are reported separately because PFOS dominates the signal for PFAS in some environmental compartments and data types may follow different trends.

Figure 5.1. Defra Outcome Indicator Framework H4: Exposure and adverse effects of chemicals on wildlife in the environment[220]

A summary assessment of the key trends we assessed is provided in Table 5.2.

Table 5.2. Managing exposure to chemicals and pesticides – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Total bank of in-use polychlorinated biphenyls (PCBs) remaining in the UK		2017–2022
Emissions of Persistent Organic Pollutants		2016–2021
Emissions of mercury to air, land and water		2016–2021
UK Pesticides Load Indicator		N/A
Exposure and adverse effects of chemicals on wildlife in the environment		N/A

5.4. Progress towards ambitions, targets and commitments

The continued effect of the EU exit on UK chemicals regulation is reflected in the level of overall progress within the annual reporting period. A summary assessment of the targets and commitments we assessed progress towards is provided in Table 5.3, with further detail provided below.

The EIP23 committed to publishing a UK Chemicals Strategy in 2023.[148] However, at the time of writing, no strategy has been published. The 2023/2024 UK REACH (Registration, Evaluation, Authorisation and Restriction of Chemicals) work programme was also delayed and only published two months before the end of the financial year.[221]

Our 2022/2023 progress report emphasised the need for the government to work across departments to bring together policy and regulation affecting chemical use and exposure. In April 2023, the first meeting of the cross-government Pharmaceuticals in the Environment Group was formed, enabling discussion and knowledge exchange across human, veterinary, agricultural and non-agricultural sources.[222]

The Health and Safety Executive (HSE) has made good progress over the reporting period. The recent updates to the Great Britain Mandatory Classification List represent a significant effort to update substance classification and labelling and reduce divergence from EU standards by delay.[223] Processing of applications for UK REACH authorisations to use or supply for use substances that are subject to authorisation is also reported to be progressing well.[224]

Progress in tackling chemical pollution at source through regulatory action, including banning or restricting the most harmful chemicals, has been mixed. Although progressing, extensions were again granted for the review of the restriction of lead in ammunition[225] and,

a year after it was identified as a restriction of interest within the regulatory management options analysis, HSE received a request from Defra and are subsequently consulting on a restriction dossier on PFAS in firefighting foams.[226] There has been some progress through other laws, for example, following its adoption as a new POP under the Stockholm Convention, perfluorohexane sulfonic acid, including its salts and related compounds, was prohibited in Great Britain.[227]

Moving towards a zero-waste economy requires consideration of the whole life cycle of chemicals in products. The Office for Product Safety and Standards published an independent research report and a consultation on a new approach to the fire safety of domestic upholstered furniture in August 2023.[228] The Environment Agency carried out targeted risk-based compliance activity that resulted in a significant increase in the destruction of POPs contained within waste such as domestic upholstered furniture.[33] These developments were reflected in the updated POPs multimedia emissions inventory waste tool, which shows a significant increase in 2023 in the tonnes of decabromodiphenyl ether being incinerated.[229]

Although the tool broadly indicates an increase in the amount of POPs being destroyed, it currently only reports on three POPs.[229] Other reported data suggest that emissions of other POPs are stabilising[216] and that products beyond domestic upholstered furniture and waste electrical and electronic equipment require intervention.[229] Therefore, progress in the annual reporting period towards the commitment to substantially increase the amount of POPs material being destroyed or irreversibly transformed by 2030 to ensure negligible emissions to the environment is mixed.

There has been good progress in the annual reporting period in seeking to eliminate the use of PCBs. In March 2024, the Polychlorinated Biphenyls (PCB) Regulations (England and Wales)[230] were amended to provide extra clarity and facilitate the reduction of the UK's total bank of in-use PCBs. The Environment Agency, with the electrical distribution industry, has worked to identify and prioritise high-risk PCB-contaminated equipment. It is crucial to have an accurate and complete inventory of PCB equipment to mitigate contamination risks for food and the environment. Targeted industry campaigns and the interrogation of high voltage customer supply data via the Environment Agency's inventory reduces the risk of equipment 'out of sight' of the regulator.

Actions in the EIP23 to reduce land-based emissions of mercury to air and water by 50% by 2030 focus on removing unabated coal from the energy mix and increasing the uptake of abatement technology in crematoria through the publication of statutory guidance for the sector.[148] The largest single source of mercury was a coal-fired power station. In April 2023, it was announced that power generation from coal at that power station had come to an end.[231] The last operational coal-fired power station closed in September 2024, achieving the government's commitment to remove unabated coal from the UK's energy mix by 2024,[232] well before the 2035 deadline agreed by the Group of Seven (G7) countries.[169] In addition, the review of the crematoria guidance, which was consulted on during the annual reporting period, included an extension to mercury abatement technology (flue gas treatment), which currently operates across around 70% of crematoria, to the rest of the sector within four years once the new guidance is published.[233]

Many key actions proposed within the draft National Action Plan for Sustainable Use of Pesticides[234] to reduce farmers' reliance on pesticides, such as paid actions through nature-friendly farming schemes[235] and provision of increased integrated pest management (IPM)

advice[236] along with development of a pesticide load indicator,[219] have been implemented despite delayed publication of the final plan.

Research has shown farmers need training, support and efficient techniques and tools if good uptake of IPM is to be achieved.[237] Funded by Defra as part of a test and trial project, the free IPM tool developed by ADAS, the National Farmers Union, SRUC and Voluntary Initiative aims to address some of these barriers.[236] Participants in the project overwhelmingly indicated that they would recommend it to other farmers to help plan crop-specific IPM, and the project recorded substantial commitments to increase IPM actions compared to current practices.[238]

In 2023, HSE reported 2.14% of the 2,574 samples of food and drink in Great Britain that were tested contained a residue above the maximum residue level (MRL) set by law. This represents a 33% decrease since 2018.[239] Within the reporting year, there have been 14 published decisions on new MRLs,[240] four completed reviews of MRLs that concluded they should be lowered to the limit of quantification[241] and two decision reports on the adoption of Codex MRLs, (internationally agreed food standards covering pesticide residues in or on food and feed).[242]

To provide the HSE with access to expert advice to review and authorise biopesticides in the UK, a Biopesticide Cloud (Expert Group) was formed in 2023 as part of the UK Expert Committee on Pesticides.[243]

In January 2024, the previous government considered and granted an application for emergency authorisation to use the neonicotinoid pesticide Cruiser SB on sugar beet crops for the fourth year in a row.[244] We have launched an investigation into Defra's emergency authorisation in 2023 and 2024, seeking to determine whether there were serious failures to comply with a number of environmental laws. In particular, the investigation is considering Defra's interpretation and application of the precautionary principle and compliance with its nature conservation obligations when it considers granting emergency authorisations.[245]

Regarding surface water and groundwater bodies, River Basin Management Plans include environmental objectives set under the WFD Regulations to achieve good chemical status for 82% of groundwater bodies by 2027. However, no surface water bodies have environmental objectives to meet good chemical status by 2027 due to the presence of ubiquitous PBTs – instead, the deadline for achieving good chemical status has been extended to 2063 for all surface water bodies.[203]

The concentrations of many hazardous substances in the marine environment have decreased substantially relative to the 1980s and 1990s due to restrictions on their use. Despite this, progress towards OSPAR's aim to move towards the cessation of discharges, emissions and losses of hazardous substances (which it was aiming to do by 2020) has been slow, partly due to their chemical stability, which results in storage in and release from marine sediments.[36,246] Legacy pollution can also be stored in marine mammals, which exhibit elevated levels of banned pollutants, with previously improving trends having recently stalled.

Ubiquitous PBTs illustrate that tackling pollution at source and reducing further emissions can have economic benefits, since it prevents the additional costs and complexities that arise when damage occurs following release to the environment. Based on the period

over which 1kg of PBDE and PFOS may degrade to levels below the Environment Quality Standards, damage costs could be in the order of £20 billion or more for the UK.[212]

Table 5.3. Managing exposure to chemicals and pesticides – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Progress
Substantially increase the amount of persistent organic pollutants (POPs) material being destroyed or irreversibly transformed by 2030, to make sure there are negligible emissions to the environment.	**Mixed**
Seek to eliminate the use of polychlorinated biphenyls (PCBs) by 2025.	**Good**
Reduce land-based emissions of mercury to air and water by 50% by 2030.	**Good**
Reduce the overall risk posed by pesticides and highly hazardous chemicals by at least half in line with Kunming-Montreal Global Biodiversity Framework Target 7.	**Mixed**
Each body of surface water (other than an artificial or heavily modified water body) to achieve or maintain good surface water chemical status by 2063 (extended from 2021) (Water Framework Directive Regulations).	**Limited**

5.5. Prospects of meeting ambitions, targets and commitments

Overall, the government is largely off track to achieve the goal of making sure that chemicals are safely used and managed, and that the levels of harmful chemicals entering the environment (including through agriculture) are significantly reduced, due to a lack of key policies and regulatory frameworks. A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 5.4, with further detail provided below.

Past trends show reductions in the emissions of certain chemicals, especially when linked to commitments under international agreements. However, recent trends indicate that the government is largely off track in achieving the commitment to make sure there are negligible emissions of POPs to the environment. For some POPs, the decline in emissions has slowed down over recent years, as major reductions from industry have been achieved and remaining diffuse sources are harder to control. Diffuse sources include sewage sludge spreading, accidental fires, backyard burning, disposal of ashes from domestic grates and residual emissions from industrial activity.[247]

The prospect of meeting the commitment to reduce land-based emissions of mercury into the air and water in England by 50% is largely on track. This would require the updated crematoria process guidance note (5/12) to be published as soon as possible with the requirement followed that, subject to certain exemptions, all cremators will be fitted with flue gas treatment that includes mercury abatement in time to meet the 2030 target.[233] However, it also relies on there being no increases in mercury emissions from other industry sectors. The energy from waste sector has seen increasing levels of incineration with a corresponding increase in emissions, which have risen by approximately 200kg from 2018 to 2021.[217] The government has the opportunity in the next five years to tackle other large emission sources of mercury to ensure they meet their commitment by the 2030 deadline.

Despite making good progress, delays in scaling up action means that, based on current removal and destruction rates of PCBs, the government is only partially on track to meeting its commitment to eliminate their use by 2025. The PCB modelling tool assumes that 99% of the in-use PCBs from a 1977 baseline have been removed and destroyed or emitted to the environment. It is estimated that it will take around four to five years to fully eliminate the remaining stockpile.[229]

Although there has been progress within the reporting period on actions to reduce the environmental risk posed by pesticides, the prospect of meeting the commitment to reduce the overall risk posed by pesticides and highly hazardous chemicals by at least half in line with Kunming-Montreal Global Biodiversity Framework Target 7 is largely off track.

At the time of writing, initial monitoring and evaluation by Defra indicated that of the four Sustainable Farming Incentive (SFI) IPM standards currently on offer, only half were viewed by farmers as positive. In particular, farmers raised questions and concerns regarding SFI action IPM4, which requires zero application of plant protection products.[248] This inflexibility was raised as a concern for farmers when faced with the realities of risk management – for example, where pesticides must be applied to mitigate against a serious outbreak. Therefore, it is likely that other interventions beyond the current four SFI actions will be required. There has also been no reported progress in other areas related pesticide reduction, such as urban use of pesticides, pesticide regulation reform, or data access and availability.

Despite progress within the government on specific areas, delays and uncertainty have characterised the transition process for chemicals after EU exit. The lack of a UK Chemicals Strategy makes it difficult for delivery partners and stakeholders to understand their roles and enable effective delivery. An approach that does not consider the whole life cycle of chemicals means that actions to target some key drivers and pressures could be missing. For example, a key tool for chemical management is the UK REACH regulatory framework.[249] The government is establishing UK REACH as a stand-alone system setting out how companies will register chemicals that are manufactured in, or imported into, Great Britain. However, the development of UK REACH and progress towards the regulatory management of chemical risks has been too slow. Although three restrictions have now been started, there have been no entries into the Candidate List of Substances of Very High Concern, the Authorisation List (Annex 14 of UK REACH) or Restrictions (Annex 17 of UK REACH) since EU exit. Defra anticipates that much of the HSE's capacity to develop restrictions over the next five years will be devoted to PFAS.[250]

No surface water bodies meet the 'good chemical status' objective. Acting to address environmental harm that has already happened is challenging. The achievement of good chemical status in surface water bodies has been extended to 2063 under the justification 'natural conditions – chemical status recovery time' due to the presence of certain ubiquitous PBT chemicals which will take many years to break down. Defra has described the 2063 deadline as 'a modelling prediction by the Environment Agency on how long it will take for the levels to dissipate under the exemption.' We have not assessed the accuracy of this prediction or the modelling that underpins it but understand that there are currently no practical interventions that can remove these pollutants from the environment.[203]

Table 5.4. Managing exposure to chemicals and pesticides – summary assessment of prospects of meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Prospects
Substantially increase the amount of persistent organic pollutants (POPs) material being destroyed or irreversibly transformed by 2030, to make sure there are negligible emissions to the environment.	**Largely off track**
Seek to eliminate the use of polychlorinated biphenyls (PCBs) by 2025.	**Partially on track**
Reduce land-based emissions of mercury to air and water by 50% by 2030.	**Largely on track**
Reduce the overall risk posed by pesticides and highly hazardous chemicals by at least half in line with Kunming-Montreal Global Biodiversity Framework (GBF) Target 7.	**Largely off track**
Each body of surface water (other than an artificial or heavily modified water body) to achieve or maintain good surface water chemical status by 2063 (extended from 2021) (Water Framework Directive Regulations).	**Largely off track**

5.6 Opportunities for improvement

The UK has the potential to be a global leader in chemicals regulation, building on its strong chemical science skills base and industry. The successful implementation of any coherent and credible UK chemical regulatory system will be crucial to maintaining or increasing levels of environmental protection. The pressures on the current system are clear, and, despite significant recruitment of new staff, resources are strained in dealing with the volume and complexity of work from a system designed for the EU. As a result of this, much of the work undertaken feels reactive in nature.

Protections for health and the environment may deteriorate if regulators cannot prioritise chemicals management holistically. To address this challenge, the whole system of chemicals and their impacts, now and into the future, needs to be considered with a greater focus on management and mitigation. A UK Chemicals Strategy should encompass this holistic view.

A UK Chemicals Strategy should set out how the UK will develop and implement a coherent and credible policy and regulatory framework for chemicals and pesticides, including the UK's approach to and priorities for addressing risks from chemicals. It should set out how the environment principles are reflected in the government's approach to chemicals, such as tackling chemical pollution at source through regulatory action. To do so, the strategy should set out a transparent, integrated and coherent governance framework to improve stakeholder confidence and delivery.

The definition of the precautionary principle set out in the 1992 Rio Declaration,[251] to which the UK government is a signatory, is that where there are threats of serious or irreversible environmental damage, a lack of full scientific certainty shall not be used as a reason for postponing cost-effective measures to prevent environmental degradation. It is particularly important that regulators anticipate and proactively manage longer-term risks, as many potential impacts arise from cumulative exposure to chemicals over a sustained period.

The process for identifying and developing environmental quality standards for substances in the future has not yet been defined. Our water quality stocktake[203] identified significant knowledge gaps for many pollutants in the aquatic environment. These relate to, for example, their sources, the role of sediment sorption (how sediment affects the availability of chemical pollutants in the water column and controls bioavailability to organisms), risks of transformation products, endocrine disrupting properties, environmental and human health risk, the development of standards and the effectiveness of wastewater treatment processes.

Increasing understanding of where chemicals are a key pressure will also enable actions to support delivery of the long-term EA21 target to reverse the decline of species abundance (see Chapter 2). The government should support the expansion of monitoring work to address data gaps in current indicators. These include assessing exposure at different trophic levels in the terrestrial environment. Work such as the National Honey Monitoring Scheme is starting to address this area.[13] The introduction of soil data remains a priority so the entry point to exposure, at least for terrestrial wildlife, becomes better understood.

The government has the opportunity, as well as continuously improving IPM options through ELM schemes, to implement other strategies to continue to reduce the impacts of pesticides on biodiversity. For example, changes have been proposed to both the authorisation process and post-authorisation monitoring.[252] Recent scientific evidence also reported that higher temperatures increased pesticide-induced lethality and behavioural changes emphasizing the need for chemical testing under realistic environmental conditions, especially given rising global temperatures.[253]

Alongside government-funded monitoring programmes, comprehensive and transparent pesticide usage data could contribute to the broader picture of the mobility of pesticides in the environment from source to receptor and their effects. There is also an opportunity to work with farmers and growers equipped to improve the monitoring of beneficial insect levels on farms. Giving farmers the data to optimise the application of pesticides and nutrients, share best practices with neighbours, and increase farm profitability and food security.

Development of a UK Chemicals Strategy also provides an opportunity to move towards more sustainable use of chemicals within a zero-waste economy. A zero-waste economy supports conservation of all resources by means of the responsible production, consumption, reuse and recovery of products, packaging and materials without burning and with no discharges to land, water or air that threaten the environment or human health.[254] In recent years, multiple studies commissioned by UK industry and regulators have identified POPs in a variety of waste materials. The continuing presence of harmful chemicals in products makes the transformation to circularity challenging. Realising the ambition of a zero-waste economy will require coherence between chemicals and waste policies and actions that extend across government (see Chapter 6).

There is opportunity, through good management planning of chemicals at the start of their lives, to reduce costs of waste management, remediation and healthcare in the future. The government should apply the principles of the UN Global Framework on Chemicals, in which the UK played a role in the development, and which was adopted in September 2023.[255] This sets a target (D2) for governments to implement policies by 2035 that encourage production using safer alternatives and sustainable approaches throughout the life cycle, including best available techniques, green procurement and circular economy practices.

In our 2022/2023 progress report we made five recommendations relating to governance, skills, policy development and monitoring. Progress during the reporting period regarding these issues has either been mixed or limited. Therefore, these issues remain relevant and are reflected in the recommendations below.

Managing exposure to chemicals and pesticides recommendation 1: To remain largely on track towards its commitment to reduce land-based emissions of mercury by 50% by 2030, Defra, working with the devolved governments in Scotland, Wales and Northern Ireland, should adopt and publish as soon as possible an updated crematoria process guidance note (5/12) with the requirement that, subject to certain exemptions, all cremators will be fitted with flue gas treatment that includes mercury abatement from 1 January 2027.

Managing exposure to chemicals and pesticides recommendation 2: Defra should improve the prospects of achieving the commitment to reduce the overall risk posed by pesticides by at least half by 2030 by targeting other drivers beyond that in ELM schemes, such as changes to both the authorisation process and post-authorisation monitoring, thus mitigating the current risk associated with high dependency on a few key actions.

Managing exposure to chemicals and pesticides recommendation 3: Defra, working with the members of the UK Chemicals Governance Group, should publish a UK Chemicals Strategy setting out how the UK will develop and implement a coherent and credible UK policy and regulatory framework for chemicals and pesticides. This should balance the need to take a precautionary approach with the flexibility to advance policy alongside scientific innovation and take regulatory action quickly when tackling chemical risks to the UK environment.

Managing exposure to chemicals and pesticides recommendation 4: To understand chemical pathways and exposure in the environment, the government should deliver a transparent terrestrial chemicals and pesticides monitoring programme, including spatial soil or invertebrate data. This should aim to provide evidence of ecosystem impacts, support land managers and allow policy decisions to target the greatest risks and improve environmental outcomes.

Managing exposure to chemicals and pesticides recommendation 5: To meet its priority of working towards a zero-waste economy, the government should consider the whole life cycle of chemicals when designing new policy and regulation, including a circular economy framework. Incorporating safety and sustainability by design across chemicals policy and regulation is a crucial step towards clean material cycles.

Chapter 6: Maximise our resources, minimise our waste

Chapter 6: Maximise our resources, minimise our waste

6.1. Summary assessment

The government has made achieving a zero-waste economy a priority and committed to eliminating avoidable waste and doubling resource productivity by 2050. Reducing waste and dependency on raw materials would benefit the economy, increase resource security and reduce environmental impacts.

Although residual waste generation has stabilised, little progress has been made to apply the waste hierarchy in priority order to minimise waste and increase the reuse and recycling of materials. Progress on waste crime and marine litter has been made, but levels of both remain concerningly high.

The prospect of the government achieving its targets and commitments is largely off track, with the scale and pace of actions failing to align with the challenge. Important actions have been delayed and the additional policies and measures required to deliver in the medium to long term do not yet exist.

The positive focus on delivering the effective regulation of high-risk illegal waste sites should be reflected in other critical areas, such as residual waste and recycling.

The government has an opportunity to deliver a zero-waste economy and contribute to the achievement of environmental and climate commitments and deliver economic benefits by developing and implementing a circular economy framework. This should be built on a comprehensive understanding of environmental pressures created by linear resource use and supported by interim resource productivity targets for material streams that support delivery of the residual waste target.

Table 6.1. Maximise our resources, minimise our waste – summary assessment

Past trends	Following a sustained period of reduction from 2004, resource use is now increasing, but resource productivity continues to improve. Residual waste generation has stabilised, but recycling rates have stalled, and incineration and hazardous waste generation continue to increase. Marine plastic litter and waste crime have improved.	**Trends show a mixed picture**
Progress in the reporting period	The scale and pace of actions does not align with the challenge. While flagship waste management policies have been developed, their introduction has been delayed and they largely focus on end-of-pipe action. There is a lack of action focused on circular economy.	**Limited**
Overall prospects of meeting ambitions, targets and commitments	Application of the waste hierarchy to prioritise waste prevention is largely ineffective. Existing measures for residual waste and recycling are delayed and will only deliver half the progress needed to meet governments EA21 residual waste long-term target. Waste crime has received additional focus, although effective regulation is needed. Increased focus on resources and circular economy would reduce waste generation, support effective regulation and bring economic and environmental benefits.	**Largely off track**
Robustness	There are data gaps regarding material flows and waste, with more robust data available for local authority municipal waste. The assessment has used publicly available information, stakeholder engagement (with the Environment Agency in particular) and expert judgement.	

6.2 Context and commitments

There is an inherent link between consumption of resources, carbon emissions and environmental impacts.[256] Globally, the extraction and processing of resources accounts for 90% of biodiversity loss and water stress and contributes around 50% of all greenhouse gas emissions.[257] In 2021, on average 14.3 tonnes of raw materials,[258] 577 kg of residual waste,[259,260] and 103 kg of hazardous waste was produced per person in England.[261] [260]

In the UK, the waste management sector is important to both climate mitigation and adaptation. It produces 6% of greenhouse gas emissions[262] and operates and maintains significant infrastructure. It also manages over 6 million tonnes of hazardous waste every year,[261] restricting the release of potentially hazardous chemicals.

The waste hierarchy ranks resource and waste management options according to what is generally best for the environment.[263] Top priority is given to waste prevention. This is followed by preparing unavoidable waste for reuse, recycling unavoidable waste (including composting), recovery of residual waste (incineration with energy recovery and backfilling of mineral voids) and finally disposal of residual waste. Residual waste is any waste that originated in England and is treated by one of four treatment methods: sent to landfill in the UK, put through incineration in the UK, used in energy recovery in the UK, or sent outside the UK for energy recovery.

The government's long-term goal is to minimise waste, reuse materials as much as possible, and manage materials at the end of their life to minimise the impact on the environment. The EIP23 restates the 25 Year Environment Plan (25YEP) commitment to eliminate avoidable waste and double resource productivity by 2050 along with other commitments relating to residual waste, eliminating avoidable plastic waste, significantly reducing and, where possible, preventing all kinds of marine plastic pollution, and eliminating waste crime and illegal waste sites. The government has also recently prioritised creating a roadmap to move Britain to a zero-waste economy.[264]

A circular or zero-waste economy can derive greater economic value from materials, support resource security, reduce use of natural resources and contribute to Net Zero.[265] Evidence suggests the economy is becoming more circular and WRAP, a waste and circular economy non-governmental organisation, estimates that further transition could add £82 billion to the UK economy by 2030.[266]

Global Target 16 of the Kunming-Montreal Global Biodiversity Framework (GBF) is 'to enable sustainable consumption choices to reduce waste and over consumption'. The EA21 target (the residual waste long-term target) is that by the end of 31 December 2042, the total mass of residual waste for the calendar year 2042 does not exceed 287kg per head of population in England.

The EA21 target is supported by EA21 interim targets to reduce both the total mass and the total mass per capita of residual waste by 31 January 2028. Further EA21 interim targets for the same date cover municipal waste streams, including residual, food, plastic, paper and card, metal and glass waste. There are further commitments in place to minimise biodegradable and food waste being sent to landfill and to support sector efforts towards achieving Net Zero. The government has not set a legally binding EA21 target for resource efficiency, only for waste reduction.[168]

This EIP23 goal focuses on four areas: the collection and packaging reforms, enabling people to take the right action, reducing use of materials, and tackling waste crime. Headline collection and packaging reform actions include a deposit return scheme for drinks containers, extended producer responsibility for packaging waste, and consistent (simpler) recycling collections for households and businesses.

The Resources and Waste Strategy[267] included many of these policies in 2018 and focused on delivery between 2019 and 2023. However, delivery has been delayed and a revised Resources and Waste Strategy, planned for 2023/2024, is yet to be published. The Resources and Waste Strategy is supported by the Waste Prevention Programme for England,[268] which seeks to develop the circular economy by focusing on certain sectors, and the Waste Management Plan for England,[269] which seeks to bring all waste-related strategies into one reference document.

6.3. Key environmental trends

Resources

The transition to a circular economy, where the value of products, materials and resources is maintained for as long as possible and the generation of waste is minimised, is essential to developing a sustainable, low-carbon, resource-efficient and competitive economy.[270]

A circular material use rate (CMUR)[270] is used to monitor progress towards a circular economy by measuring the share of material recovered and fed back into the economy. It includes flows of materials, including fossil fuels and energy products, but does not include flows of water. The higher the CMUR value, the more secondary materials substitute for primary raw materials, thus reducing the environmental impacts of extracting primary materials.

Research commissioned by the OEP[271] shows that in 2022, England's CMUR, or the proportion of material used that was sourced from recycled rather than virgin materials, was 17% (see Methodological Statement) . This is consistent with similar economies for the same period, including France (19.3%) and Italy (18.7%), and compares with 11.5% for the European Union.[272]

The highest CMUR by main type of material in England was metal ores, with 65% circularity, driven by the often increased cost-effectiveness of recycling metals over mining and processing new ores. The UK also produces more scrap metal than is required for domestic recycling, which, coupled with strong international demand for scrap metal, further incentivises recycling. However, while positive, metal ores represent the smallest material flow when considering total mass consumed (9.5 million tonnes).

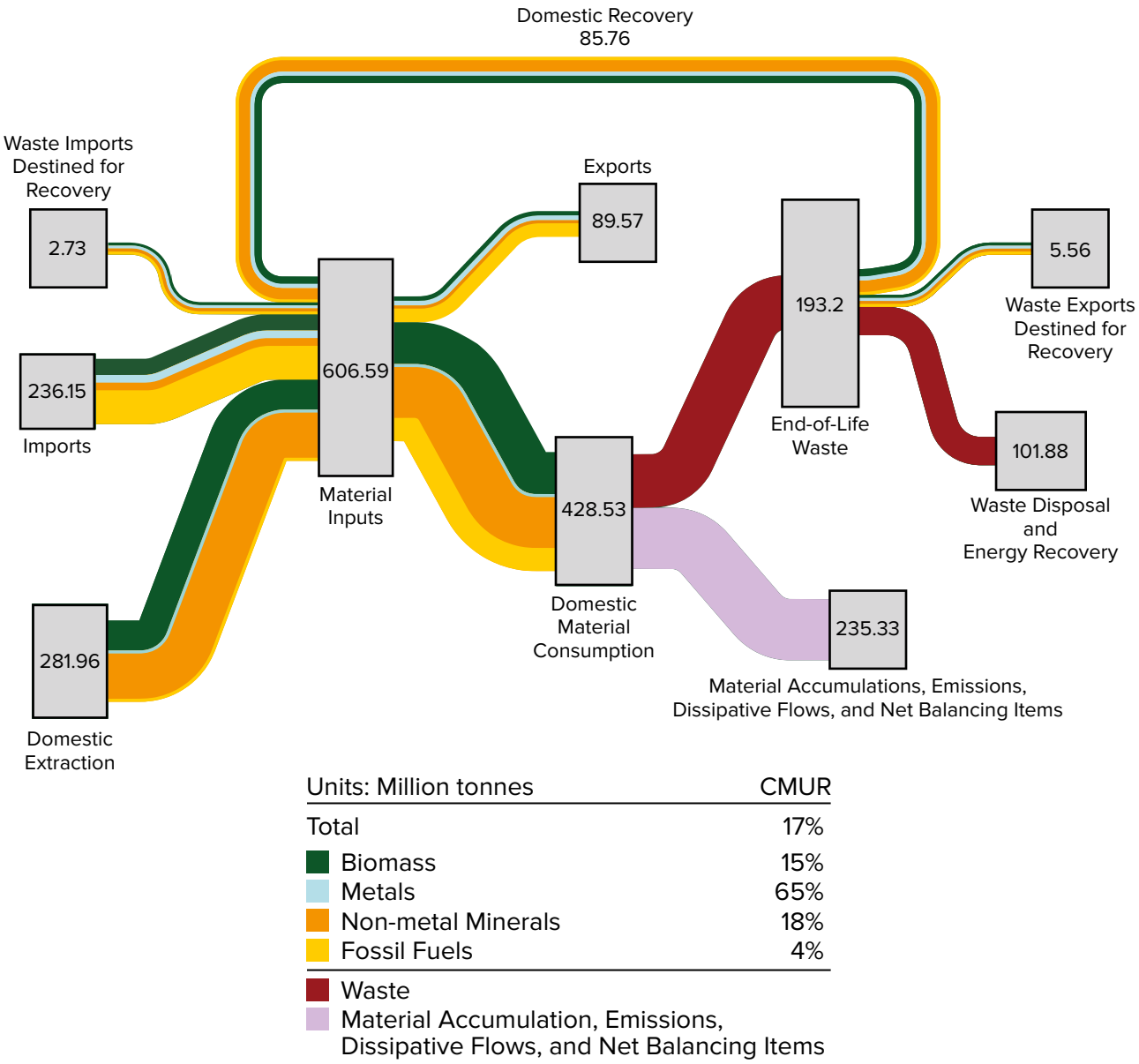


Figure 6.1. Sankey diagram showing material flows in million tonnes/year in 2022 for England

In 2022, domestic material consumption in England was 428.53 million tonnes (Figure 6.1). Non-metallic minerals, which are generally used in construction, represent the greatest proportion of this total at 184.2 million tonnes consumed, of which 18% was sourced from recycled materials. The consumption of biomass was 151.6 million tonnes, of which 15% was sourced from recycled materials. Fossil fuel consumption was 83.3 million tonnes, of which 4% was from recycled materials.

Resource productivity is a measure of how efficiently raw materials are used and indirectly provides an indicator of the extent to which economic output is being decoupled from material consumption. While resource productivity represents a useful measure, it has limitations. Trends in the use of non-metallic minerals can dominate changes in resource productivity, but they may not capture the higher-value materials or those with greater environmental impact.

From 2004 to 2021, average raw material footprint per capita (excluding fossil fuels) decreased by around 25% (Figure 6.2).[273,274] In the shorter term (2016 to 2021) it has increased by 22%. This has primarily been driven by changes in the consumption of non-metallic minerals, which, in 2016, fell to the lowest level recorded by the Outcome Indicator Framework (OIF) (between 2001 and 2021) and represented a 29% decrease when compared with the previous year. Between 2016 and 2021, levels have returned to those seen previously in 2014 and 2015.

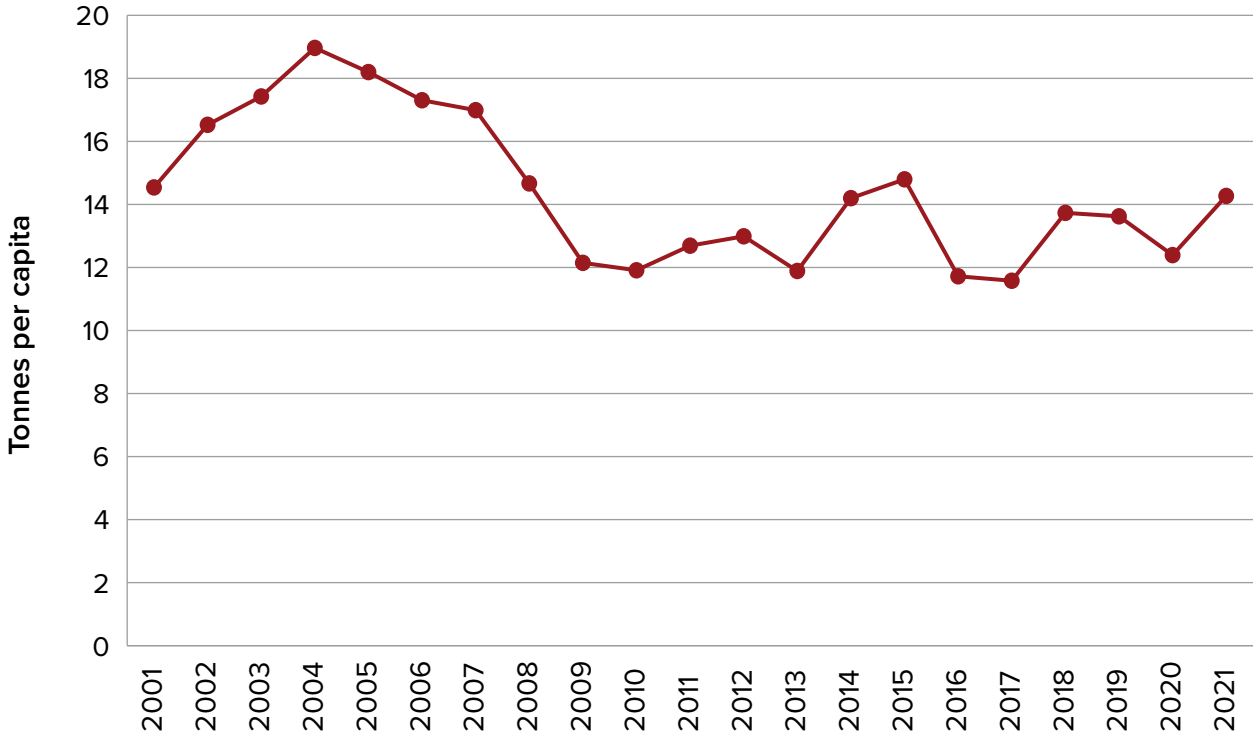


Figure 6.2. Total consumption of raw materials (excluding fossil fuels) in England in tonnes per capita.[273]

Resource productivity in England has improved in both the long term (2001 to 2020) and short term (2015 to 2020). In 2020, England generated approximately 37% more economic value (£/kg) per unit of raw material consumption than in 2001.[273]

Waste management

Residual waste refers to discarded materials, which are disposed of through incineration or landfill or used in energy recovery and lost to the economy.[275] This is inefficient and compounds the environmental and climate impacts of extracting and processing the original raw materials by creating the need for new raw materials for new products.

Since 2019, the amount of residual waste generated in England has shown little or no change (Figure 6.3), reversing a previously increasing trend. Short-term progress has been driven by a reduction in the amount of waste being sent to landfill and a fall in waste being sent outside the UK for energy recovery. However, this fall has been offset by incineration rates in England, which continue to increase.

Although incineration with energy recovery contributes approximately 4% of UK electricity generation,[276] it also contributes to greenhouse gas emissions at rates comparable to those of coal-fired power stations[277] particularly when burning materials such as fossil-derived plastics.

Hazardous waste, which provides a measure of hazardous chemicals that, if released, could pose a risk to health and/or cause environmental pollution, continues to increase. This could be partly associated with the government's progress towards its commitment to destroy or irreversibly transform persistent organic pollutants (POPs) (see Chapter 5) and other chemicals[278] and increased business compliance through greater regulatory attention, such as stopping waste misdescription and illegal waste sites. The Resources and Waste Strategy includes a commitment to consult on further ways to encourage hazardous waste producers to implement the waste hierarchy, but this is still forthcoming.[267]

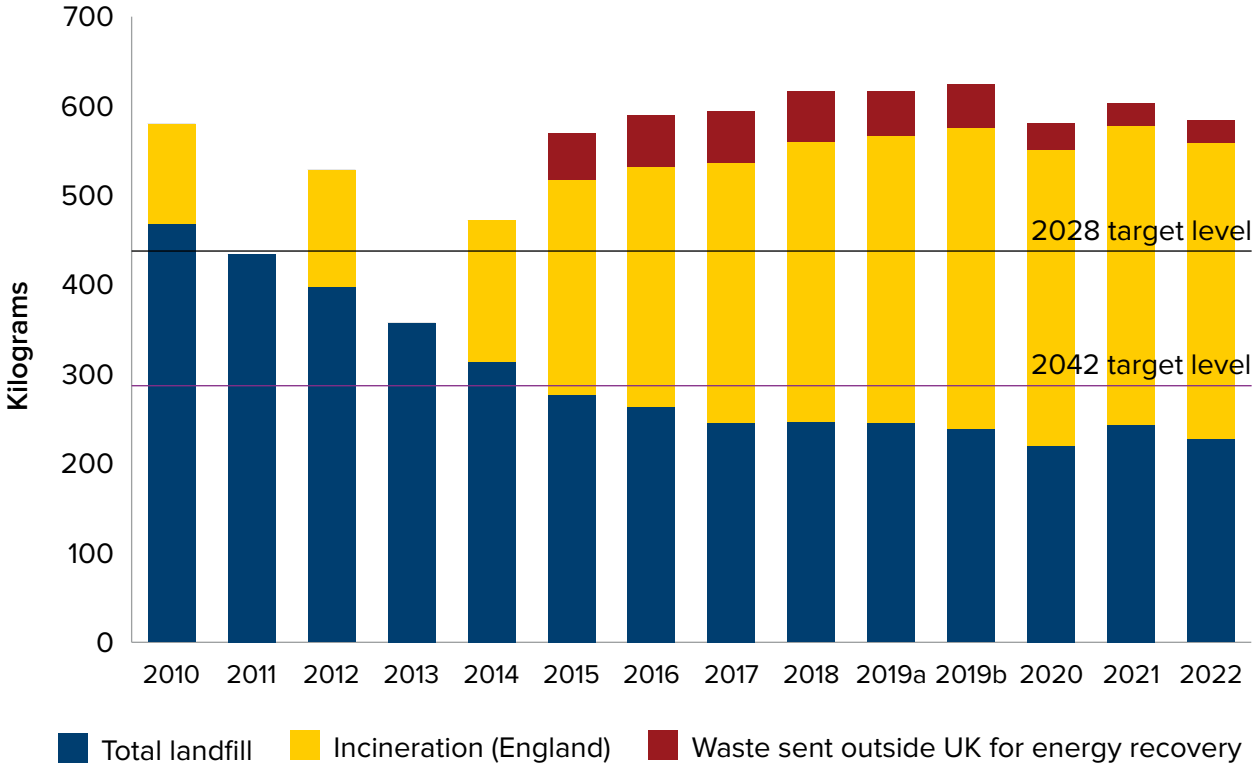


Figure 6.3. Residual waste generated and the proportion landfilled, sent outside the UK for energy recovery and incinerated in England per head of population, 2010 to 2022[259] Target level lines represent the 2028 EA21 interim target and 2042 EA21 long-term targets for residual waste per capita.

Municipal waste streams monitored for the EA21 interim targets for total residual waste and residual food, plastic, paper and card, metal and glass waste all show little or no change since 2019.[279,280] Overall recycling rates also show little or no change during the assessment period (2017/2018 to 2021/2022) or in the medium-term from 2012/2013.[281]

Regarding marine litter, between 2013 and 2017 approximately 53% of fulmars (a species of marine bird known to regularly ingest litter) had more than 0.1g of plastic in their stomachs.[282] From 2018 to 2022 this decreased to 43% – still significantly above the OSPAR threshold of 10%. OSPAR considers the levels found in fulmars to represent the abundance of marine litter, with ingestion being a potential contributing factor to the decline in the species.[282]

Waste crime

Waste crime can cause significant harm to communities, health, wellbeing and the environment.[283] It takes many forms, including fly-tipping, illegal dumping or burning of waste, deliberate misdescription of waste, operation of illegal waste management sites, and illegal waste export. Perpetrators range from individuals to serious and organised crime groups undertaking industrial-scale illegal activity.[284]

While up to one-fifth of all waste produced in England may be illegally managed[285] at a cost of up to £1 billion per year,[284] every £1 invested in tackling waste crime could yield an average of £4.96 back to the economy.[286]

Fly-tipping represents a significant challenge to urban and rural communities. Reported impacts range from visual blight to the disruption or loss of business.[285] Where fly-tipping occurs on private land, it is the responsibility of the landowner to resolve,[287] with sometimes substantial costs to the landowner reported.[288]

The OIF indicator for waste crime reports that, from 2018/2019 to 2022/2023, fly-tipping incidents increased by 13%.[289] However, after exceeding 1.1 million incidents in 2020/2021, the increase appears to have stabilised, with a 5% decrease between 2020/2021 and 2022/2023. While this suggests progress has been made, the overall number remains concerningly high.

Between 2017/2018 and 2022/2023 there has been a decrease in the total number of illegal waste sites and those classified as active high-risk.[289] Particular success has been seen in regulators tackling high-risk illegal waste sites, resulting in an improving downward trend.

A summary of the key trends we assessed is provided in Table 6.2.

Table 6.2. Maximise our resources, minimise our waste – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Resource productivity		2015–2020
Amount of raw material consumed		2016–2021
Residual waste		2019–2022
Percentage of sampled fulmars having more than 0.1g of plastic in their stomach, Greater North Sea ['marine good environmental status' descriptor 'marine litter']		2013–2017 to 2018–2022
Number of illegal waste sites		2017/2018–2022/2023
Number of fly-tipping incidents		2018/2019–2022/2023
Hazardous waste disposal		2017–2022

6.4. Progress towards ambitions, targets and commitments

Resources

The APR 2024 details limited actions in the annual reporting period about resource efficiency, although we welcome the publication of the Waste Prevention Programme for England[268] and its focus on waste arisings and known carbon emissions for seven products.

Other developments include the announcement of a UK centre for circular economy research[290] and consultations for reforming the extended producer responsibility system for Waste Electrical and Electronic Equipment (WEEE)[291] and for modifying the Plastics Packaging Tax[292] to encourage use of chemically recycled plastic.

In our 2022/2023 progress report, we highlighted opportunities for the government to reduce resource use and improve resource productivity.[293] These include the development of a coherent approach that connects resource use, product design, material flows and waste management; updating the Resources and Waste Strategy; and development of an EA21 target that addresses resource efficiency and the associated environmental impacts of consumption, including embodied carbon. However, there has been little or no visible progress on any of these opportunities.

Waste management

The APR 2024 reports that the government has developed measures, including UK-wide bans on a range of polluting single-use plastic items, and has announced a future ban on the supply and sale of wet wipes containing plastic.

On food waste, the APR 2024 reports planned additional funding to councils to support weekly food collections in 2026, and WRAP reports that UK per capita food waste fell between 2007 and 2021. While these are encouraging signs, further action is required. The prevention and reduction of food waste, a key component of the previous government's food strategy, represents a potential quick win for food security, food poverty and waste reduction.[294,294]

The Environment Agency has made further announcements on the ban of disposable vapes and held a consultation on the near-elimination of biodegradable waste to landfill.[295] It has also continued to support effective regulation of waste streams, particularly in the areas of POPs contained in some domestic upholstered furniture (see Chapter 5) and plasterboard waste (Box 6.1).

Box 6.1. Effective regulation: plaster and plasterboard

Plaster and plasterboard are routinely found in construction and demolition waste; plasterboard sheets, small off-cuts and plaster are commonplace in builders' skips.

Effectively preventing plaster and plasterboard from entering landfill is important because the gypsum it contains reacts with biodegradable waste to create hydrogen disulphide gas, which can cause odour and health issues.[296]

Disposal of gypsum-based materials to landfill together with biodegradable waste has been banned since 2009, when an Environment Agency position statement allowing up to 10% sulphate content was withdrawn due to concerns that even low levels may generate hydrogen disulphide.[297]

Although there are initiatives and best practice for the reduction and management of plaster and plasterboard waste,[298] these waste materials can still be challenging to segregate. Unless effective waste segregation procedures are adhered to, gypsum can still enter waste sites in skips and be processed with other construction and demolition waste, thus contaminating 'trommel fines' (materials created by the mechanical treatment of waste, which are generally disposed of to landfill).

Trommel fines are too small for effective recycling and there is no acceptable level of contamination of gypsum in waste. Deliberate generation of trommel fines and misdescription of such waste is a significant issue and is used by waste criminals to evade landfill tax and to misrepresent hazardous waste as non-hazardous waste.[299]

In 2019 the Environment Agency began a three-year campaign to sample trommel fines and audit waste assessment procedures. During the initial campaign, none of the sites audited were able to provide a waste assessment for their trommel fines.

The Environment Agency used the audit results to work with producing sites to reinforce their legal responsibilities and provided a grace period in which to implement waste assessment procedures.

Box 6.1. Effective regulation: plaster and plasterboard (cont.)

By 2022/2023, audits at over 500 sites found 61% had a full or partial waste assessment, indicating some improvement but high levels of non-compliance in the sector remained. This highlights the importance of waste assessment procedures[300] and waste management service providers educating construction sites about being compliant on this issue.

New sample results available for 31 sites showed a large variation in sulphate content of fines between 0.1% and 20.2%. The current zero limit for sulphate content is therefore not practical, considering all fines contain some level of sulphates, and a new threshold for disposal at landfill is under consideration by the Environment Agency to support compliance.

Applying the waste hierarchy in priority order to prevent plaster and plasterboard waste while ensuring effective regulation of waste acceptance are important steps to improving the management of trommel fines. Practical measures to improve waste segregation at the producing site would also deliver further progress.

The government is also taking steps to reduce the flow of litter to the marine environment. During the reporting period, Seafish, a public body supporting the seafood industry, led a government-funded research programme to improve understanding of the UK's fishing gear supply chains, with the aim of reducing discarding at sea, which is challenging due to the cost and complexity of on-land management.[301]

A decrease in plastic litter was observed on beaches in most OSPAR regions (2015 to 2020) and in floating litter in the North Sea (2009 to 2018), despite an increase in plastic production and use over a similar timeframe, which could indicate progress in waste handling. However, marine litter levels remain high and further efforts are needed to address plastic waste.[36,282]

Many waste management measures remain issue specific and do not consider the scale and pace of action necessary to transition to a circular economy. Continued delays to the implementation of the mandatory digital waste tracking scheme and to flagship collection and packaging reforms[302] aimed to support delivery of both its short- and long-term commitments are of significant concern.

Overall, progress has been limited. Little has been done to review and evaluate the effectiveness of current resources and waste policies or to reverse the current stagnation by applying the waste hierarchy in priority order to minimise waste and increase reuse and recycling.

Waste crime

The government continues to make progress with waste crime, although measures remain focused on enforcement. The APR 2024 reports the publication of fly-tipping league tables to increase transparency on the use of financial fines for fly-tipping and regulations laid to ensure councils spend any income from fines on enforcement and clean-up. The government has also increased the maximum fines that councils can issue for littering and fly-tipping.

Other published measures include launching an Economic Crime Unit to address serious financial offences in the waste sector,[303] scrapping the cap on penalties for businesses that commit waste crime[304] and reforms to the waste exemptions regime designed to reduce the risks related to the management of waste outside the formal permitting system.[305]

Overall progress in addressing waste crime is mixed. This is due to the scale and challenge of the underlying issues and limited evidence of measures for supporting green choices and positive behaviours (see Chapter 12). There are still over a million fly-tipping incidents per year[289] and our analysis of waste crime summary data[306] shows that approximately one new high-risk illegal waste site is detected for every two sites stopped.

The scale of the regulatory challenge is illustrated by the Hoads Wood SSSI,[307] which has been used as an illegal waste site requiring over £10 million to remediate.[308] Delays to environmental permitting, which have been recognised by the Environment Agency as affecting progress on regulation of the sector, have further impacted the regulation of waste sites.[309]

A summary assessment of the targets and commitments we assessed progress towards is provided in Table 6.3.

Table 6.3. Maximise our resources, minimise our waste – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

EA21 target	Progress
By the end of 31 December 2042, the total mass of residual waste for the calendar year 2042 does not exceed 287kg per head of population in England (the residual waste long-term target).	**Limited**
Other targets and commitments	
Eliminate avoidable waste by 2050 and double resource productivity by 2050 (25YEP).	**Limited**
Seek to eliminate waste crime and illegal waste sites by 2042, prioritising those of highest risk.	**Mixed**

6.5. Prospects of meeting ambitions, targets and commitments

Limited progress and delays in important policies mean that the prospect of achieving targets and commitments is largely off track. The prospects of meeting the EA21 residual waste target and its commitment to eliminate avoidable waste by 2050 and double resource productivity by 2050 are largely off track. Despite the scale of the issues remaining high, the prospect of meeting the government's waste crime commitments is largely on track.

A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 6.4, with further detail provided below.

Resources

Recent trends in resource use and resource productivity suggested that relative decoupling, that is, a reduction in the amount of resources used per unit of economic activity, has been

occurring.[273,293] However, the latest increase in raw material consumption suggests this trend has reversed in the short term.

Current policy addresses resource use in a limited way. It does not directly incentivise reducing resource use and consumption (other than through VAT) or contribute to resource security,[168,310] and the Resources and Waste Strategy has yet to be updated. The government's circular economy and supply chain policy actions are limited and there are no credible medium and long-term plans. Therefore, the prospects of eliminating avoidable waste and doubling resource productivity are largely off track. In addition, existing policies remain focused on driving waste management up the lower levels of the waste hierarchy, from disposal to marginally better environmental options, such as incineration with energy recovery, rather than applying the waste hierarchy in priority order, starting with waste minimisation then increasing reuse and recycling.[311]

Waste management

Trends in waste management suggest that measures to apply the waste hierarchy in priority order to minimise waste and increase reuse and recycling are largely ineffective. The APR 2024 presents a qualitative assessment of progress towards the EA21 targets and interim targets on residual waste. While the government states that it is too early to identify trends in the data, it notes that it is expected that residual waste arisings will remain at similar levels to 2019 until policies to reduce this waste are introduced.

As set out in the government's detailed evidence report,[310] the primary delivery mechanism for 25% of the 2042 EA21 target and for achievement of the 2028 interim targets are the collection and packaging reforms.

The government has stated that an element of the reforms, the Deposit Return Scheme (DRS) regulations for England, would be laid in Parliament and come into force in early 2025.[312] While such progress is welcome towards delivery of the EA21 target, the scheme will not be delivered until October 2027 and so has little time to influence the 2028 interim targets.[313]

The remaining collection and packaging reforms are also delayed, and so the prospect of meeting the 2028 interim targets is largely off track. In addition, as the current Resources and Waste Strategy runs only to 2024, the lack of subsequent medium to long-term measures to deliver the additional 25% reduction required to meet the EA21 target is concerning.

Significant delays to key reforms have created uncertainty in the waste industry and inhibited the necessary investment.[314] The government has not yet set out the waste infrastructure capacity it expects will be needed to meet its ambitions, which makes informed investment decisions challenging.[315] Decisions are currently made on an individual basis, which, at national scale, results in sub-optimal provision and distribution of infrastructure.[316]

The extension of the UK Emissions Trading Scheme to the waste sector[317] is welcome, but careful consideration of the implications for application of the waste hierarchy and any unintended consequences will be required.[318]

Overall, existing policies are not comprehensive and lack coherence. They focus primarily on lower levels of the waste hierarchy and are designed to address waste that is already produced, rather than to prevent waste and improve resource productivity, as would occur under a circular economy. They do not set out what is needed to achieve waste ambitions over the long term[319] or to achieve Net Zero.[262] The lack of a UK Chemicals Strategy further compounds this issue and has implications for hazardous waste management.

Waste crime

While some actions in the Resources and Waste Strategy relating to waste crime have been completed, many are at the consultation stage.[320] Data gaps exist, with only 24% of waste crime estimated to be reported to the Environment Agency, limiting its ability to identify and assess the full extent of the problem.[285]

Annual national waste crime survey data show that waste crime is still widespread.[285] While the volume of waste thought to be criminally managed remains very high at 18%, this has not increased relative to 2021. However, the survey estimates that a greater percentage of organisations commit waste crime relative to the estimates made in 2021. Issues including misdescription, large-scale fly-tipping, illegal burning and illegal exports of waste are noted to have increased, representing an increasing challenge for regulators and communities.

The formation of a new Economic Crime Unit[303] targeting finances to inhibit the ability of offenders to operate and recoup the proceeds of criminal activity is welcome. Positive progress is being made on effectively regulating high-risk sites and we welcome continued focus in this area. The government's qualitative assessment is that, given present progress, it is currently on track to achieve this ambition.[321]

Regarding fly-tipping, the scale of the challenge is significant. More progress is needed on the government's Litter Strategy for England commitments[322] and this should be scaled up to cover wider waste crime, such as fly-tipping. Promoting green behaviours[323] offers opportunities to enhance the effectiveness of current policies.

Table 6.4. Maximise our resources, minimise our waste – summary assessment of prospects of meeting targets and other commitments

EA21 target	Prospects
By the end of 31 December 2042, the total mass of residual waste for the calendar year 2042 does not exceed 287kg per head of population in England (the residual waste long-term target).	**Largely off track**
Other targets and commitments	
Eliminate avoidable waste by 2050 and double resource productivity by 2050 (25YEP).	**Largely off track**
Seek to eliminate waste crime and illegal waste sites by 2042, prioritising those of highest risk.	**Largely on track**

6.6 Opportunities for improvement

Resources and waste are still treated as separate issues and the linear use of resources continues to generate waste, create environmental impacts, affect communities and contribute to early loss of valuable materials from the economy. Our analysis shows that, in

2022, the proportion of material used in England sourced from recycled materials was 17%. The remaining materials were sourced from virgin materials that are often imported.

The government has the opportunity to deliver a circular economy framework that incentivises circular resource use and harnesses support of business and the third sector to deliver the goal of a zero-waste economy. A framework could contribute to delivery of the government's waste and resources commitments and other EIP23 goals, including those relating to chemicals. It would also offer economic opportunity for substantial net material savings, reduced exposure to price volatility, increased job creation[324] and has potential to increase GDP by nearly £25 billion by 2035.[325]

The transition to a circular economy can be monitored using resource productivity and the circular material use rate as overall measures of the direction of change. The government also has an opportunity to drive progress to a circular economy and delivery of the EA21 residual waste target by setting interim targets for biomass, metal ores, non-metallic minerals and fossil fuel usages as well as for enabling actions such as green public procurement.[168] The interim targets should be ambitious and be supported by delivery plans. This will provide clarity and certainty to authorities and businesses as they transition and invest in long-term change in the way they deliver services and do business.[314]

While strategic change is required to drive the transition to a circular economy, there are opportunities for sector-specific measures as well as those focused on supply chains and critical raw materials. Systems thinking should be used to identify the incentives and policy actions required to maximise circularity in these areas, to work coherently to deliver multi-benefits across sectors and at multiple levels, and to prevent regulation acting as a disincentive and avoid unintended consequences.[326,327,324]

Opportunities to deliver short- and medium-term benefits also exist. Further action on biodegradable waste,[328] waste prevention,[319] plastics,[329] chemical recycling,[330] batteries[331] and electronic waste[332] (see Box 6.2) would support the transition to a circular economy while supporting government's residual waste and wider environmental commitments.

Regarding waste management, we welcome the government's confirmation that the DRS regulations for England would be laid in Parliament and come into force in early 2025.[312] However, acceleration in the delivery of the remaining collection and packaging reforms offers further opportunity to achieve 25% of the 50% improvement required to meet the EA21 residual waste long-term target as set out in the government's detailed evidence report.[310] While the broader application of extended producer responsibility to WEEE waste is welcome, this approach could also usefully be applied to other sectors, products and materials, including critical raw materials.

Box 6.2. E-waste opportunities

The growth in the manufacturing of high-tech products, such as mobile phones, has greatly increased the demand for some strategic and rare minerals.[333] The UK imports nearly 100% of each of the 24 materials considered to be economically and strategically important and for which there are supply chain risks.[334]

Mining has been assessed to be responsible for around 7% of annual forest loss in developing countries and contributes to air pollution, water pollution and biodiversity loss. It also contributes to 10% of annual greenhouse gas emissions.[335]

Box 6.2. E-waste opportunities (cont.)

E-waste is now the fastest-growing waste stream.[336] In 2020, the UK generated the second-highest amount of E-waste per person in the world at 24.9kg, exceeding the European average (already the world's highest continental average) of 16.2kg.[336]

Research suggests there is 23,000 tonnes of copper contained in old electrical items, which could supply a large proportion of the UK's demand in new consumer products.[337]

Defra reports that the UK has significantly lower collection and recycling rates for e-waste than other countries in the European region. Estimates suggest that only 12% of UK electronics are reused and more than 55% are not collected for recycling, with one-third being disposed of.[332]

There is opportunity to improve the monitoring and evaluation of e-waste and to deliver additional measures to improve reuse and recycling. Taking a materials-based policy focus (including for copper and lithium) in addition to those for specific products and improving End of Waste criteria would support further transition to a circular economy for e-waste.[338]

A circular economy for e-waste can deliver multiple benefits across the EIP23, including minimising waste and waste crime, exposure to chemicals and improved resource use. It would also support progress towards a zero-waste economy and Net Zero and offer economic and resource security by reducing the UK's reliance on international supply chains.[332]

The government can further support effective waste regulation and reduce waste crime. Delivering digital waste tracking with a monitoring and evaluation framework to drive effective policy responses[339] should be supported by measures to ensure duty of care regulation is applied in the chain of custody. This would reduce opportunity for waste crime and ensure the right waste is treated or disposed of in the right location. Development of additional, effective campaigns, such as that for plasterboard, and cross-agency working, such as the Joint Unit for Waste Crime,[283] would provide further opportunities to accelerate progress and improve compliance.

Data and reporting are key gaps. Robust, detailed and comprehensive data enable targeted, science-based policy to deliver government ambitions.[326] Waste reporting requirements are currently focused on local authorities, who manage only a limited portion of total waste produced, and operators of sites with environmental permits. There is limited data on other major waste streams, including soils and chemicals. Regarding the transition to a circular economy framework, data on material streams, products, sectors, economic performance and associated environmental impacts are lacking[319] and new data will be required to target and monitor action and evaluate progress.

A focus on behaviour and green choices could support and complement policy measures and effective regulation by having a positive impact on littering, waste crime and recycling. Estimates suggest that as many as 42% of householders find recycling confusing, and eight in ten households are still failing to recycle items like cardboard, plastic and food packaging.[340] This problem was to be addressed through the simpler recycling scheme[341] which is yet to be delivered, plus a focus on action to develop effective systems for space-constrained homes such as flats in urban areas.

Recent work in Scotland has identified a lack of understanding about the impact of littering, along with the sense that it is someone else's responsibility, as among the underlying causes of littering.[342] An updated Litter Strategy for England,[343] scaled up to cover waste crime and developed coherently with other circular economy policies, could help to maximise behavioural, regulatory and macro-economic benefits across the government's resources and waste commitments.

In our 2022/2023 progress report we made four recommendations relating to targets, policy development and behaviour change. Progress during the reporting period regarding these issues has been limited. Therefore, these issues remain relevant and are reflected in the recommendations below.

Maximise our resources, minimise our waste recommendation 1: Defra should, in transitioning to a circular economy, implement the delayed digital waste tracking scheme and collection and packaging reforms along with further supporting measures, including waste minimisation, reducing the use of hazardous chemicals and promoting green choices. These measures should be designed to deliver the EA21 target on residual waste, ensure the waste hierarchy is applied in priority order for materials and wastes throughout their life cycles, increase innovation and investment, support delivery of effective and proportionate waste regulation, and drive further progress with tackling waste crime.

Maximise our resources, minimise our waste recommendation 2: Defra should accelerate progress to a zero-waste economy by developing a circular economy strategy that addresses barriers to and incentivises circular material use. This should be supported by including in a revised EIP material-specific interim targets that are consistent with the overall trajectory of environmental improvement required to meet the EA21 residual waste long-term target and steps that support delivery of that target and of the transition to a circular economy. Defra should implement actions identified in a circular economy strategy that provide the greatest opportunities to develop circular material use and minimise waste and environmental pressures in priority sectors and material flows.

Chapter 7: Using resources from nature sustainably

Chapter 7: Using resources from nature sustainably

7.1. Summary assessment

Natural resources are the basis on which the economy and society are built. Using natural resources, such as timber, fish and food, in a sustainable and efficient manner is essential to achieving the government's priority of ensuring that nature recovery and also underpins its wider objective of economic growth.

Unsustainable resource use is a driver of climate change, biodiversity loss, soil degradation, deforestation and waste. While aspects of resource use are becoming more sustainable, environmental impacts are too high and data gaps remain.

Progress on sustainable supply chains, timber, fisheries and a nature-positive food system is limited. While measures to improve soil health have been implemented, a regulatory framework designed to complement voluntary farming schemes and based on a clear definition of sustainable soil management should be developed.

The government has clear opportunities to improve outcomes on specific resources, such as timber, fish and soils. Supply chains can be made more sustainable by fulfilling Environment Act commitments on forest risk commodities and using green public procurement to benefit delivery of the government's environmental priorities.

Demand for natural resources is growing, so taking a systems approach to deliver coherent policy, which reconciles competing demands for land and sea, is essential. Delivering sustainable resource use – by including timber and biomass within a circular economy framework, and fisheries and soils in the context of the food system – would contribute to wider environmental improvements.

Table 7.1. Using resources from nature sustainably – summary assessment

Past trends	The percentage of fish and shellfish stocks harvested sustainably is improving but the status of many stocks remains unknown. While deforestation associated with UK consumption has decreased, water scarcity and biodiversity impacts have increased. The percentage of sustainably managed woodland in England has decreased and knowledge on soil health remains a significant gap.	**Trends show a mixed picture**
Progress in the reporting period	Progress towards tackling illegal deforestation in supply chains and increasing the sustainability of fisheries has been limited. While the expansion of tree planting to environmental land management (ELM) schemes is welcome, progress on agroforestry is limited. The uptake of measures intended to benefit soil health in ELM schemes is promising, but there is insufficient evidence of positive outcomes.	**Limited**
Overall prospects of meeting ambitions, targets and commitments	The government is largely off track to meet commitments on more sustainable supply chains, establishing a sustainable and long-term UK timber supply, and sustainable exploitation and recovery of fish and shellfish stocks. There is uncertainty around delivering sustainable soils due to the lack of an available soil health indicator and effective regulation that complements ELM schemes.	**Largely off track**
Robustness	The assessment has used sources of publicly available information, stakeholder engagement (with the Forestry Commission in particular) and expert judgement. Key data gaps remain around soil health, sustainable fisheries and the environmental impacts of supply chains.	

7.2. Context and commitments

Natural resources are central to supporting food production and delivering the goods and services we rely on for health and wellbeing, but their consumption is depleting the natural environment. This EIP23 goal seeks to protect and enhance natural capital, the value of which, in England, was calculated as £1.4 trillion in 2022.[9]

Using resources efficiently while minimising environmental impacts offers opportunities across EIP23 goal areas and the government's priority actions. These opportunities include getting nature-friendly farming right, managing competing demands for use of land and sea, speeding up action in the marine environment and developing a circular economy framework.

Climate change impacts the sustainability and supply of resources through extreme weather events and the spread of invasive non-native species (see Chapter 10). In addition, competing demands for land and marine space significantly contribute to environmental pressures (see Chapter 2), as well as other pressures such as urbanisation, consumption patterns and the globalisation of trade, all of which affect resources.

The EIP23 acknowledges the importance of using resources efficiently and emphasises the need to scale up actions to protect and enhance resources for future generations.[148] Resource consumption has far-reaching impacts beyond national borders, meaning that international trade and supply chains are pivotal in mitigating global deforestation and land degradation.

The EIP23 aims include maintaining a sustainable, long-term UK timber supply while also tackling illegal deforestation in international supply chains. Measures to achieve this include the 2050 target for woodland and trees outside woodland (an EA21 target), which is that by the end of 31 December 2050 at least 16.5% of all land in England is covered by woodland and trees outside woodland.[344] Other actions include improving woodland management for sustainable timber production, building the capacity of the forestry sector and implementing due diligence legislation for forest risk commodities. These are intended to contribute to more sustainable supply chains and the commitment to halt and reverse forest loss and land degradation globally by 2030.

The government has committed to speeding up action on the marine environment. The EIP23 commits to ensuring that all fish stocks are recovered to and maintained at levels capable of producing their maximum sustainable yield. This is in addition to the requirement in the Marine Strategy Regulations 2010 on the Secretary of State (among others) to take necessary measures to achieve good environmental status (GES) of marine waters by 31 December 2020.[78] One descriptor used to determine the achievement of GES is that populations of all commercially exploited fish and shellfish are within safe biological limits. Measures intended to achieve this include Fisheries Management Plans (FMPs), designed to reduce ecosystem impacts and deliver recovery of fish stocks, and tackling illegal, unregulated and unregistered fishing.

An important aspect of the government's commitment to get nature-friendly farming right is ensuring that soils are healthy and sustainably managed. While the 25 Year Environment Plan (25YEP) contained a commitment that, by 2030, all of England's soils would be sustainably managed,[213] this was not retained in the EIP23, which commits to bringing at least 40% of England's agricultural soil into sustainable management by 2028 and increasing this to 60% by 2030 through new farming schemes. The government also

committed to publishing a baseline map of soil health for England by 2028 to establish the baseline data needed for monitoring soil health. The Outcome Indicator Framework (OIF)[345] indicator for soil health[346] remains the only unpopulated indicator in the government's framework, but encouraging progress is being made through the Natural Capital Ecosystem Assessment (NCEA) programme.[347]

The government has committed to boosting food security and the EIP23 recognises that food security is dependent on a healthy and sustainable natural environment. It echoes the previous government's Food Strategy objective to deliver a sustainable, nature positive, affordable food system. In 2020, the UK imported 46% of its food, valued at £48 billion.[348]

7.3. Key environmental trends

Sustainable supply chains

From 2016 to 2021, the global impact of UK consumption on deforestation associated with crop, cattle-related and timber commodities decreased by 13%. However, other indicators show a 28% increase in water scarcity and 14% increase in biodiversity loss between 2016 and 2021.[349]

Sustainable timber

In 2021, UK consumption was responsible for an estimated 30,656 hectares of agriculture-driven deforestation worldwide. While this represents a 49.6% reduction from 2005, the rate of improvement has slowed since 2013. The estimated CO_2 emissions associated with deforestation increased by 20.3% between 2016 and 2021.[350]

The total calculated natural capital value of England's forests increased by £867 million between 2013/2014 and 2022/2023. In 2022/2023, it was estimated at £63.4 billion, of which £17.4 billion was due to carbon sequestration, £24.2 billion to recreation and public access, £1.2 billion to mitigating flooding and £1.3 billion to benefits to air quality.[351]

The OIF has two indicators that provide information on English timber resources. From 2019 to 2024, the percentage of woodland in England that is sustainably managed decreased by 2 percentage points to 57% (Figure 7.1), largely due to long-duration grant schemes ending during the period. From 2017 to 2022, the percentage of the annual growth of trees in English woodlands that is harvested also decreased.

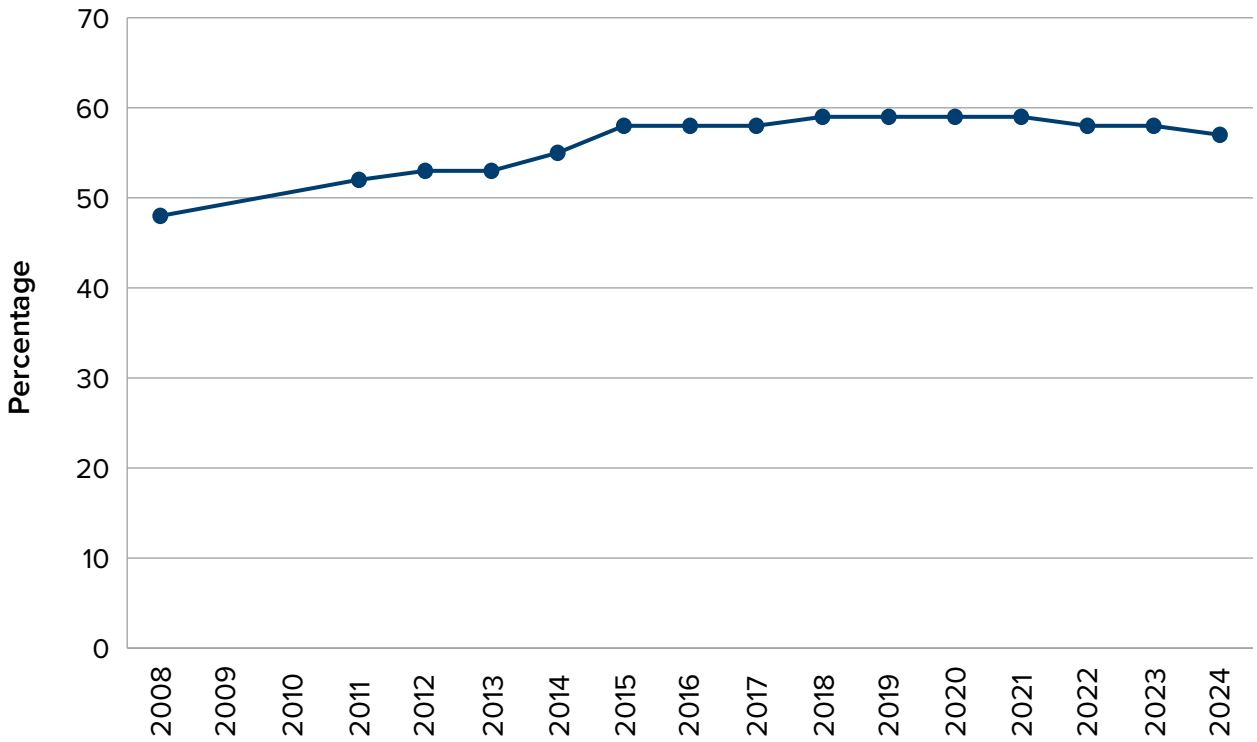


Figure 7.1. Proportion of woodland in England that is sustainably managed, from 2008 to 2024.[42]

Sustainable fisheries

The percentage of fish and shellfish stocks harvested sustainably is an indicator of fishing pressure on 57 species. No data for either the OIF[352] or the related England biodiversity indicator[353] have been updated during this reporting period. Data available for 2020 show an improving trend for fish and shellfish stocks being harvested sustainably.[353] However, 21% of stocks were assessed to be at levels where fishing pressure was above the acceptable mortality range, with little or no change in those stocks with unknown status, a figure that remains concerningly high at 23%.

Sustainable soils

Healthy soils are fundamental to terrestrial habitats and play a vital role in supporting agriculture and food security, in addition to other functions, such as reducing flood risk and sequestering carbon. Most soils form through slow, long-term natural processes. They should be regarded as a non-renewable resource[354] and consequently be afforded the same status as air and water.[355]

Current soil regulations contain significant gaps, both within agriculture and, particularly, outside it. Historically, regulations have seen soil as a medium and vector for the pollution of other natural assets,[355] as is the case with contaminated land legislation, which addresses specific environmental and human health impacts of contaminated soils.[356] A wide array of soil health aspects are not therefore protected,[355] including reducing the threat of soil loss, compaction or erosion.[357]

Pressure from agriculture, climate change, pollution and land-use change all contribute to soil degradation, which in England and Wales costs approximately £1.2 billion a year.[358] However, it is estimated that 10 times the amount of soil lost to erosion is disposed of to landfill.[359]

The OIF indicator for soil health is the last indicator in the government's framework without data. The government reports that further development work is needed before a soil health indicator can be included.[346,347] Application of the indicator and monitoring data to inform effective evaluation and policy response will be key to ensuring that soils are sustainably managed.

A summary assessment of the key trends we assessed is provided in Table 7.2.

Table 7.2. Using resources from nature sustainably – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Percentage of woodland that is sustainably managed		2019–2024
Fish stocks that are sustainably harvested [marine good environmental status descriptor 'commercial fish']		2015–2020
Soil health		N/A
Global environmental impacts of UK consumption of key commodities		2016–2021

7.4. Progress towards ambitions, targets and commitments

Sustainable supply chains

The commitment to halt and reverse forest loss and land degradation globally by 2030 was agreed at COP26. Global timber demand is predicted to quadruple by 2050, creating challenges for sustainable timber production. In 2021, the UK imported 81% of all timber,[360] and Forest Research, the research agency of the Forestry Commission, estimates that domestic softwood availability will peak between 2037 and 2041.[361] Pests and diseases are further predicted to reduce supplies and create price rises.[362]

The APR 2024 states that the UK and Indonesia convened the Forest, Agriculture and Commodity Trade (FACT) Dialogue to discuss the sustainability of supply chains for agricultural commodities associated with deforestation.

Other published measures include the provision in the Financial Services and Markets Act 2023, which requires the Treasury to carry out a review to assess the extent to which regulation of the UK financial system is adequate for the purpose of eliminating the financing of the use of prohibited forest risk commodities.[363]

In our 2022/2023 progress report, we recommended that the government publish the list of commodities covered by the scheme for due diligence on forest risk commodities and the secondary legislation needed for implementation. The previous government published the list, but did not progress secondary legislation prior to the general election.[364]

Sustainable timber

The EIP23 acknowledges that, in addition to carbon sequestration and nature recovery, tree planting will play an important role in the green economy in England. It recognises that developments in planting rates, nursery capacity, and capacity building through skills and technical knowledge will be required.

The rate of tree planting is critical to achieving government commitments towards both sustainable timber and the area of woodland in England. The APR 2024 notes that there is a current slow rate of expansion in tree planting (see Chapter 2).[33] For tree planting in England to contribute to sustainable timber, a proportion of the trees planted must be of timber value and therefore primarily conifers. While providing fewer opportunities to enhance biodiversity than those woodlands with a diversity of forest structure and tree species,[365] planting for timber is important for resource security and forms part of a range of planting that delivers benefits across the EIP.

The APR 2024 reports several actions in the annual reporting period, including forestry training and apprenticeships, the opening of two new grant rounds for domestic seed sourcing and tree production, and funding for the Woods into Management Forestry Innovation Funds and the Tree Production Innovation Fund. Other reported actions include publication of the Timber in Construction Roadmap,[366] which aims for better use of timber in buildings while stimulating tree planting rates, and the Forestry Commission's new approach to forestry applications to improve efficiency.[367]

Some tree planting measures will be delivered through new farming schemes. The government has announced the introduction of new agroforestry offers through the Countryside Stewardship and Sustainable Farming Incentive schemes.[368] It is important that the government monitor the uptake and effectiveness of these incentives to ensure that progress towards its tree planting and agroforestry commitments are accelerated as intended.

Sustainable fisheries

Sustainable management of fisheries is important for the continued supply of fish stocks and the communities that fisheries support, and it has a direct influence on the goals of the UK Marine Strategy (UKMS). In addition, as noted above, one descriptor used to determine the achievement of GES in marine waters is whether populations of all commercially exploited fish and shellfish are within safe biological limits.[369]

Overfishing remains a significant pressure. Among the top 10 fish stocks that dominate landings by vessels, five are either overfished or their stock biomass is at critical levels, while the remaining five are sustainably exploited and fished.[370] FMPs are designed to set out the policies and actions to secure the long-term sustainability of UK fish stocks.

The first five 'frontrunner' FMPs were also published in the reporting period, as committed to in the EIP23. FMPs are action plans to deliver sustainable fisheries and therefore offer a viable solution to mitigate pressures from commercial fishing. There remain a further 31

FMPs across UK waters that are due to be published by the end of 2024.[82] While five new draft FMP consultations were published by government in October 2024,[371] it is unlikely that the remaining 26 will be delivered on time.

To protect the marine environment, FMPs must follow expert guidance and be aligned with the eight objectives of the Fisheries Act 2020.[372] Our analysis indicates that some objectives were completely missing from the five published FMPs and the desired actions were often poorly defined without specific milestones and timelines.

Other published measures include annual negotiations for fishing opportunities for total allowable catches with maximum sustainable yield advice which have increased from 47% in 2021 to 52% in 2024,[373,374] and new byelaws introduced to prohibit the use of bottom-towed gear in specific areas of 13 English offshore Marine Protected Areas (MPAs) designated for reef and rocky habitats. A permanent closure was also implemented on sand eel fishing grounds in English waters of the North Sea, many of which overlap with MPAs.[375,376,377]

While three recommended Highly Protected Marine Areas (HPMAs)[52] were established in English waters, two HMPA's were not designated by government due to an assessed high level of dependency with local industry,[378] and Defra also reported the launch of an environmental science network to gather data and research the environmental impacts of deep-sea mining.[379]

These actions mark positive steps in the protection and recovery of the marine environment from damaging activity, such as the physical disturbance caused by bottom trawling. They will contribute towards achievement of the EA21 target for the condition of protected features in relevant MPAs and to the 30 by 30 commitments, as well as GES in marine waters, since MPAs cover almost 40% of English waters.[380]

Revision of the UKMS Part Three (programme of measures), which was due in 2021 but has not yet been published, offers an opportunity to provide a detailed and clear plan for ensuring that fish stocks are exploited sustainably. It will also contribute to the achievement of GES in marine waters and the protection of the wider marine ecosystem that supports these stocks.

Sustainable soils

It is not possible to assess progress regarding soil health without a developed indicator or definition of what sustainable management entails.[381]

Farming incentive schemes are government's preferred approach to implementing sustainable soil management. The APR 2024 reports that, as of 1 April 2023, there were 13,900 live Sustainable Farming Incentive agreements and 35,100 live Countryside Stewardship and Environmental Stewardship agreements.

It is not possible to quantify the overall benefit to soil health as a result of these schemes. Our analysis indicates that, of 741 actions assessed for soil health and conservation in these agreements, only 56 (7.6%) are beneficial for creating and maintaining healthy soils.[195] Among these, 37.5% relate to restoration, management, enhancement and protection, while 3.6% focus on monitoring and measurement, which is essential for assessing benefits and improvements.

Regarding chemical impacts on soils, actions to reduce farmers' reliance on pesticides, provision of integrated pest management advice and development of a pesticide load indicator have been implemented (see Chapter 5).

The APR 2024 reports several activities relating to the protection of lowland peatlands. These include the publication of the government's response to the Lowland Agricultural Peat Task Force Chair's Report.[382] In this document, the previous government agreed to take action on all recommendations and funding to improve lowland peat soils across the north of England and for the Lowland Peat Research and Development Programme.

In our 2022/2023 progress report,[293] we recommended that the government accelerate actions to enable assessment of whether soils are being managed sustainably. These actions should include defining sustainable management, developing indicators and evaluating current regulatory and governance frameworks to support policy development and implementation. There has been limited progress in this area, with reported actions focusing on implementation of farming schemes.

Sustainable food system

The previous government's Food Strategy aims to reduce greenhouse gas emissions and the environmental impacts of the food system, in line with Net Zero commitments and biodiversity targets, and to prepare for the risks arising from climate change.[383]

Actions in the APR 2024 that contribute to achieving a more sustainable food system include the uptake of farming incentives that promote nature-friendly farming, funding for innovation in nutrient management and an update to the Agricultural Transition Plan to produce food while preserving nature.

The government has also commissioned research to improve estimates of the amount of food waste in municipal residual waste and announced capital funding for the introduction of mandatory food waste collections by local authorities. In addition, they have published the Food Data Transparency Partnership paper on the methodology for data in the food supply chain.[384]

At COP28, the UK endorsed the UAE Declaration on Sustainable Agriculture, Resilient Food Systems, and Climate Action.[385] The declaration recognises the impact of climate change on agriculture and food systems, and the need for resilient food systems and food security. It also reaffirms commitments to a number of measures, including the Kunming-Montreal Global Biodiversity Framework.

Overall progress in the annual reporting period towards sustainable use of natural resources has been limited. Important policy gaps remain, especially in relation to timber and soils.

Table 7.3 provides a summary assessment of the targets and commitments we have assessed.

Table 7.3. Using resources from nature sustainably – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Progress
Halt and reverse forest loss and land degradation globally by 2030.	**Mixed**
All fish stocks are recovered to and maintained at levels that can produce their maximum sustainable yield.	**Limited**
Take the necessary measures to achieve or maintain good environmental status of marine waters within the marine strategy area (deadline passed on 31 December 2020) – specifically the descriptor that populations of all commercially exploited fish and shellfish are within safe biological limits (Marine Strategy Regulations 2010 and Marine Strategy).	**Limited**
Bring at least 40% of England's agricultural soil into sustainable management by 2028 and increase this to 60% by 2030.	**Not assessed**

7.5. Prospects of meeting ambitions, targets and commitments

The prospects of the government achieving its commitment to use resources from nature, such as timber, fish and food, more sustainably and efficiently is largely off track. A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 7.4, with further detail provided below.

Sustainable timber

The government has published its list specifying the forest risk commodities to which the EA21 prohibition on regulated persons using illegally produced commodities in their UK activities applies. However, the Environmental Audit Committee (EAC) considers current UK regulation insufficient in limiting non-sustainable deforestation, with reliance placed on the laws in exporting countries. The assumption that such laws will incorporate adequate provision for sustainability takes control away from the UK government and may be inadequate to tackle illegal deforestation.[386]

The UK's limited domestic supplies of timber and its heavy reliance on imports, at a time of rising global demand and increasing impacts from climate change, is concerning.[360] While the continued expansion of woodland and tree planting outside woodland is welcome, with last year's planting in England increasing to 5,529 hectares[42], it is largely aimed at improving biodiversity rather than sustainable timber production. From 2024, ELM schemes are the main mechanism to deliver tree planting. As the National Audit Office highlights, tree planting will be one of several competing priorities and it is uncertain how landowners will respond to the different options available.[387]

Bringing existing woodland into sustainable management offers the capability of producing timber products while providing other benefits to society and creating high-quality habitats more immediately and often at a lower cost than planting new trees. While measures such as the Woodland Management Plan grant[388] are available to bring woodlands into sustainable management under the UK Forestry Standard,[365] they have had limited success in increasing the overall amount of woodland that is sustainably managed. It is therefore important that the government monitors the uptake and effectiveness of new Woodland Management Plan grants offered under ELM schemes.[389]

The EAC notes the lack of a single strategy that clearly articulates the government's vision for the timber sector. It also finds no clear indication as to how the government intends to integrate the delivery of policy objectives with delivery of its nature recovery and climate change mitigation goals. While the Timber in Construction Roadmap is welcome,[366] it focuses on promoting increased use of timber and presents many existing policy measures rather than the long-term strategy required. Therefore, the prospect of the government achieving more sustainable and long-term UK timber supply while also tackling illegal deforestation is largely off track.

Sustainable fisheries

In our 2022/2023 progress report, we recommended that the government ensure that fisheries management is integrated into plans to achieve GES in marine waters. We also recommended that FMPs contain credible and coherent delivery plans and take a more precautionary approach to fisheries management.[390]

While the APR 2024 reports the publication of five FMPs, 31 others across UK waters remain yet to be published by the end of 2024. These are unlikely to be delivered. Our assessment of the published FMPs suggests that our previously raised concerns[390] have only been partially addressed and the plans may need further enhancements. We note that further action is needed to ensure that FMPs drive effective action and address key pressures, such as climate change and the issue of over-exploited stocks and those in poor condition (see Chapter 2).

Pressures related to competing demands for use of the sea have the potential to significantly impact fisheries. The government has an ambition to significantly expand marine renewable energy resources by 2030,[391] and Great Britain already has one of the world's most developed marine aggregate industries.[392] Areas designated as offering future marine aggregate extraction opportunities comprise a large proportion of English marine fisheries,[393] and projections suggest that significant expansion in extraction may be necessary in these areas to meet demand and negate a decline in permitted land-based reserves.[394]

Therefore, the prospects of the government achieving its commitments to ensure that all fish stocks are recovered to and maintained at levels that can produce their maximum sustainable yield and that all commercially exploited fish and shellfish are within safe biological limits are largely off track.

Sustainable soils

Soil health remains the only unpopulated metric in the OIF and while a proof of concept for the indicator[395] has been published and monitoring has commenced through the NCEA programme,[347] soil health remains a significant gap in government's framework.

While progress is being made with implementing measures through voluntary farming schemes, it is uncertain to what extent these measures will result in improved soil health and sustainable soil management. The lack of a regulatory framework – which aligns with ELM schemes to ensure that the polluter pays and establishes minimum standards for soil, based on a clear definition of sustainable soil management[355] limits the government's ability to influence soil health and puts greater emphasis on the success of ELM schemes.

Research commissioned by the OEP regarding the attainment of sustainable soil management in England found deficiencies in establishing a definition of a healthy or good-quality soil, the measures that might be required to ensure that specific soils are managed sustainably, the range of sustainable soil management measures covered by legislation or government voluntary schemes, and the variation of such voluntary schemes to secure beneficial results for soil health.[357]

The future risk to soil from the impact of climate change may also be significant. Of the eight risk areas identified as priorities in the UK's Third Climate Change Risk Assessment, soil is a significant factor in five of them, most notably in risks to soil health from increased flooding and drought (Priority Risk Area 2).[396]

It is not possible to assess the prospects of the government meeting its commitment to bring at least 40% of England's agricultural soil into sustainable management by 2028, given the limited evidence base. However, we consider that there is a significant challenge to achieving the commitment given the short timeframe, as well as the issues around limited regulations, lack of a definition of sustainable soil management, limited available monitoring to demonstrate improved soil health, and uncertainty regarding the effectiveness of nature-friendly farming to improve soil health.

Sustainable food system

The Food Strategy contained a commitment to publish a report monitoring progress towards the end of 2024.[383,397] We understand that while the UK Food Security Report was laid before Parliament as required by the duty to report under the Agriculture Act 2020,[398] there are no plans to publish a progress report.

The prospect of achieving a sustainable, nature-positive and affordable food system is largely off track. The slow pace of progress with the planned Land Use Framework,[399] and on delivering sustainable soil management and effective fisheries management mean that key environmental pressures related to the food system are not being addressed at the necessary speed and scale.

Mandatory food waste reporting has also been delayed, although additional funding to councils to support weekly food collections is welcome (see Chapter 6). We also see a missed opportunity regarding public procurement. The government aspires only to ensure that half the public money spent on food should be for food produced within the local area and/or to higher environmental standards.[294]

A key element of achieving a sustainable food system is the delivery of nature-friendly farming (see Chapters 2 and 13). The government's commitments and plan with regard to nature-friendly farming are positive, but challenges remain.

Table 7.4. Using resources from nature sustainably – summary assessment of prospects of meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Prospects
Halt and reverse forest loss and land degradation globally by 2030.	Largely off track
All fish stocks are recovered to and maintained at levels that can produce their maximum sustainable yield.	Largely off track
Take the necessary measures to achieve or maintain good environmental status of marine waters within the marine strategy area by 31 December 2020 – specifically the descriptor of good environmental status that all commercially exploited fish and shellfish are within safe biological limits (Marine Strategy Regulations 2010 and Marine Strategy).	Largely off track
Bring at least 40% of England's agricultural soil into sustainable management by 2028 and increase this to 60% by 2030.	Not assessed

7.6. Opportunities for improvement

The government has clear opportunities for improving outcomes on specific resources, such as timber, fish and soils, as well as delivering wider commitments. Supply chains can be made more sustainable by publishing the secondary legislation needed to implement the scheme for due diligence on forest risk commodities, as set out in the EA21.[400] Additionally, using green public procurement to drive change and considering natural resource use within the broader context of the food system and circular economy can further these efforts.

Regarding timber, increasing coherence between domestic and international timber policy offers a significant opportunity to deliver sustainable use of a resource across supply chains (Box 7.1).

Regarding forest risk commodities, the government has an opportunity to bring forward the necessary secondary legislation to operationalise the requirements of Schedule 17 of the EA21.[364] It can also subsequently act upon the steps recommended by the Treasury in its review under the Financial Services and Markets Act 2023[363] assessing the extent to which regulation of the UK financial system is adequate for the purpose of eliminating the financing of the use of prohibited forest risk commodities.

Box 7.1. Opportunity for coherence between domestic and international timber policy

The World Bank estimates that global timber demand is set to quadruple by 2050.

The UK is the third-largest net importer of timber and wood products in the world and imported 81% of its timber in 2021.[360,366]

Up to one-fifth of the UK's imported timber is from countries considered to have high social and/or environmental risks associated with their forestry practices.[401]

The UK does not have sufficient timber resource to allow it to significantly reduce reliance on imports and these stocks are expected to peak in the late 2030s.[360]

Box 7.1. Opportunity for coherence between domestic and international timber policy (cont.)

Domestically, there has been limited progress in developing the sector and in delivering co-benefits for nature and the economy.

While ELM schemes offer the potential to develop agroforestry and sustainable woodland management, these measures will compete with other aspects of the scheme.

Government has significant opportunity to develop a coherent and comprehensive timber policy that supports delivery of its international and domestic commitments.

Increasing the sustainability of domestic timber production[402] would support delivery of benefits across EIP 23 goals and provide economic benefits.[403]

Increasing the sustainability of the timber sourced from international supply chains by requiring all imported timber to be sustainably harvested rather than just being compliant with local laws as recommended by the EAC[386] would benefit resource security and enhance attainment of international commitments.

Soil remains a significant gap in the government's environmental framework. As recommended by the Environment, Food and Rural Affairs Committee, there is the opportunity to implement a new soil protection legislative framework as a backstop to: address regulatory gaps, enforce the polluter pays principle and establish minimum acceptable standards for those who choose not to engage with voluntary ELM schemes.[355]

Although progress towards sustainable soil management has been slow, there is an opportunity to adopt a systems approach to develop a more coherent and comprehensive soil policy. This policy should reflect the importance of soil as the foundation of terrestrial ecosystems and mirror the standards set for air and water.

Regarding agricultural soils, while the focus has been on implementing practical measures that may benefit soil health, there is the opportunity to enhance the present approach by making sustainable soil management an entry requirement for farming incentive schemes.

Government soil policy should not be limited to agricultural and peat soils. There is an association between areas of deprivation and land contamination.[404] Brownfield and grey belt land offer significant opportunities to regenerate communities and deliver environmental benefits by remediating chemical contamination. Evaluating land contamination policy and its effectiveness in remediating brownfield land could support more effective regeneration policies and measures.

The government also has opportunities to develop a coherent and comprehensive approach across natural resources. Increasing sustainable woodland management can provide a wide range of environmental benefits for nature, including improving soil health, contributing to clean air and water, and sequestering carbon, in addition to generating resource security and increased timber supplies. Accelerating progress with sustainable fisheries, soil health and tree planting would also contribute to multiple targets and commitments.

Action in wider government policy areas offers additional opportunities. The UK public sector spends more than £393 billion on procurement every year.[405] While the

government has implemented a social value model, which includes consideration of effective stewardship of the environment,[406] there has been less progress on green public procurement. The government can use its new National Procurement Policy Statement[407] to develop a mission-driven approach to environmental procurement, and include targets for departments or mandatory reporting on the sustainability of government contracts, to support progress.

Harnessing the support of business would provide the opportunity to enhance progress and support the implementation of adjustments to government policy. Using financial reporting mechanisms – such as the Taskforce on Nature-related Financial Disclosures (TNFD), which encourages and enables business and finance to assess, report and act on their nature-related dependencies, impacts, risks and opportunities – could help to mobilise significant additional investment in nature (see Box 12.1).

Policy development should maximise spatial and sampling data and evidence. A significant number of fish stocks have unknown status, while data on consumption and material flows is limited[360] and a soil health indicator has not yet been developed. Demand for natural resources will grow, so policy coherence and clear mechanisms for managing competing demands for the use of land and sea are essential to achieving sustainable supply and use. Insights developed from data, combined with spatial planning, would provide further synergies and opportunities for the sustainable management of soil, timber and marine resources and policies.

Finally, considering natural resources, especially timber and biomass, within a circular economy framework will contribute to wider environmental improvements. By considering the wider context of production and consumption systems and the environmental impacts caused, there is the opportunity to deliver improved environmental, economic and social outcomes.

In our 2022/2023 progress report, we made five recommendations relating to policy development and monitoring and evaluation. Progress during the reporting period regarding these issues has either been mixed or limited. Therefore, these issues remain relevant. This year we focus on soil and supply chains.

Using resources from nature sustainably recommendation 1: Defra should address the significant gap in its environmental regulatory framework for delivering sustainable soil management, such as through an effective soil protection regulatory framework, as recommended by the Environment, Food and Rural Affairs Committee. This should maximise beneficial functions, such as carbon sequestration, and support nature's recovery, while also addressing key challenges such as erosion, compaction and contamination.

Using resources from nature sustainably recommendation 2: Defra should ensure that sustainable soil management practices are more cohesive and coherent by expanding the provision of voluntary sustainable soil management schemes, training, best practice guidance and advice.

Using resources from nature sustainably recommendation 3: The Cabinet Office should catalyse and support action to improve the sustainability of supply chains and contribute to delivery of its targets and commitments by enhancing and reporting on its approach to green public procurement.

Chapter 8: Mitigating and adapting to climate change

Chapter 8: Mitigating and adapting to climate change

8.1. Summary assessment

Climate change is causing loss and damage to people and the natural environment, and its impacts are expected to accelerate. To meet its Net Zero ambitions, the UK must continue to reduce greenhouse gas (GHG) emissions while introducing adaptation measures that build resilience against unavoidable impacts.

Historically, the UK has made good progress in reducing emissions, which have fallen gradually since at least 2000. A significant reduction in 2023 brought the UK's annual emissions to their lowest level since records began in 1990, surpassing even those recorded during the Covid-19 pandemic, when economic activity was reduced.

Relatively detailed delivery plans are in place for climate mitigation, but they need to be strengthened and provide sufficient evidence that future Carbon Budgets can be met through planned policies and measures. With the exception of the electricity supply sector, emission reduction rates will need to increase rapidly across the economy. Progress in sectors such as agriculture and waste, alongside the rate of peat restoration and afforestation, has been too slow.

The third National Adaptation Programme (NAP3) provides limited evidence of adaptation action at the scale needed to prepare for climate risks across most sectors. The key climate risks to the natural environment appear largely unaddressed. There is also inadequate integration of long-term climate risks into policy development, including for statutory EA21 targets.

The forthcoming update to the Carbon Budget Delivery Plan, EIP revision and Land Use Framework together offer the government a unique opportunity. This is the time to co-ordinate the development and delivery of multiple strategies so that plans for climate mitigation, adaptation and nature recovery are fully integrated.

Table 8.1. Climate mitigation – summary assessment

Past trends	The UK has met its first three Carbon Budgets, covering the period 2008 to 2022. There have been significant reductions in emissions from the energy supply, industry and waste sectors over the long term, with less progress in agriculture and transport.	**Improving trends dominate**
Progress in the reporting period	Progress has been slow with a delay on the ban on the sale of new petrol and diesel cars and vans, and the introduction of an exemption from the phase-out of fossil-fuel boilers by 2035 for 20% of households. While tree planting and peatland restoration are progressing, barriers remain in place that limit upscaling.	**Limited**
Overall prospects of meeting ambitions, targets and commitments	While the UK is largely on track to meet the target for the phase-down of hydrofluorocarbon (HFC) consumption, transitioning the economy to achieve Net Zero is far more challenging. Since last year, the Climate Change Committee's (CCC) confidence in meeting Carbon Budgets 5 and 6 has decreased.	**Largely off track**
Robustness	The available evidence base is relatively strong and includes annual emissions inventories, relatively detailed delivery plans and annual progress assessments from the CCC.	

Table 8.2. Climate adaptation – summary assessment

Past trends	Indicators used in this assessment were mapped to the risk reduction goals of the NAP3. They indicate that both exposure and vulnerability to climate risks have increased over the last few years, across most adaptation related outcomes.	**Trends show a mixed picture**
Progress in the reporting period	While NAP3 represents some progress on previous plans, it often repeats actions from pre-existing strategies and there is very little new funding, indicating a lack of ambition to keep pace with growing climate risks. Regarding the natural environment, NAP3 has limited targeted actions to address the climate risks and opportunities identified in the latest UK Climate Change Risk Assessment. Climate risks and adaptation measures are not adequately integrated into policy, including agricultural policy, or the delivery and measurement of some EA21 targets.	**Limited**
Overall prospects of meeting ambitions, targets and commitments	Overall, CCC assessments indicate a persistent lack of progress in reducing vulnerability and exposure to climate risks across all sectors and a need to increase the pace and scale of delivery of adaptation actions.	**Largely off track**
Robustness	This assessment is primarily based on assessments from the CCC, publicly available information and expert judgement. Adaptation is difficult to measure directly. The risk reduction goals and indicators used in this assessment provide only proxy measures to indicate whether climate risks are being managed. There is also a lack of long-term, consistent datasets covering adaptation outcomes, significant data gaps and limited research available into the effectiveness of policy for improving the resilience of the natural environment.	

8.2. Context and commitments

Since the Stern Review in 2006, it has been clear that the benefits of strong, early action on mitigating climate change outweigh the costs. At the same time, the transition to a low-carbon economy brings both challenges and opportunities. It also requires the removal of behavioural, technological and economic barriers. Given that climate change is happening, measures to help people and businesses adapt to the unavoidable impacts of climate change are also essential.[2]

The UK has a strong statutory framework that underpins the policy landscape for mitigating and adapting to climate change. However, the scope and maturity of policies differ significantly.

On mitigation, the Climate Change Act 2008 sets out a clear, ambitious and binding long-term target to reach Net Zero GHG emissions by 2050, relative to a 1990 baseline.[408] The UK has also committed, under the Paris Agreement on climate change, to a Nationally Determined Contribution (NDC) to reduce GHG emissions by at least 68% by 2030 compared to 1990 levels,[409] and recently announced at COP29 a new NDC of 81% by 2035 compared to 1990 levels.[410]

The Climate Change Act 2008 also requires the government to set Carbon Budgets, establishing caps on emissions over five-year periods that act as stepping stones to 2050. Carbon Budgets are set based on advice provided by the CCC. The CCC also reports on the government's progress on climate mitigation annually, with the latest assessment published in July 2024.[411]

In March 2023, the government published its Carbon Budget Delivery Plan. The plan outlines the government's strategy to meet its Carbon Budgets. It includes the package of policies and proposals designed to meet Carbon Budgets 4 to 6 and the projected emissions reductions, both by policy and sector, and overall.[412]

Following a legal challenge, in May 2024 the High Court found the latest Carbon Budget Delivery Plan to be unlawful, in that it failed to demonstrate that the proposals and policies would enable the Carbon Budgets to be met. This was partly due to the unsupported assumption that planned policies and proposals would be implemented in full, and that they would deliver the projected emissions savings in full, without properly considering the risks to delivery.[406] The High Court required a new Carbon Budget Delivery Plan to be produced within 12 months.

In addition, there are a range of non-binding technological and sector-based commitments, which cover, among other things, deployment of renewable electricity, low-emission vehicles, fuel-mix quotas and low-carbon heating. For HFCs, a potent type of greenhouse gas used in a range of applications such as refrigeration, air conditioning and aerosols, the Montreal Protocol on Substances that Deplete the Ozone Layer requires phasing down of production and consumption by 85% between 2019 and 2036[415].

On adaptation, the UK is committed to the adaptation goals in the Paris Agreement and the Kunming-Montreal Global Biodiversity Framework Target 8, to minimise the impacts of climate change on biodiversity and build resilience.[79] However, unlike mitigation, there are no statutory targets for adaptation, and a wide range of desired outcomes, spanning the natural environment, infrastructure, health, communities and the built environment, and business and industry.[416]

The Climate Change Act 2008 drives action by requiring publication of a Climate Change Risk Assessment (CCRA) every five years. These CCRAs inform the UK government's National Adaptation Programme. NAP3[416] was published in July 2023, and sets out the government's goals and plans for adaptation for the next five years based on 61 risks and opportunities identified in the third CCRA.[396]

Healthy ecosystems act as natural buffers against climate impacts like floods and droughts, and better-connected habitats are generally more resilient to climatic shocks. Regarding the natural environment, NAP3 focuses on the delivery of large-scale habitat creation, restoration and management. Many of the actions set out in NAP3 are already part of existing strategies and targets for nature recovery.

8.3. Key environmental trends

Climate mitigation

From 2018 to 2023, total UK GHG emissions, including those from international aviation and shipping, decreased by 16.5%, based on provisional figures for 2023 (Figure 8.1).[417]

Between 2022 and 2023, there was a significant drop of 4% in GHG emissions. This was driven largely by a reduction in emissions from the electricity supply, industry and residential building sectors, according to provisional statistics. This brought the UK's overall annual emissions to their lowest recorded level since records started in

1990, surpassing even 2020, when economic activity was reduced due to the Covid-19 pandemic.[418] Since 2000, overall emissions have decreased by 44.4%.[417]

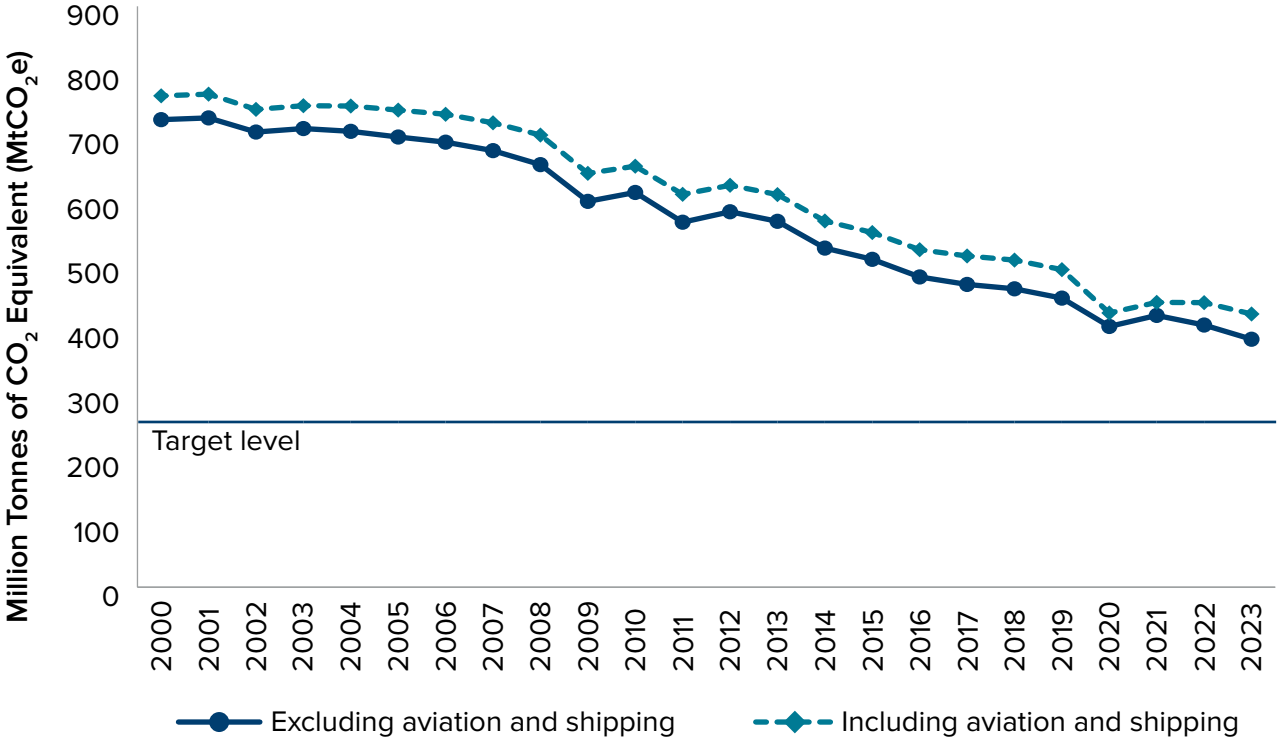


Figure 8.1. UK total GHG emissions, including aviation and shipping, and excluding aviation and shipping, in million tonnes of CO_2 equivalent ($MtCO_2e$), from 2000 to 2023.[417] Target level line represents the NDC to reduce GHG emissions by at least 68% by 2030, compared to 1990 levels.

As there are no available indicators for HFC consumption, emissions of fluorinated gases (F-gases) were used instead. From 2016 to 2021, F-gas emissions decreased by 19.7%, but they nonetheless remained 9.3% higher in 2021 than in 2000.[419]

From 2016 to 2021, England's overall consumption-based GHG emissions or carbon footprint remained constant. However, over the same period, embedded emissions from imports increased by 17.4%, offsetting decreases of 20.2% from domestic goods and services and 5.9% from direct household emissions.[420]

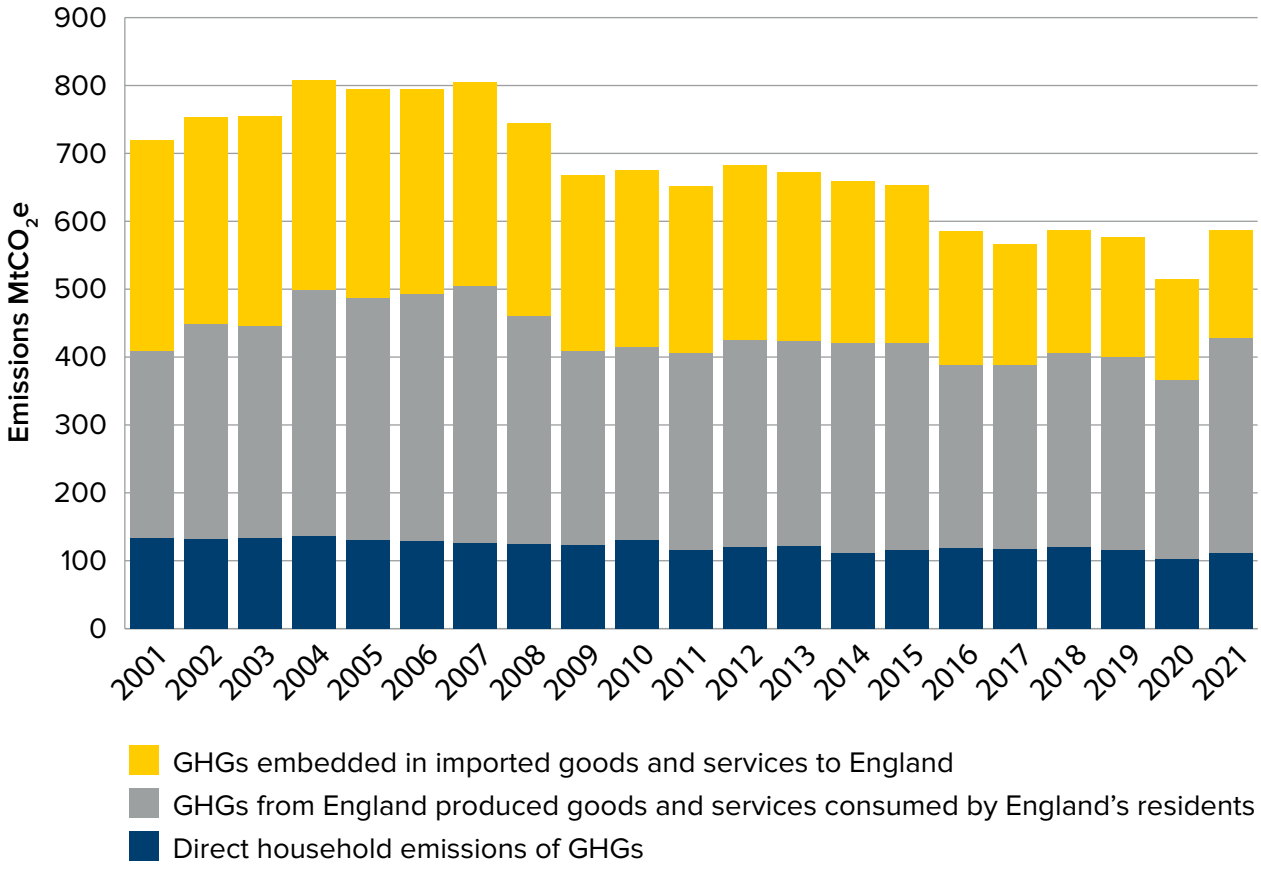


Figure 8.2. Consumption-based GHG emissions in England, from 2001 to 2021.[420]

A summary of the key trends we assessed is provided in Table 8.3.

Table 8.3. Mitigating and adapting to climate change – summary assessment of key trends

Indicator	Indicator trend	Trend time period
UK GHG emissions	↓	2018–2023
Consumption-based GHG emissions in England	→	2016–2021
Emissions of fluorinated gases	↓	2016–2021

Climate adaptation

Climate impacts, and therefore adaptation measures, span many policy areas, vary geographically and are context specific. In the absence of an adaptation monitoring and evaluation framework, we have used proxy indicators to assess how climate resilience has changed over time.

Focusing on the natural environment, we mapped the NAP3 reduction goals (and associated CCRA risks and opportunities) to relevant indicators across all EIP23 goal areas.

These monitor a range of pressures and environmental outcomes that are influenced by climate change and are relevant to climate adaptation. This approach has limitations, as these outcomes are also influenced by factors other than climate change (see Methodological Statement).

Around half of the relevant indicators in Chapters 2 to 11 show a continued decline or trends show no change. Particularly concerning trends include the continued poor condition of protected sites (Chapter 2), the number of invasive non-native species becoming established (Chapter 10), an increase in the frequency of wildfire incidents (Chapter 9) and a decrease in the proportion of flood or coastal risk management assets that are in the required condition (Chapter 9). This indicates that it is likely that resilience to climate threats has not improved, while exposure to the risks has increased.

The CCC's latest progress report for adaptation found that, across 45 adaptation outcomes assessed, none demonstrate sufficient evidence that reductions in climate exposure and vulnerability are happening at the rates required to manage risks appropriately.[75,421] For nature related adaptation outcomes, which focus on habitat ecological health as a proxy for resilience to climate change, the CCC found insufficient progress across terrestrial and freshwater habitats and mixed progress for marine and coastal habitats.

8.4. Progress towards ambitions, targets and commitments

Climate mitigation

The APR 2024 reported a call for evidence on proposals for changes to the UK Emissions Trading Scheme (UK ETS) and participation in COP28, where new funding was announced for forests and oceans, and action to help increase transparency around finance. Therefore, it provides only a very limited picture of actions within the reporting year.

There are limited examples of policy progress within the reporting year. These include a government-negotiated deal with Tata Steel to replace its current integrated steelworks with electric arc furnaces. In addition, the government introduced a new zero-emission vehicle mandate and increased the individual grants available for installing heat pumps in homes by 50% through the Boiler Upgrade Scheme.[128,422]

Recent policy shifts have signalled a slowing of pace, undermining confidence in the transition to Net Zero. Policies were cancelled or delayed, or exemptions were introduced. For example, the government scrapped the introduction of minimum energy efficiency requirements for properties in the private rented sector.[411] Bans on new petrol/diesel vehicles were delayed by five years to 2035. A ban on the installation of oil-fired boilers was delayed from 2026 to 2035 and the government also introduced a 20% exemption from the fossil-fuel boiler ban due to be introduced in 2035.[128,422]

Recent progress in the agriculture and land-use sectors has been slow. The Land Use Framework, which will be critical in directing the development and delivery of climate and wider actions, has been delayed from its planned 2023 publication.[399]

Defra targets to increase the uptake of low-carbon farming practices to 70% of farmers by 2025, rising to 85% by 2035, appear to be off track. It is estimated that only around 50% of farms currently apply these practices and uptake is decreasing.[423] Barriers to uptake include

concerns over profitability, lack of flexibility in land tenancy contracts, poor awareness of carbon mitigation measures and scepticism about their impacts.[424]

Plans for tackling methane, however, have been strengthened. Agriculture is the main source of methane emissions, contributing around 49% of emissions in 2022.[425] Plans include improving the effectiveness of methane regulation and monitoring capability[425] and introducing a mandate for methane-suppressing feed products no later than 2030.[426]

Plans to reduce emissions from land use show insufficient progress. This applies to both restoring peatlands and expanding woodlands. Peatlands represent a significant carbon stock and are currently a net contributor of emissions due to their poor condition.[427] According to the CCC, peatland restoration needs to happen 2.5 times faster to meet the target of 32,000 hectares restored per year by 2026.[411] The planned ban on the sale of peat in horticulture, a key element of the England Peat Action Plan (2021 to 2024), was due to be introduced for amateur gardening in 2024.[428] This now looks unlikely. Similarly, on expanding woodlands, while progress has accelerated significantly recently (see Chapter 2), annual planting rates must increase a further 45% from 2023/2024 to meet the previous government's target of 30,000 hectares across the UK annually by 2025.[41,429]

With regard to emissions from the waste sector, there has been limited recent implementation of waste management policies. Growing levels of waste are being incinerated, with a corresponding increase in associated GHG emissions (see Chapter 6). However, the recent decision to expand the UK ETS from 2028, to include waste incineration and energy from waste facilities, is welcome.

Another major recent announcement was the intention to implement a Carbon Border Adjustment Mechanism by 2027. This could have important implications for the future economics of production and consumption and associated emissions, protecting the competitiveness of UK industry as it decarbonises. It should also help to tackle the UK's carbon consumption problem (where embedded emissions from imports have increased, offsetting mitigation progress made on domestic goods and services and households) (see Section 8.3). However, the impact of any adjustment mechanism will largely depend on its implementation. Implementation will be affected by its scope, alignment with the EU's Carbon Border Adjustment Mechanism due in 2026, and the carbon intensity of UK products compared with imports.

In our 2022/2023 progress report, we assessed progress towards the target to reduce HFC consumption as good. In January 2023, the EIP23 stated that the UK is ahead of schedule, with HFCs on the market already phased down by 55%.[148] According to the CCC, F-gas regulations are currently the main lever for reducing HFC consumption. Restrictions on the use of F-gases have driven emissions down by 20% from their peak in 2017 to 2021, and by around 13% from the Montreal Protocol target baseline in 2019 to 2021.[328]

A summary assessment of the targets and commitments we assessed progress towards is provided in Table 8.4.

Table 8.4. Mitigating and adapting to climate change – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Progress
Net Zero emissions by 2050, including Carbon Budgets 4, 5 and 6, and the UK's 2030 and 2035 NDC	Limited
Reducing HFC consumption by 85% between 2019 and 2036 under the Kigali amendment to the Montreal Protocol	Good

Climate adaptation

The APR 2024 did not report any adaptation actions. However, in July 2023, the government published NAP3, outlining the overarching vision and plans to address climate change impacts and enhance national resilience over the next five years. Focusing on the 61 risks and opportunities identified in the third CCRA, it covers five sectors and outlines plans to improve their resilience, through better information, co-ordination and policy delivery.[416]

In March 2024, the CCC published its independent assessment of NAP3. It found that the plan lacks the necessary pace and ambition to address growing climate risks. It also noted that NAP3 fails to set out a compelling vision for what the government's 'well-adapted UK' entails. The CCC reviewed the coverage of NAP3 actions across the CCRA risks and opportunities and found progress on only around 40% of the short-term actions to address urgent risks identified in the last CCRA.[430]

For the natural environment, NAP3 focuses on the delivery of large-scale habitat creation, restoration and management. Many of the actions repeat existing strategies and targets for nature recovery. These include: the EA21 targets, agri-environment schemes (AES), restoring the condition of protected sites, and targets to reduce the establishment of invasive non-native species.[416]

In our view, NAP3 and many of the associated strategies and targets for nature recovery currently show a lack of detailed consideration of the CCRA risks and opportunities. For example, government plans for restoring protected sites[46] and peatland[431] do not address the risks of changing climatic conditions and extreme events (CCRA3 risk N1) or new species becoming established in the UK (CCRA3 risk N3). Nor do the plans include proactive adaptation strategies or dedicated funding.

There are, however, some examples of attempts to assess and embed future climate risks into local planning. For example, Protected Landscapes authorities need to produce a Climate Adaptation Management Plan, embedded or linked with their management plans by 2028.[46,416] There are also requirements for Landscape Recovery scheme proposals to demonstrate that actions do not increase the vulnerability of the surrounding area to climate change risks.[142]

A key policy gap continues to be the lack of a coherent strategy for adapting the agricultural sector, despite this being consistently identified as a priority by the CCC.[75,432] This is urgently needed to ensure robust climate planning and to develop integrated responses for environmental land management (ELM) policies, particularly with regard to water and soil management and improving capability to respond to such threats as changing pest and disease risks.[432]

The government has also incorrectly assessed the effects of climate risks when assessing the deliverability of long-term biodiversity targets, which are described in the latest Target Impact Assessment.[40]

For example, for the wildlife-rich habitat restoration or creation target (an EA21 target), the impact assessment draws on evidence that, under a 3°C global warming scenario, between 80% and 90% of the biodiversity features in freshwater, wetland, uplands and coastal habitats are expected to be at medium or high risk over the next 30 years.[433] Based on this, Defra assumed a 3% annual loss in habitat condition and included an additional 3% to habitat restoration unit costs. These assumptions were unrealistic as climate impacts are not gradual or linear over time. There can be rapid ecosystem collapse from multiple interrelated climate-related threats, such as drought, disease and invasive non-native species.[434] Furthermore, climate-driven losses to priority habitats cannot practicably be regained through restoration efforts, especially at the anticipated scale of 80–90% of biodiversity features.[433] The current metrics for habitat condition might even become irrelevant were there to be such a radical shift in climate and ecological baselines.

Overall, while good progress has been made in reducing HFC consumption and in mitigating emissions in the power sector, progress is limited for implementing the challenging pathways to Net Zero. Progress is also limited for developing adaptation plans that address climate change risks, especially for the natural environment and agriculture sector.

8.5. Prospects of meeting ambitions, targets and commitments

Climate mitigation

Recent policy changes are positive steps in accelerating the transition to clean power by 2030. The new government has been ambitious and urgent in areas such as establishing a publicly-owned investment company Great British Energy[435], revising planning policy to support onshore wind[436], and supporting capacity of renewable projects through the Contracts for Difference (CfD) scheme.[437] There are also relatively comprehensive plans in place for accelerating nuclear energy,[438] expanding electricity networks and improving the flexible capacity of the grid.[412,439,411,412]

However, emission reduction rates must increase rapidly across all sectors of the economy. Based on the policies and programmes in the latest CBDP, the UK is likely to meet the next carbon budget (CB4, covering 2023–2027), but additional action is required to meet CB5 (2028–2032) and CB6 (2033–2037).[411]

The prospects of the government meeting its NDC 2030 target are also off track. However, according to the CCC's latest assessment, only around one-third of the emissions reductions required to meet the NDC 2030 target are covered by credible plans. The greatest delivery risks are associated with the industry, buildings and transport sectors.[411]

Regarding the recently announced NDC 2035 target, without accompanying delivery plans to achieve the necessary emissions reductions, the prospects of meeting this more ambitious target are similar so we have to conclude that the prospect of meeting this more ambitious target is also off track.

Many of the policies included in the Carbon Budget 4 delivery plan are at an early design stage and are therefore subject to numerous delivery risks. Risks relate to policy implementation delays, funding shortfalls, scaling of emerging technologies, regulatory barriers, stakeholder resistance and co-ordination of actions across government departments and agencies.

Certain policies are at an early stage but could have major implications for the UK's overall carbon footprint, including emissions that are consumption-based. These include the expansion of the UK ETS from 2028 to include waste incineration and energy, as well as technical changes to the cap and allowances,[317,440] and the announced Carbon Border Adjustment Mechanism. Similarly, future ELM policies could have important, but as yet uncertain, effects on decarbonising the agriculture and land-use sectors.

Due to be rolled out fully in 2025, ELM schemes are expected to be the main delivery vehicle for planting trees,[41] restoring peatlands,[431] and incentivising farmers to move to low-carbon farming practices. However, as these are voluntary schemes, take-up across the country is highly uncertain. According to the National Audit Office, a key issue is the dependence on attracting private landowners, which involves foregoing agricultural land over the long term. Many stakeholders are deterred by future policy uncertainty and a history of mismanagement of previous agricultural subsidy schemes.[387] Payment for participating in decarbonisation activities needs to be attractive across the sector, and so while the £5 billion committed over 2024/2025 and 2025/2026 to support the transition towards a more productive and environmentally sustainable agricultural sector is welcome[441], plans to mobilise private finance will also be critical (see Section 12.2).

In our view, the government's plans so far have been over-reliant on deploying individual technologies, which has not had a significant direct impact on people's lives. Delivering the emissions reductions in future Carbon Budgets will be far more difficult and disruptive. It will require widespread decarbonisation of buildings, transport and industry, acceleration of new infrastructure such as pylons, the mobilisation of significant private investment and a shift towards more sustainable lifestyles (see Chapter 12).

Without sufficient public support, the government risks backlash and fracturing political consensus. A much greater consideration of the supporting policies is needed, as well as broad engagement with the public, to implement economy-wide change at the scale required, while also developing consensus over difficult trade-offs and enabling a just transition to Net Zero.[442,443]

With regards to HFCs, there has been good progress their use since regulations were introduced in 2015.[411,444] Whilst demand for heat pumps and air conditioning will increase in future, driven by Net Zero policy[445] and adaption to heat waves[446] respectively, we expect ratcheting F gas regulation to continue to drive the phase out of HFC use across refrigerant products, replacing them with less harmful alternatives (e.g. propane, CO_2).[447] Overall, we assess the prospects of meeting this target to be largely on track.

Climate adaptation

The government's vision for adaptation is 'for a country that effectively plans for and is fully adapted to the changing climate, with resilience against each of the identified climate risks.'[416] Based on this, the last three CCC adaptation progress reports (2019, 2021, 2023) and its independent assessment of the NAP3 have all concluded that there is a persistent

lack of progress in reducing exposure and vulnerability to climate change risks and that adaptation action is not keeping pace with increasing risk levels.[75,430,432]

For the natural environment, the NAP3 actions often simply list pre-existing targets, strategies and legislation for improving nature. We recognise that linking is important, given that adaptation is necessarily cross-cutting, and that improving ecosystem health supports climate resilience. However, it is difficult to ascertain how consistently or effectively future climate change risks are being integrated across delivery plans.

Our review of various underlying strategy documents for peat and agriculture, and the pathways set out in the Terrestrial Biodiversity Targets Impact Assessment, finds limited consideration of the specific climate risks and opportunities identified in the latest CCRA and an absence of targeted intervention to support the resilience of habitats and species.[448] Furthermore, there remain concerning gaps in adaptation planning. We found no strategies for key sectors such as agriculture and limited plans for adaptive delivery or revision of biodiversity targets under accelerating climate change.

To deliver its vision for adaptation, the government must produce a NAP that examines key interlinkages between climate mitigation, adaptation and nature goals, and provides coherent strategies for harnessing synergies and managing trade-offs. We would expect such an approach to lead to greater prioritisation of nature-based solutions, which are often better at maximising synergies. For example, the restoration of wetlands, a key water management strategy, could unlock significant carbon storage capacity, provide a nature-based solution to reducing exposure to flood risks or storm surges, and create an important habitat for wildlife.[449]

A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 8.5.

Table 8.5. Mitigating and adapting to climate change – summary assessment of prospects of meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Prospects
Net Zero emissions by 2050, including Carbon Budgets 4, 5 and 6, and the UK's 2030 and 2035 NDC	**Largely off track**
Reducing HFC consumption by 85% between 2019 and 2036 under the Kigali amendment to the Montreal Protocol	**Largely on track**

8.6. Opportunities for improvement

The government needs to make up lost ground, both in scale and pace. It has been nearly 20 years since the Stern Review on the Economics of Climate Change, which assessed a wide range of evidence on the impacts of climate change and on the economic costs. Its conclusion was simple: the benefits of strong and early action far outweigh the economic costs of not acting. An integrated response to climate change and biodiversity loss is also needed. This is made difficult by the fact that different government departments and institutions are responsible for each of these.[1]

Taking actions that maximise synergies in mitigating and adapting to climate change, alongside restoring nature, should be seen as investing in a more prosperous, sustainable future while delivering better value for money in achieving the government's ambitious

goals on Net Zero and nature recovery. At present there is a unique opportunity to co-ordinate development and delivery of multiple strategies to maximise synergies, with the revised EIP23, planned Land Use Framework and required Carbon Budget Delivery Plan update.

The government has set up a new mission control for clean power and a publicly owned investment company, Great British Energy. These organisations have twin objectives: to deliver clean power by 2030 and accelerate progress towards Net Zero. They should also adopt a more balanced approach, both in managing the inter-dependencies between climate mitigation, adaptation and nature recovery, and in ensuring that the required decarbonisation of buildings, transport and industry takes place with public support and in the context of a just transition.[12]

When the government publishes its required Carbon Budget Delivery Plan revision, it should make transparent the risks in delivery and implementation for individual policies and the measures taken to mitigate these. It should define the synergies and trade-offs between adaptation and nature goals, steering transition pathways towards more balance and integrated actions.

For adaptation, in particular, more comprehensive plans are needed for adapting sectors that are highly susceptible to climate risks, such as agriculture, forestry and fisheries. Such plans should fully consider the specific future risks and opportunities identified in the CCRA and outline a detailed and targeted approach to managing them. They should also focus on key enablers for improved adaptation outcomes, including improving the monitoring of ecosystem health and addressing data gaps, such as the resilience of species, geographic ranges in species populations and the uptake of nature-based solutions for adaptation.[416]

Finally, the government should also consider more fully the risks to achieving the EA21 targets from multiple interrelated climate-related threats. Threats include drought, diseases, invasive non-native species and extreme events that could, in a worst case scenario, lead to sudden ecosystem collapse.[434]

In our 2022/2023 progress report, we made three recommendations relating to policy development and delivery. Progress during the reporting period regarding these issues has either been mixed or limited. Therefore, these issues remain relevant. This year, we have focused on EA21 targets.

Mitigating and adapting to climate change recommendation 1: To guard against future climate risks undermining the government's ability to meet the EA21 targets, on each occasion that Defra reviews an EIP and considers whether to set, revise or replace any targets, it should undertake an assessment of climate risk and incorporate its findings into that review. Defra should consider the cascading effects of multiple climate threats and the implications on both the government's ability to meet targets and the metrics used to assess this, and it should define the criteria for where adaptation is necessary.

Chapter 9: Reduced risk of harm from environmental hazards

Chapter 9: Reduced risk of harm from environmental hazards

9.1. Summary assessment

Environmental hazards, such as flooding, coastal erosion, drought, wildfires and high temperatures, all have significant social, economic and environmental impacts, and their frequency and intensity will only increase with climate change. The government has made protecting communities from the dangers of flooding a priority.

Methodological improvements in assessing flood risk have increased the accuracy of the evidence base, incorporated new information and combined national and local models. Trends on the impact of other environmental hazards are periodic or sparse.

The government is continuing to deliver against its comprehensive policy framework to reduce flood risk. In addition, there has been progress in the annual reporting period with initiating policy measures to increase resilience to wildfire risk and drought, although not at the pace and scale required.

However, delivery challenges, such as capacity and skills shortages and the effect of inflation on costs, mean that the government is largely off track to meet its commitment to better protect properties from flooding and coastal erosion. The level of ambition and investment directed towards addressing other hazards needs to increase to keep pace with the growing risks from climate change.

Solutions that increase resilience to environmental hazards can deliver multiple benefits and early adaptation investments deliver high value for money. The government has an opportunity to accelerate and expand climate adaptation efforts through improved cross-government delivery, increased public awareness and spatial targeting using evidence-based strategies and action plans.

Table 9.1. Reduced risk of harm from environmental hazards – summary assessment

Past trends	There are mixed trends in reducing risk from flooding, but wildfire incidents and average temperatures show deteriorating trends.	**Trends show a mixed picture**
Progress in the reporting period	Progress has continued on flood protection, and policy development to manage wildfire risks has started. However, there has been no progress in reducing risks from exposure to high temperatures.	**Mixed**
Overall prospects of meeting ambitions, targets and commitments	The government is on track to meet its commitment to double the number of projects using nature-based solutions but is predicted to miss its commitment to maintain 94% of assets fit for their designed purpose. Overall, there is a need to increase the scale, ambition and pace of efforts to improve resilience against all environmental hazards.	**Partially on track**
Robustness	The assessment has primarily used sources of publicly available information, stakeholder engagement and expert judgement. A new National Flood Risk Assessment is in development. However, the evidence base relating to options to reduce the risk of other environmental hazards, especially wildfires, needs to be improved.	

9.2. Context and commitments

The government's long-term ambition is to reduce the risk of harm to people, the environment and the economy from natural hazards, such as flooding, coastal erosion, drought, wildfires and high temperatures. Alongside land-use change, development and recreational pressures, climate change will result in increases in the frequency and intensity of environmental hazards over time.[5]

The UK's vulnerability to hazards is expected to rise with climate change unless effective adaptation measures are implemented. Nearly 10% of risks in the 2023 National Risk Register are extreme weather events.[450] The National Audit Office estimates that at least eight climate change risks may each have a cost of more than £1 billion a year by 2050. The third National Adaptation Programme (NAP3) is a key strategy adopted by the government to reduce risk. Early adaptation investments, such as heat alert and heat-wave planning, deliver high value for money.[450]

Climate change is creating more favourable conditions for wildfires. In the UK, wildfires have historically peaked in spring and mid- to late summer. Future projections suggest that the wildfire season may extend to late summer and early autumn. The frequency and severity depends on such factors as vegetation type, land use, management practices and topography. Available data indicate that almost all UK wildfires are started by human action, both accidental and deliberate (arson).[451]

In addition, in 2023 the UK experienced its sixth-wettest year on record since 1836, with climate change intensifying storm downpours by around 20%.[316] The UK and Ireland faced 13 to 14 severe storms in 2023/2024, which caused at least 13 deaths and widespread damage and were linked to rising temperatures in a rapid attribution study.[452]

The government has made protecting communities from the dangers of flooding a priority.[264] There are commitments to better protect properties from flooding and coastal erosion (100,000 properties by 2024 and 336,000 by 2027[142]), to maintain major flood and coastal erosion risk management assets fit for their designed purpose (94% by March 2025 and 98% in the long term)[148] and to double the number of government-funded projects to reduce flooding and coastal erosion through nature-based solutions to 260 projects by 2027.[453]

Over the last winter period, over 250,000 properties were protected from flooding. However, more than 8,000 properties were flooded.[454] Weather damage claims increased 36% in 2023 compared to 2022, highlighting the increasing impact of extreme weather events on people's lives and livelihoods.[455]

9.3. Key environmental trends

From 2016 to 2022, the total number of properties at high risk of flooding from sea, rivers and surface water decreased by 13% to 515,000. The apparent increase since 2022, 583,800 in 2023 and 540,200 in 2024,[454,456] does not reflect a heightened risk but rather a better understanding of the existing risk levels. Methodological improvements in 2023 and 2024 have enhanced the accuracy of the evidence base, incorporated new information and combined national and local models. The Environment Agency is further developing a new National Flood Risk Assessment to improve its assessment for risks such as surface water flooding.[454]

Since 2019, there has been little or no change in the number of properties at risk of surface water flooding. Improved modelling suggests that 3.2 million properties are at risk of surface water flooding in England – around 1 in 7 homes. As of March 2024, 1.58 million properties were registered to receive free flood alerts, an 11% increase on 2018. However, the flood warning service does not cover surface water flooding, due to the challenges in predicting the location, intensity, duration and impact of sudden rainstorms and their effects on the ground.[454,457]

In England, there are approximately 238,000 assets dedicated to flood or coastal risk management. Since 2018/2019, there has been an overall decrease in the percentage of these assets meeting the required condition, from 97.9% to 92.6%.[457] This has been attributed to the significant impacts of winter storms between 2023 and 2024 and the shortfall in maintenance funding.[458,457]

From 2015/2016 to 2020/2021, there was a 31% increase in the total number of wildfires, excluding urban areas (see Methodological Statement), suggesting that the occurrence of wildfire incidents is growing, even if it is still below 2018/2019 levels.[459] There has been no update to the data within the annual reporting period. In the UK, wildfires are more common in lowland areas, primarily due to accidental or deliberate human actions, as these regions are more densely populated.[451,460] However, the most extensive wildfires typically occur in upland areas, where fire suppression is more challenging because reporting is often slower, water supplies are limited and there is a lack of experience, appropriate equipment and available access points.

Table 9.2 Reduced risk of harm from environmental hazards – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Properties at high risk of flooding		N/A
Percentage of flood or coastal risk management assets, in high-consequence systems, in required condition in England		2018/2019–2023/2024
Number of wildfire incidents		2015/2016–2020/2021

9.4. Progress towards ambitions, targets and commitments

Overall progress in the annual reporting period towards reducing the risk of harm to people, the environment and the economy from natural hazards has been mixed. A summary assessment of progress towards targets and commitments is provided in Table 9.3, with further detail given below.

The APR 2024 highlights actions focused on flood protection, emphasising nature-based solutions to mitigate flooding and coastal erosion. However, the APR 2024 does not detail actions for other environmental hazards, such as drought, wildfires and high temperatures, aside from mentioning a five-year plan in NAP3.[33,416]

Actions in NAP3 aim to enhance climate resilience and adaptation across various sectors, ranging from funding, delivery and monitoring of resilient infrastructure to evaluation and learning from previous programmes. However, NAP3 falls short in the pace and ambition needed to tackle escalating climate risks. Despite recognising all the risks outlined in the latest Climate Change Risk Assessment (CCRA3), only about 40% of the urgent short-term actions identified in the last CCRA have been progressed.[430]

Flooding and coastal erosion

Progress in flood protection for properties and assets within the reporting year has largely been good. The expected impact of meeting the commitment to better protect properties (100,000 by 2024 and 336,000 by 2027) will reduce flood risk by 11% from 2021 to 2027.[461] The APR 2024 reports the delivery of 135 flood protection schemes,[33] which means that, by the end of March 2024, 88,272 properties[462] were better protected. Although this is below the government's commitment to better protect 100,000 properties from flooding and coastal erosion by 2024,[142] there have been other positive developments in this area through the implementation of a funded programme aimed at reducing flood risk.

As well as the continued delivery of the government's £5.6 billion Flood and Coastal Defence Investment Programme, the APR 2024 reported several funding actions. These included funding to deliver preventative measures to protect agricultural land and rural communities from flooding, and financial support to those who have suffered significant damage due to prolonged and extreme wet weather and flooding.

During the reporting period, there was also good progress towards the commitment to double the number of government-funded projects that include nature-based solutions to reduce flooding and coastal erosion. In September 2023, the Environment Agency and Defra announced £25 million of funding for improving flood resilience through a new Natural Flood Management (NFM) programme. Five months later, the government announced that the NFM funding would be used to deliver 40 projects by March 2027.[463] Beyond flood risk reduction, NFM solutions should deliver wider benefits, such as enhanced habitats and biodiversity, improved water quality and availability of drinking water, carbon capture and improved health and wellbeing.

Increasing amounts of impermeable surfaces and decreased green infrastructure, such as sustainable drainage systems, result in more run-off via drainage systems rather than filtering into the soil. This increases the risk from surface water flooding. During the reporting period, the previous government published its integrated plan for delivering clean and plentiful water. The plan included a commitment to require standardised sustainable drainage systems in new developments from 2024.[464] It also included supporting 41 lead local flood authorities, through £3.5 million in grants, to enhance local surface water flood risk mapping.[465]

Several other important actions have been completed that contribute towards reducing the risk from coastal erosion. These include working with coastal groups to refresh the Shoreline Management Plan and launching an online Shoreline Management Plan Explorer to make the data more accessible, as well as expanding the Coastal Transition Accelerator Programme to include projects in Bude, Charmouth and Swanage.[454]

Wildfires

Wildfires are regarded as an emergent risk in the UK. In recent years, the UK has experienced significant wildfire incidents that have broken previous records and resulted in an increased risk to homes, infrastructure and agriculture. There has been mixed progress in reducing the risk of wildfires.[466]

Although the EIP23 does not include specific wildfire targets or commitments, NAP3, published within the reporting year, commits to actions to reduce wildfire risk under goal N5.[416] It focuses on increasing resilience and reducing the risk of wildfires through actions such as improving land management practices, particularly in vulnerable areas like peatlands, and enhancing early warning systems and response strategies to better prepare for and mitigate the impacts of wildfires. Additionally, it involves conducting research to better understand the causes of wildfires and develop effective prevention and restoration strategies. The Home Office and cross-government partners have initiated the scoping of a Wildfire Strategy and Action Plan. This includes incentivising assessment and management of wildfire risk under environmental land management schemes.

The government has also recently launched the new £2 million Lowland Agricultural Peat Water Discovery Pilot, researching more sustainable management of lowland agricultural peat.[467]

The EIP23 states that the Peatland Grant Scheme under the Nature for Climate Fund will be used to restore degraded peatland and make it more resilient to wildfire.[148] Twelve new landscape-scale projects were awarded £16 million towards the government's pledge to restore approximately 35,000 hectares of peatland in England.[468,469] It is unclear how many of the projects delivered under the Peatland Grant Scheme have also increased the resilience of peatland to wildfires. There is a continued debate on the optimum land-use management practices and restoration actions to reduce the risk of wildfires. The likelihood is that this will be site and context specific, depending on ecohydrological differences and other factors. Addressing this evidence gap could inform adaptation to increasing wildfire risks.[470]

High temperatures

Built-up urban areas have large amounts of tarmac, concrete and other dark surfaces that absorb heat during the day and release it at night, causing cities to be warmer than surrounding rural areas. Compared with more suburban and rural areas, they also generally have less green and blue spaces, such as parks, forests, ponds and wetlands, which act on their surroundings through evaporative cooling. This urban heat island effect can increase already high background temperatures.

Progress in increasing resilience to rising temperatures in the UK has been limited. The first edition of the Adverse Weather and Health Plan was released in April 2023, with the second edition published in March 2024.[471] Although this fulfilled the government's commitment under NAP3 to create a unified plan consolidating existing guidance on weather and health, it does not include any actions to increase resilience, focusing instead on governance, early warning systems and related areas.

NAP3 does not adequately emphasise the importance and urgency of addressing heat-related issues, including the urban heat island effect and lacks significant new initiatives to tackle the problem effectively.

Efforts to increase resilience to high temperatures largely focus on enhancing green infrastructure (see Chapter 11). Enhancing green infrastructure to strengthen the cooling capabilities of urban areas requires smart planning strategies and advanced urban design and greening technologies. In some instances, this is already happening, but it is only on a voluntary basis and not going far enough. For example, the National Planning Policy Framework[472] and Local Nature Recovery Strategies[473] suggest, but do not require, decision-makers to consider communities' access to and engagement with nature. This indicates that, while actions are being taken, the scale, pace and cross-government support needs to be significantly increased to match the growing risks posed by climate change.[474]

Drought

Progress in increasing the resilience of England's water supply to drought has also been mixed. Despite a set of comprehensive plans and research actions to consolidate the current body of knowledge and identify where further research could deliver the most benefit for drought management and resilience, we have assessed progress towards the water demand target (an EA21 target) to be mixed (see Chapter 4).

Table 9.3. Reduced risk of harm from environmental hazards – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Progress
Better protect 100,000 properties from flooding and coastal erosion by 2024, and 336,000 by 2027.	Good
Maintain at least 94% of major flood and coastal erosion risk management assets fit for their designed purpose, through to March 2025. Our long-term aim is for this to reach 98%.	Limited
Double the number of government-funded projects to reduce flooding and coastal erosion through nature-based solutions to 260 projects by 2027.	Good

9.5. Prospects of meeting ambitions, targets and commitments

Overall, the government is only partially on track to reduce the risk of harm to people, the environment and the economy from natural hazards. A summary assessment of the targets and commitments we assessed prospects of meeting is provided in Table 9.4, with further detail provided below.

There has been progress on flood risk. However, the level of ambition and investment devoted to addressing other hazards needs to increase to keep pace with the growing risks from climate change. This necessitates accelerating the implementation of measures and expanding their reach to cover more areas and communities for all climate risks. Additionally, there is a pressing need for an enhanced evaluation and monitoring framework to assess progress towards environmental resilience for hazards other than floods.

Flood risk

Regarding flood risk, the Environment Agency's latest forecast indicates that the government is largely off track in its commitment to better protect 100,000 properties from flooding and coastal erosion by 2024, and 336,000 by 2027.[475] The £5.2 billion 2021 to

2027 capital programme is expected to better protect 200,000 properties, 40% fewer than the government's original commitment of 336,000. The agency expects to invest in around 1,500 schemes, as cost pressures from inflation and slow delivery due to capacity and skills shortages have made the original intention to invest in 2,000 projects unaffordable within the capital programme.[475]

The Environment Agency's prediction regarding the 2027 target for flood protection highlights the need for a comprehensive flood and coastal erosion risk management investment programme that extends to 2050. This approach is essential so as to maximise value for money and meet the targets. Overall, there are ongoing efforts and some successes in mitigating flood-related dangers.

The government has responded to the National Infrastructure Commission (NIC) study on reducing the risks of surface water flooding with several key commitments.[476] Within the response, the government notes that of the 22 actions set out within their 2018 Surface Water Management Action Plan[477], and the additional 26 accepted recommendations from the 2020 Jenkins Review, 70% have been completed.[478]

However, past trends indicate that, between 2018/2019 when the Surface Water Management Action Plan was published, and 2022/2023, there has been little or no change in the number of properties at risk from surface water flooding in England. A 2023 report by the Chartered Institution of Water and Environmental Management (CIWEM) on surface water management found that capacity and skills was a significant issue for local authorities. CIWEM also found that funding uncertainty, uncompetitive salaries and high workloads were key issues affecting staff retention.[479] In its response to the National Infrastructure Committee, the government accepted the benefits of closer working between relevant local agencies, and committed to holding consultations on reforms to local flood risk management planning.

The government's Plan for Water, an integrated plan for delivering clean and plentiful water, recognised that many towns and cities have been paved over with hard, impermeable surfaces preventing rainwater from soaking into the ground and exacerbating surface water flooding. The government has stated, subject to consultation, that implementation of Schedule 3 of the Flood and Water Management Act 2010 was to be expected in 2024.[148,464,476] However, at the time of writing, progress is unclear, with the government still considering how best to implement this.

These steps reflect some advancement in addressing surface water flooding risks. But the response[480] stops short of any new commitments to removing the barriers to joint working and does not accept the case for devolving capital funding directly to local authorities to implement joint local plans and tackle some of the barriers highlighted within the CIWEM report.[476]

Maintaining existing assets is as crucial as delivering new ones. The government is largely off track towards its commitment to ensure that at least 94% of major flood and coastal erosion risk management assets remain fit for their designed purpose through to March 2025. With the available funding, and the significant impact of winter storms between 2023 and 2024 on existing assets, the predicted outcome for 2024 to 2025 is 92% of assets at required condition.[462] There is no indication that the Environment Agency will meet its longer-term commitment of maintaining 98% of its high-consequence assets in the required condition, due to the need for additional funding.

The existing flood risk reduction programme will contribute to the government's priority of protecting communities from the dangers of flooding. By turning its focus towards programmes that deliver ecologically coherent nature-based solutions through NFM projects, the government has an opportunity to use its success in reducing flood risk as leverage to address other environmental hazards. Currently, there are around 184 NFM projects within the 2021-2027 flood and coastal defence programme and the NFM programme combined, suggesting that the government is largely on track to reach its commitment to double the number of government-funded projects to reduce flooding and coastal erosion through nature-based solutions – to make 260 projects by 2027.[463,481,482] A large majority of nature-based solutions have multiple benefits, such as reducing the risks of several hazards, improving habitats and biodiversity and increasing water quality, thus have the potential to contribute towards meeting EA21 targets and interim targets.

Table 9.4. Reduced risk of harm from environmental hazards – summary assessment of prospects of meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Prospects
Better protect 100,000 properties from flooding and coastal erosion by 2024, and 336,000 by 2027.	**Largely off track**
Maintain at least 94% of major flood and coastal erosion risk management assets fit for their designed purpose, through to March 2025. Our long-term aim is for this to reach 98%.	**Largely off track**
Double the number of government-funded projects to reduce flooding and coastal erosion through nature-based solutions to 260 projects by 2027.	**Largely on track**

9.6. Opportunities for improvement

To effectively protect communities from all environmental hazards, the government should focus on fostering collaboration, building capability and raising awareness. A large majority of nature-based solutions for reducing the risk of environmental hazards have multiple benefits, such as decreasing risk across several hazards, improving habitats and biodiversity, and increasing water quality. For example, increasing green infrastructure reduces surface water flooding, while increasing urban resilience to extreme heat and improving public health and wellbeing. To deliver strategic solutions that provide multiple benefits, spatial targeting along with effective governance to ensure cross-government co-ordination is needed.

Flood risk

The progress that has been achieved in the annual reporting period in decreasing flood risk is a positive example of evaluating and learning from past programmes to create a practical, well-funded plan that effectively mobilises both government and stakeholders. However, the approach to monitoring and evaluation of the current capital programme favours traditional solutions.

Both the National Infrastructure Commission and the Climate Change Committee have recommended that the government set longer-term targets for the level of flood resilience and flood risk reduction it is seeking to achieve.[483] The Environment Agency led a research project into measuring resilience to flooding and coastal change and the selection of

national indicators (namely, properties better protected from flooding through defences, asset condition, planning applications granted against flood risk advice, and the availability and take-up of flood warnings.[454] This provides an opportunity to change how government enables and measures the benefits of a broader range of actions to increase resilience over the long term by utilising one or some of these indicators to set new long-term measurable commitments to reduce flood risk within the upcoming EIP revision.

The increasing frequency of extreme weather events and increasing levels of development could raise the number of properties at high risk of flooding. The newly established cross-government Floods Resilience Taskforce and proposed reforms to the National Planning Policy Framework offer significant opportunities to increase resilience to environmental hazards through improved spatial planning.[484]

To reduce flood risk in England, particularly from surface water flooding, further actions are necessary. The government must now implement Schedule 3 of the Flood and Water Management Act 2010, as recommended in its 2023 review.[485] Using the natural environment to help keep surface water out of sewer systems would reduce the risk of surface water flooding and reduce pollution, as well as benefiting wildlife, providing access to nature for local communities, helping to improve air quality and lowering carbon emissions.

The National Infrastructure Commission's Second National Infrastructure Assessment recommends enhancing data collection and fostering co-ordinated governance at the local level. Additionally, it advocates for measures to control the proliferation of impermeable surfaces.[316] A strategic approach to addressing this issue would include better distribution of public funding to upper-tier local authorities and the requirement to develop costed, long-term, joint plans to manage surface water flooding, including local targets for risk reduction.

Wildfires

The forthcoming Wildfire Strategy and Action Plan will be key to reducing the increasing risk of wildfires from climate change.[416] It should be used alongside the promised England wildfire risk map to target the most effective resilience measures in high and medium risk areas to reduce the overall area affected by wildfires. Wildfires are complex, and increasing resilience requires a mix of adaptative and preventative measures. The measures need to be based on strong evidence and should take into account the complexities and limitations of different sites and the unintended consequences of adopted land management strategies to reduce wildfire risk. Almost all UK wildfires are caused by humans. Poor public awareness of wildfire risks should be addressed in the forthcoming Wildfire Strategy and Action Plan through community engagement and communication to facilitate green choices. The Wildfire Strategy and Action Plan should also include a target for reducing wildfires in the UK.

High Temperatures

The social and economic case for accelerating heat adaptation measures in the UK is clear. The UK government was one of the first signatories of the Global Cooling Pledge, marking a major advancement in heat resilience and sustainable cooling efforts.[474,486] There is now the opportunity to publish a coherent and credible UK national cooling action plan, as required by the Global Cooling Pledge. This action plan should consolidate various aspects currently

managed by different departments, drive delivery towards a collective long-term vision and put in place a clear governance structure to provide leadership and drive co-ordinated action forward.

In our 2022/2023 progress report, we made three recommendations relating to policy development and funding programmes. Progress during the reporting period regarding these issues has either been mixed or limited. Therefore, these issues remain relevant and are reflected in the recommendations below.

Reduced risk of harm from environmental hazards recommendation 1: To improve the management of surface water flooding, the lead local flood authorities should work with stakeholders to produce and deliver publicly available joint delivery plans that show how the risk of surface water flooding will be reduced to meet agreed local targets and follow the solutions hierarchy.

Reduced risk of harm from environmental hazards recommendation 2: To reduce the number of properties at risk of surface water flooding, Defra should bring into force Schedule 3 of the Flood and Water Management Act 2010 and update its technical standards for sustainable drainage systems.

Reduced risk of harm from environmental hazards recommendation 3: The government should change how it enables and measures the benefits of actions to reduce the risk of harm from flooding, by using the indicators it has developed to measure progress against a wider range of flood resilience actions to set new measurable targets to reduce flood risk.

Reduced risk of harm from environmental hazards recommendation 4: To reduce the risk and impact of extreme heat, the government should develop a heat resilience strategy that further develops green infrastructure in towns and cities and sets out a clear governance structure to provide leadership and drive forward co-ordinated action across national and local government, communities and the private sector.

Reduced risk of harm from environmental hazards recommendation 5: To mitigate the risk of harm to the environment from wildfires, the Home Office should use its forthcoming Wildfire Strategy and Action Plan to set clear targets for wildfire reduction, implement adaptative and preventative measures, enhance public awareness and strengthen the evidence base.

Chapter 10: Enhancing biosecurity

Chapter 10: Enhancing biosecurity

10.1. Summary assessment

Enhancing biosecurity and tackling the threats of invasive non-native species (INNS) to native biodiversity is essential to achieve the government's priority of ensuring nature's recovery. It is also vital to increasing the resilience of species, habitats, agriculture and forestry to climate change.

The number of INNS becoming established continues to rise and their distribution continues to increase in freshwater, marine and terrestrial environments, increasing pressure on native biodiversity and having economic impacts.

A strong partnership approach between the government and other stakeholders is at the core of achieving the key outcomes for 2030 from the Great Britain Invasive Non-native Species (GB INNS) Strategy. Co-ordination mechanisms are long established and function well with actions undertaken across a comprehensive range of areas. These mechanisms are delivering progress, just not at the needed pace and scale.

The prospect of achieving the target to reduce the number of INNS introductions and establishments by at least 50% by 2030 is largely off track. Current resources are inadequate, and their allocation does not follow the recommended approach of prioritising prevention, followed by early detection and rapid response, and then management and control.

The government has opportunities to improve outcomes by increasing resources, prioritising prevention and rapid response, strengthening compliance with legislation and publishing an implementation plan for the GB INNS Strategy that provides the necessary level of transparency and detail to enable stakeholders to effectively play their part in delivery.

Table 10.1. Enhancing biosecurity – summary assessment

Past trends	There has been increasing establishment of INNS since 1960, with no indication that trends are changing.	**Deteriorating trends dominate**
Progress in the reporting period	Positive actions are happening but not at the needed pace and scale. The GB Non-native Species Secretariat and Inspectorate have limited capacity. Delays with publishing the GB INNS Strategy implementation plan and consultation on pathway action plans (PAPs) have slowed progress.	**Mixed**
Overall prospects of meeting ambitions, targets and commitments	The government is off track for meeting the INNS target. Overall resourcing is low and not enough is allocated to prevention and rapid response. Increasing the capacity of the Non-native Species Secretariat and Inspectorate and establishing a rapid response biosecurity fund would improve prospects.	**Largely off track**
Robustness	The assessment has primarily used sources of publicly available information and expert judgement. Data on the number of INNS becoming established are available and accessible through the Non-native Species Information Portal. Key evidence gaps remain, but they are being addressed through the GB INNS Evidence Strategic Plan.	

10.2. Context and commitments

Enhancing biosecurity and tackling the threats of INNS to native biodiversity is essential to achieve the government's priority of ensuring nature's recovery, as well as increasing the resilience of species, habitats, agriculture and forestry to climate change. The risks from pests, pathogens and INNS has risen with the growth of trade and travel and is increasing with climate change.[148]

INNS are one of the top five drivers of biodiversity loss globally and impact the economy, food security, water security and human health.[487] Their economic impact in the UK has increased 45% between 2010 and 2021, in terms of comparable costs. In 2021, the total annual cost to the UK was estimated at £1.9 billion, of which £1.4 billion occurred in England, with agriculture and construction, development and infrastructure the most affected sectors.[488]

The EIP23 aims to address biosecurity threats and lists measures to protect and enhance animal and plant health and tackle INNS. Our assessment primarily focused on INNS, given the relationship between effective management of INNS and improved outcomes in other areas, such as nature and water. The EIP23 sets a target to reduce the rates of introduction and establishment of INNS by at least 50% by 2030, compared with 2000. The EU Regulation 1143/2014 on the prevention and management of the introduction and spread of invasive alien species (EU Regulation on Invasive Alien Species) has been retained in domestic law and holds at its core a list of invasive alien species of special concern that are subject to restrictions.[489]

The UK has committed, under Target 6 of the Kunming-Montreal Global Biodiversity Framework, to identifying and managing pathways, preventing the introduction and establishment of priority INNS, reducing the rates of introduction and establishment of known or potential INNS by at least 50% by 2030, and eradicating or controlling INNS, especially in priority sites, such as islands.

The overall framework for tackling INNS is provided by the GB INNS Strategy 2023 to 2030.[490] It sets out a vision that 'biodiversity, ecosystems, people and the economy are protected from the risks posed by INNS through a strong partnership of government, voluntary organisations, non-governmental organisations (NGOs), researchers, businesses and the public'. It also lists seven key outcomes for 2030 to achieve this vision (Box 10.1). The GB INNS Strategy follows the hierarchical approach of the Convention on Biological Diversity, which emphasises prevention, followed by early detection and rapid response and then management and control.

Delivery of the GB INNS Strategy is overseen by the UK Non-native Species Programme Board and the GB Non-native Species Committee, as well as the GB Non-native Species Secretariat (GB NNSS), which acts on behalf of the Programme Board and Committee and is the focal point for co-ordination and communication. The Programme Board and key stakeholders interact via working groups and the annual stakeholder forum, which is facilitated by the GB NNSS and its website.

Box 10.1. GB INNS Strategy seven key outcomes by 2030

Prevention: Reduce establishments of INNS by at least 50% compared to 2000 levels.

Surveillance, early detection and monitoring: Significantly improve our detection and monitoring capability, including increasing inspections and investigations.

Management: Eradicate, control or contain INNS – prioritised by the greatest impact and likelihood of success.

Prioritisation and risk analysis: Set out an agreed approach to the prioritisation of species based on risk and likelihood of success to ensure that our efforts are focused where they can achieve the greatest benefit.

Evidence: Commission the research priorities outlined in the Evidence Strategic Plan, to ensure that the strategy is based on the best available evidence, identify gaps and priority areas for further development.

Awareness raising: Increase awareness of INNS issues and promote appropriate changes in behaviour or attitudes throughout all relevant sectors and among the general public.

Co-ordination: Improve co-ordination of actions within governments, government associated bodies and key actors outside government.

10.3. Key environmental trends

The Outcome Indicator Framework (OIF) has two biosecurity indicators. They were not available for reporting in 2024 in a finalised form as they are being further developed, so the interim indicators have been used instead.

The number of INNS becoming established continues to rise (Figure 10.1). Of the 2,074 established non-native species in Great Britain, 195 are considered to be having a negative impact on native biodiversity (48 freshwater species, 39 marine species and 108 terrestrial species).

From 1969 to 2022, the number of INNS established in or along 10% of the land area or coastline has increased in freshwater, marine (coastal) and terrestrial environments, with the greatest increases observed in marine and terrestrial environments (27 and 33 species respectively).[491]

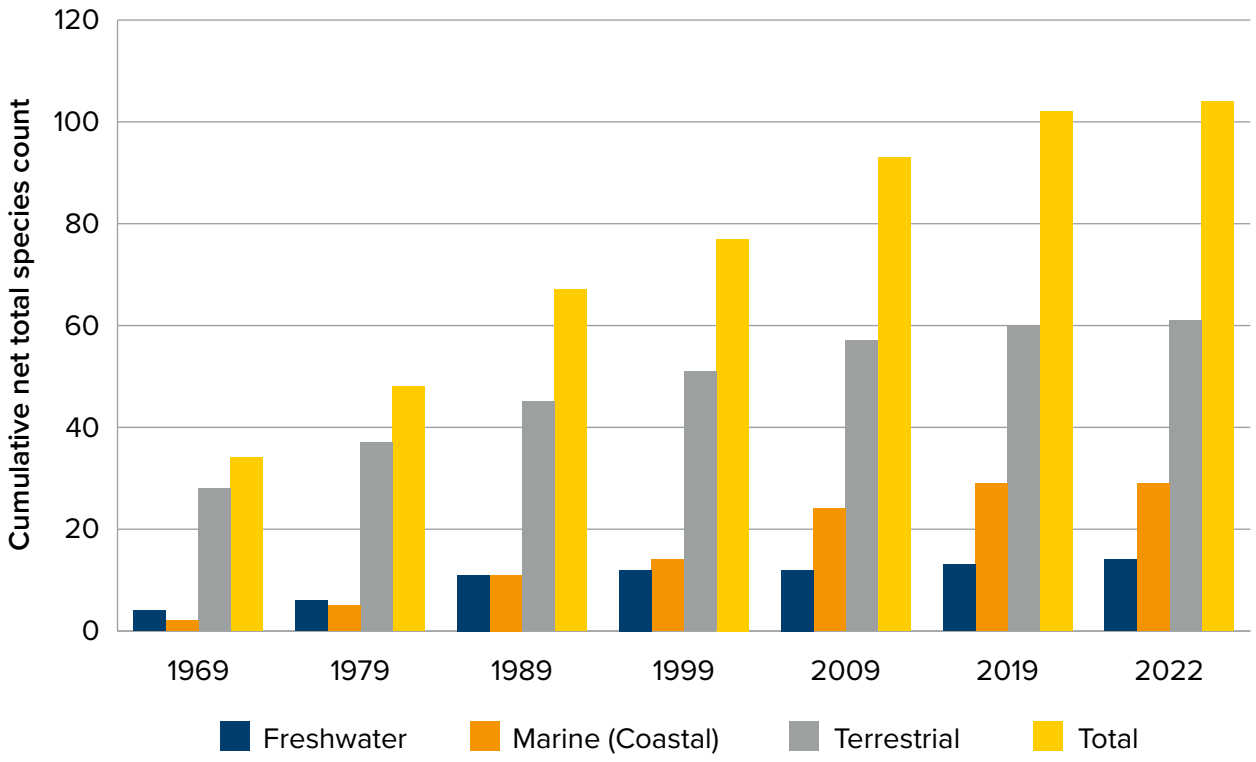


Figure 10.1. Cumulative net total number of INNS established across or along 10% or more of the land area or coastline of Great Britain, from 1969 to 2022[491]

From 2000 to 2023, there has been a decrease in the number of additional tree pests and diseases becoming established in England within a rolling 10-year period (Figure 10.2).[492] Over this period, 11 tree pests and diseases became established.

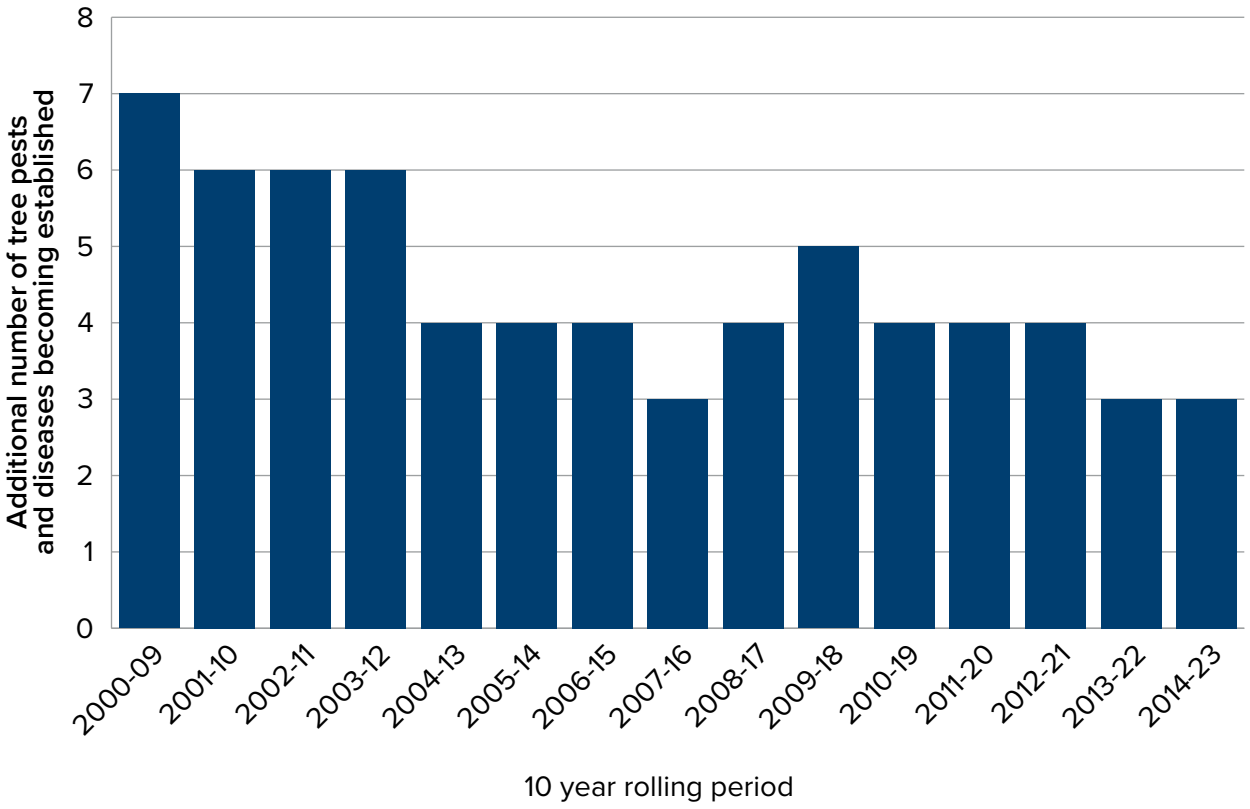


Figure 10.2. Number of additional tree pests and diseases becoming established in England, from 2000 to 2023.[492]

Our 2022/2023 progress report contained a comparison of the annual expenditure, level of threat and success of biosecurity regimes. Plant health has significantly more resources than INNS, including for inspections and this is reflected in the different trends regarding establishments of INNS and tree pests and diseases.

A summary assessment of the key trends we assessed is provided in Table 10.2.

Table 10.2. Enhancing biosecurity – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Number of INNS becoming established	↑	1969–2022
Number of additional tree pests and diseases becoming established	↓	2000–2009 to 2014–2023

10.4. Progress towards ambitions, targets and commitments

The APR 2024 reports a range of actions to protect and enhance plant and animal health, including border controls, awareness raising, funding schemes and management actions. However, the APR 2024 only reports three actions on tackling INNS and so provides a very limited picture of activities within the annual reporting period. Therefore, we complemented this information with wider evidence-gathering, primarily using the range of publicly

available resources provided by the GB NNSS. A summary assessment of the targets and commitments we assessed progress towards is provided in Table 10.3, with further detail given below.

Policy, governance and resourcing

Actions to tackle INNS encompass a wide range of activities, so it is important to know what the expected outcomes of these are and how they come together to achieve the objectives and seven key outcomes of the GB INNS Strategy. The GB INNS Strategy was published in February 2023 and contains a commitment to draft and publish an implementation plan. The implementation plan should identify key leads and contributors for each action, as well as monitoring delivery and reviewing the success of actions in delivering the key outcomes. This should feed into an annual progress report on the actions taken under the GB INNS Strategy.

We are aware that an implementation plan has been developed; however, at the time of writing and 19 months after the publication of the GB INNS Strategy, it is still not publicly available. No annual progress reports have been published, although the GB NNSS provides an update on progress each year at the annual stakeholder forum. In addition, there is also limited transparency regarding the UK Non-native Species Programme Board and GB Non-native Species Committee. The terms of reference state that they will place their agendas and associated documents on the GB NNSS website. However, they currently publish the agenda and minutes of the meetings at least six months after they take place, and the papers considered at the meetings are not published.

The lack of a publicly available implementation plan for the GB INNS Strategy and the low level of transparency of the UK Non-native Species Programme Board and GB Non-native Species Committee undermine the strong partnership approach that should be at the core of a strategy such as this that is reliant on stakeholder engagement and involvement in delivery to achieve outcomes.

Assessing progress requires the development of an approach to measure the EIP23 target and GB INNS Strategy key outcomes. There is work under way to develop a methodology for tracking progress towards the target to reduce the rates of introduction and establishment of INNS by at least 50% by 2030, compared with 2000. This will involve a combination of analytical approaches – such as horizon scanning, risk assessment and management, and modelling – along with action-focused metrics, such as pathway management, interceptions, contingency responses and eradications.[493] This is a positive development and would benefit from being made public to enable scrutiny and allow stakeholders to contribute to what is a very challenging task.

In our 2022/2023 progress report, we highlighted the benefits of strengthening the integration of INNS and other biosecurity issues. Defra continues to convene a monthly biosecurity meeting, which is useful in integrating INNS into the better-resourced plant and animal health regimes, given the shared risks and potential to improve collaboration on surveillance.

A refreshed UK Biological Security Strategy was published during the reporting period and includes INNS, with the GB NNSS reporting relevant actions on awareness raising, inspections, PAPs and contingency responses, all of which contribute to achieving strategy outcomes. The GB NNSS also maintains links with the National Biosurveillance Network,

which is focused on a One Health approach to surveillance, particularly for human and animal health.

Our 2022/2023 progress report identified the low level of resourcing as a key issue holding back progress. Since then, no updated estimate of overall resourcing has been available and nor has it been possible to provide a relative estimate of expenditure along the hierarchy of prevention, early detection and rapid response, then management and control. However, there has been an increase in the budget for the Non-native Species Inspectorate (NNSI), with an increase in staffing from 10 to 16 during the reporting period.[494]

The NNSI plays an important role in preventing introductions and establishments through inspections, as well as supporting rapid response. The APR 2024 reported that the NNSI undertook a total of 1,378 inspections over the reporting period and determined that non-compliance with respect to key invasive species legislation across all key sectors is at 11%. No comparable data were available for plant and animal health to use as a reference point, but this nonetheless provides a useful baseline against which to assess developments in compliance.

Prevention

Achieving the target to reduce the rate of introductions and establishments of INNS requires prevention to be prioritised. Prevention actions encompass horizon scanning, risk assessment, import controls and border security, and pathway management.

The APR 2024 reported the introduction of new border controls as part of the Border Target Operating Model that is being progressively introduced from January 2024. While INNS are not addressed directly, they are addressed indirectly where they are a shared concern for plant and animal health. However, the scheme has been beset by multiple delays, and the extension of checks to some fresh produce has been further delayed to July 2025.

The GB INNS Strategy has an objective to maintain and further develop a risk analysis framework to support legislation, decision-making and prioritisation. The GB NNSS runs the GB Non-native Risk Analysis Mechanism and there are currently 151 completed risk assessments. One new species has been prioritised for risk assessment during the reporting period.[493] The risk assessment process is robust and takes account of developments in international standards. However, the process of laying statutory instruments to list and de-list species of special concern to target the greatest risk species is very slow. For example, after a review of the list of species of special concern in 2022, 10 species were agreed for de-listing, but this has not yet occurred.

The GB INNS Strategy identifies six priority pathways: hull fouling, stowaways on fishing equipment, zoo or botanic garden escapes, contaminants of ornamental plants, horticulture escapes and ballast water. It commits to the development of PAPs but states that commercial shipping hull fouling and ballast water are addressed by the International Maritime Organization, marine licensing and the International Convention for the Control of Ships' Ballast Water and Sediments 2004.

PAPs set out a series of actions for stakeholders, with an emphasis on awareness raising, promoting best practices and implementing biosecurity measures. PAPs are developed with the involvement of stakeholders and then finalised after consultation. PAPs have been developed for zoos, recreational boating, angling and horticulture. The GB NNSS

established an exotic pets PAP working group during the reporting period, with the aim of having a draft PAP by mid-2025.

However, the potential of PAPs to contribute to the prevention of INNS introductions and establishments is hampered by delays in the consultations needed to finalise them. The zoos and botanic gardens PAP has remained in pre-consultation draft form since 2016, the recreational boating and angling PAP since September 2020 and the horticulture PAP since September 2022, with no progress made regarding consultations during the reporting period.

The NNSI has also contributed to an improved understanding of unintentional pathways, such as angling, boating and containers. During 2023/2024, it carried out 451 inspections and recorded a contamination rate of 10% for containers, 32% for boats and 15% for angling equipment. The NNSI estimated that there could be around 600,000 contaminated units per year in these pathways in GB.[494]

Early detection and rapid response

Achieving the target to reduce the rate of introductions and establishments of INNS also requires effective early detection and rapid response. The GB INNS Strategy has an objective to further prioritise rapid responses and maintain and develop the capacity to carry them out.

Records of INNS are contained in the Non-Native Species Information Portal, which provides access to distribution data for over 3,000 non-native species, as well as more detailed information for over 300 species. A species alert mechanism has been developed to support the rapid recording of new species. A focused list of 19 species was developed to improve detection and reporting, but there is still a need to raise awareness of the species on the list.

In April 2023, the GB NNSS reconvened the rapid response working group and they are currently carrying out a review to inform the development of future actions. In addition, during the reporting period, the GB NNSS and the UK Centre for Ecology and Hydrology have tracked 59 potential incursions, including 40 terrestrial invertebrates, nine plants, three mammals, two birds, three fish and two freshwater invertebrates. Given available capacity, it is challenging to screen this number of species and determine an appropriate response. In October 2023, the rapid response to the greater white toothed shrew (*Crocidura russula*) was discontinued, as it was already too established for eradication to be feasible, highlighting the need for awareness raising and early detection so responses can be taken before species become established.

Management and control

The GB INNS Strategy contains an objective to minimise and manage the impact of established INNS in a cost-effective and strategic manner. This involves supporting local action and ensuring that INNS management is included in new agricultural and land management schemes.

Local Action Groups focus on reducing the risks and impacts associated with INNS in a specific area. There are over 50 Local Action Groups in England. The APR 2024 reported that 12 Local Action Groups were awarded a total of £300,000 over two years under the Local Invasive Species Management Fund. While welcome, this amounts to £12,500

per year and, as it focuses on riparian INNS weed management, it does not provide the long-term funding needed for effective management and control of these species.

The GB NNSS supports Local Action Groups and organises an annual workshop to exchange best practice and discuss common issues. The most recent one was held in January 2024. It involved developing a future vision for Local Action Groups and the importance of more sustainable funding was emphasised.

The GB NNSS has also provided regular input to progress the integration of INNS management into environment land management schemes. INNS are included in the Countryside Stewardship scheme, with action on the control of invasive plants and mammals, such as deer, grey squirrel and mink. It is not possible at this stage to assess how this contributes to overall INNS management and control.

The development and implementation of biological control methods is seen as an important part of improving the long-term management of widespread INNS. The APR 2024 reported development with the biological control research programme and that testing of the weevil *Listronotus elongatus* has been successful, with clear ongoing control of floating pennywort at many of the 19 test sites.

Awareness raising

Raising awareness of INNS among key target audiences and the general public is an essential part of achieving the behaviour change needed to reduce the risk of new INNS introductions and the further spread of established INNS. An annual Invasive Species Week takes place to raise awareness of the issues and work that is being undertaken to address INNS. In May 2023 and May 2024, organisations across the UK, Ireland, Isle of Man, Jersey and Guernsey worked together during the Invasive Species Week to raise awareness of INNS, their impacts and measures to prevent their spread.

In addition, two further public awareness campaigns, Clean Check Dry and Be Plant Wise, were delivered by the GB NNSS and partner organisations. Their development was informed by a 2018 survey of awareness of INNS issues among key stakeholders and the public in England.[495] An evaluation of the campaigns that includes a repeat of the survey would help to ensure that they have the maximum impact.

Looking across the EIP23 target and the objectives and outcomes of the GB INNS Strategy, overall progress in the annual reporting period is mixed. However, progress towards the specific target to reduce the number of introductions and establishments is limited. Positive actions are happening, but not at the pace and scale required, as illustrated by the delay in publishing the GB INNS Strategy implementation plan. The continued low level of resourcing means that co-ordination mechanisms, such as the GB NNSS, despite functioning well have limited capacity and lack funding for prevention and rapid response, which delays action and progress.

Table 10.3. Enhancing biosecurity – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Progress
Reduce the number of introductions and establishments of INNS by at least 50% in 2030.	**Limited**

10.5. Prospects of meeting ambitions, targets and commitments

The prospect of meeting the target to reduce the rates of introduction and establishment of INNS by at least 50% by 2030 compared with 2000, is largely off track (Table 10.4). In our 2022/2023 progress report, we stated that this was despite having a well-established and comprehensive approach with the right tools in place and that the fundamental problem was that actions are not undertaken with the necessary urgency or at the scale required to achieve the target. This remains the case.

One of the key outcomes of the GB INNS Strategy is to improve co-ordination of actions within governments, government associated bodies and key actors outside government. A lot of the available capacity of the GB NNSS is spent on co-ordination in order to achieve this. However, maximising effectiveness will also require addressing the complicated governance and delivery arrangements that impede rapid action.

In addition, improving co-ordination is not enough without the resources to act. Overall resourcing is low and not enough is allocated to the priority areas of prevention and rapid response. This is recognised in the GB INNS Strategy, which acknowledges that the need for significantly greater resources for prevention is a factor contributing to the low number of complete eradications of INNS.

Table 10.4. Enhancing biosecurity – summary assessment of prospects of meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Prospects
Reduce the number of introductions and establishments of INNS by at least 50% in 2030.	**Largely off track**

10.6. Opportunities for improvement

In our 2022/2023 progress report, we illustrated that, with sufficient resources, political will and long-term commitment, preventing introductions and establishments of INNS are attainable goals. This remains the case.

The government has clear opportunities to improve outcomes. It is important to ensure that there are the resources needed to act and not just co-ordinate, and that allocation of resources across activities reflects the hierarchy of prevention first, followed by early detection and rapid response, then management and control.

Prevention and preparedness are the most cost-effective options for managing threats from INNS.[487] Increasing capacity of the GB NNSS and the NNSI, as well as establishing a rapid response biosecurity fund for delivery bodies to provide short-term funding when needed to prevent the establishment of an INNS, would improve the chances of meeting the INNS target. Increasing the capacity of the NNSI would also enable them to play a bigger role in rapid response, as well as increasing compliance with legislation.

Management of high-risk pathways can also be improved. PAPs are voluntary and, as such, can be limited in their effectiveness. The unnecessary delay in consultation and finalisation also affects their uptake, use and impact.

Publication of an implementation plan for the GB INNS Strategy is essential to provide the necessary level of transparency and detail to enable stakeholders to effectively play their part in delivery. This should be complemented by an annual progress report that goes beyond a list of actions. Our 2022/2023 progress report set out seven attributes of an APR for the EIP that could inform the development of a progress report for the GB INNS Strategy. The GB NNSS currently provide an update on activities at the annual stakeholder forum, which could be further developed into an annual progress report.

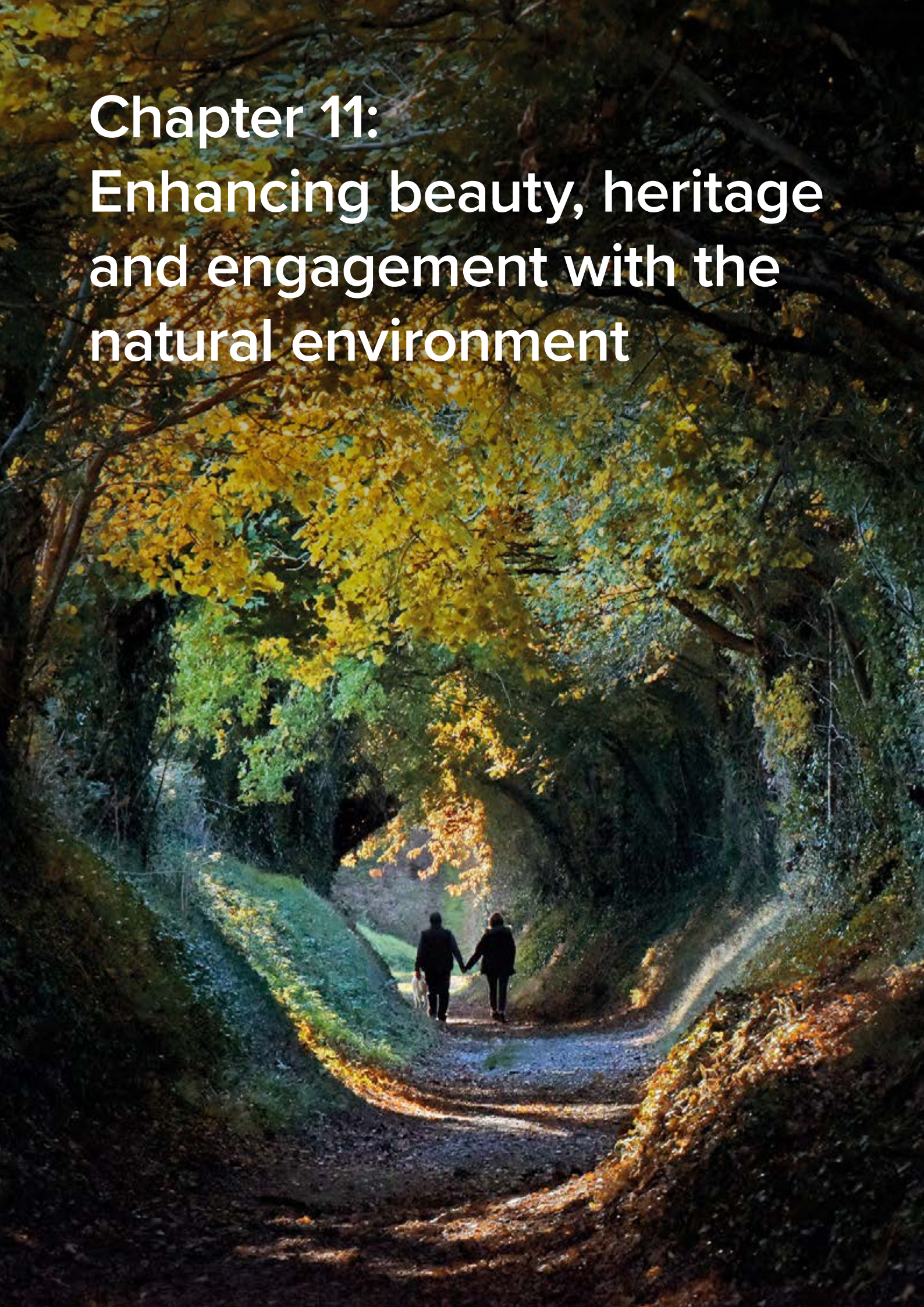
It is only five years until the 2030 target to reduce the number of introductions and establishments of INNS by 50%, so simply doing more of the same will not deliver the desired outcomes. Past trends clearly show that there are limits to what can be achieved with the current scale of action and pace of delivery. A change of mindset is needed, from one that focuses on justifying actions to one where acting is the default response.

In our 2022/2023 progress report, we made four recommendations relating to the need for more resources and capacity, prioritising prevention actions and policy integration. Progress during the reporting period regarding these issues has either been good or limited. These issues remain relevant. This year we have focused on unnecessary delays.

Enhancing biosecurity recommendation 1: Defra working with the devolved governments in Scotland and Wales should strengthen the partnership approach at the core of tackling INNS and enable stakeholders to play their part in delivery by publishing an implementation plan for the GB INNS Strategy.

Enhancing biosecurity recommendation 2: Defra should increase the effectiveness of PAPs by carrying out a public consultation so that they can be finalised and implemented fully.

Chapter 11: Enhancing beauty, heritage and engagement with the natural environment



Chapter 11: Enhancing beauty, heritage and engagement with the natural environment

11.1. Summary assessment

Enhancing the beauty and heritage of the natural environment, widening access to it and strengthening people's engagement with it, together create a virtuous circle. Their successful delivery has merits on its own, improving health and wellbeing, but also provides a vital foundation for the rest of the EIP23.

There is a varied picture of changes in quality across landscapes and waterscapes. Entrenched inequalities mean that some parts of society continue to have less opportunity to access and engage with nature than others. While frequency of visits to the natural environment shows little recent change, there are worrying trends in children's engagement with nature.

The government has been trying to widen the spatial and social reach of the natural environment, through improvements in and expansion of protected landscapes. It has also been championing the importance of green and blue infrastructure.

Most progress has been made with policies that use the government's significant spatial evidence base to ensure that the benefits of nature are available to everyone. By putting nature at the heart of strategic thinking and decision-making in multiple sectors, particularly planning, health and education, the government can harness the support and resources needed to deliver this goal.

Table 11.1. Enhancing beauty, heritage and engagement with the natural environment – summary assessment

Past trends	Available data on landscape and waterscape character shows more improvement and stability than decline. The frequency of adults' visits to the natural environment and pro-environmental behaviours show little or no change. However, the frequency of children's visits to the natural environment during school holidays and their pro-environmental behaviours have declined.	**Trends show a mixed picture**
Progress in the reporting period	Progress has been made in widening access. Steps have been taken to expand and enhance protected landscapes. While nature-friendly farming policies and various tree planting actions have improved access and engagement, urban green spaces remain under resourced. Progress has stalled regarding green social prescribing and the Children and Nature Programme.	**Mixed**
Overall prospects of meeting ambitions, targets and commitments	Use of varied definitions of access and green space suggest that the prospect of ensuring that everyone lives within a 15-minute walk of green or blue space is partially on track. However, the causes of inequalities in access, enhancement and engagement are only partially being addressed. Successful delivery depends on improved engagement and wider buy-in across government.	**Partially on track**
Robustness	The evidence base has improved due to increased engagement with government departments and delivery bodies supplemented by publicly available information. The assessment of prospects relies primarily on expert judgement.	

11.2. Context and commitments

Conserving and enhancing the beauty of the natural environment to make sure it can be enjoyed, used and cared for by everyone goes hand in hand with strengthening peoples' connection to it.

The EIP23 details two ambitious commitments: to ensure that everyone lives within 15 minutes' walk of a green or blue space; and to conserve and enhance the natural, geological and cultural diversity of landscapes, and protect the historic and natural environment for the benefit and enjoyment of future generations. Additional commitments to develop coastal paths are intended to generate significant benefits for the surrounding local landscapes and communities, as well as boosting the number and range of people accessing them.

Ambitions and actions also aim to use nature to improve health and wellbeing and strengthen future generations' connection with nature. The positive links between natural environments and people's physical and mental health are well evidenced.[496,497] Public Health England estimates that greater access to green space can save the NHS £2.1 billion annually through avoided health costs, contributing to improving healthy life expectancy and addressing inequalities in life chances across society.[498]

Exposure to nature can increase levels of physical activity and improve mental health and cognitive performance among children and young people.[499] However, it is not just the amount of time spent in nature that matters. The quality of the environment and the level of engagement is also vital, with evidence suggesting that wellbeing, educational and environmental outcomes are not being realised because of a growing disconnect from the natural world among significant proportions of the population.[500,501]

Harnessing the health and wellbeing and educational benefits of engagement with nature will directly support the government's missions to 'build an NHS fit for the future', where everyone lives well for longer and to 'break down barriers to opportunity' through the childcare and education systems.

Responsibility for progress lies across government departments (Figure 11.1). The Department for Environment, Food and Rural Affairs (Defra) is the lead for natural environment policy and therefore for many of the programmes described in the EIP that aim to improve access, enhancement and engagement.

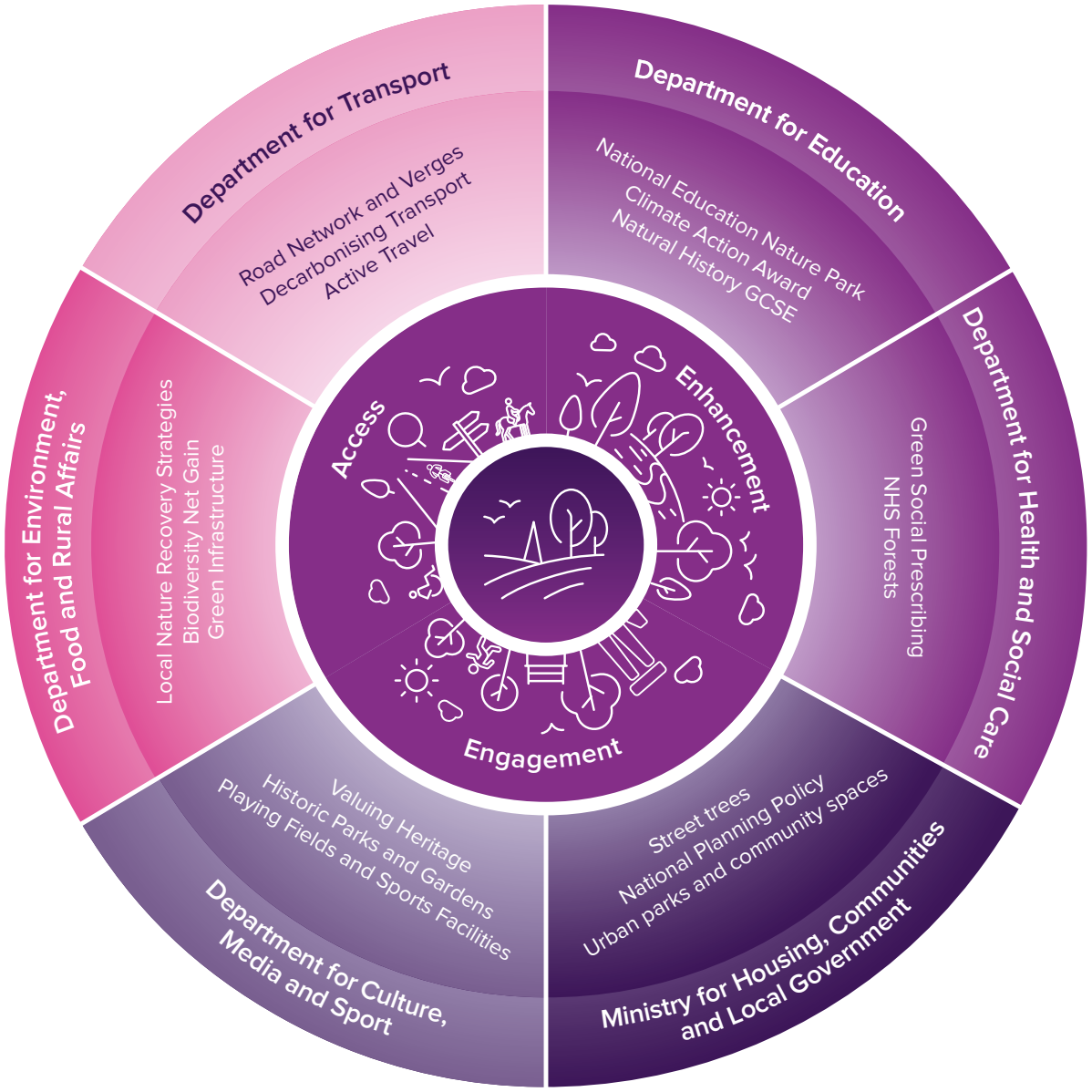


Figure 11.1. Examples of government departments and their policies that contribute to beauty, heritage and engagement

The Ministry for Housing, Communities and Local Government (MHCLG) provides national planning policy, which is a vital part of protecting and enhancing nature, securing access to green spaces for communities and investing in green infrastructure.[472,502] Alongside policies for improving urban parks and green spaces, this contributes to providing accessible green space for large numbers of people.

The Department for Transport and Active Travel England aim to make 50% of all journeys in towns and cities walked or cycled by 2030 and for 55% of all primary school children to be walking to school by 2025,[503] thus increasing time spent outside and people's connection with local environments.

The Department for Education's Sustainability and Climate Change Strategy is explicitly cross-referenced to the EIP23[504] and aims to strengthen the connection between children and nature. Similarly, the Department for Culture, Media and Sport (DCMS) has responsibility for natural heritage, and has created a National Youth Guarantee that commits to 'ensure

that every young person in England will have access to regular out-of-school activities, adventures away from home and opportunities to volunteer by 2025'.[505]

The Department of Health and Social Care has no strategies or targets relating to engagement with nature, but does have the policy remit for, and most to gain from, helping people access the health and wellbeing benefits of time spent in nature.

In addition, the third National Adaptation Programme (NAP3) published in July 2023[416] introduced risk reduction goals for communities and health and wellbeing, as a way to direct government action and make the most of adaptation opportunities through, for example, nature-based solutions such as green infrastructure.

11.3. Key environmental trends

Access

The government has developed a new official statistic for defining and measuring access to green space in England, which uses three scenarios to describe how many households live within a 15-minute walk of green space.[506] The scenarios vary in the type of green space and rights of way that are included, which has a significant impact on the estimation of the number of households with access.

In 2023, the 'neighbourhood standard' scenario estimated that 53% of households live within 1km of a green space of at least 10 hectares. The 'all green space' scenario estimated that 78% of households live within 1km of a green space of at least two hectares; and the 'all green space with rights of way' scenario estimated that 91% of households live within 1km of a green space of at least two hectares or a rural right of way.

Looking below the national-level figures, patterns of distribution become apparent that have implications for how the government approaches achieving its commitment of 100% of households living within 15 minutes' walk of green or blue space. For example, the percentage of households with access to green space is much higher for urban than rural areas in two of the three scenarios. In the 'neighbourhood standard' scenario, most areas either have all households or no households with access to green space. These patterns highlight the value of such spatial analysis for informing where the most significant lack of access to green space is and why this might be the case.

Enhancement

In 2024, Natural England published a composite indicator of changes in landscape and waterscape character that measures changes in the physical, visual, cultural and experiential attributes of 159 National Character Areas (NCAs) across England.[507] It enables analysis of the extent to which NCAs are delivering outcomes ranging from improving the conditions of rivers and canals to conserving and enhancing heritage assets.

From 2015 to 2019, the attributes of 34% of NCAs were declining, 60% were improving and 6% showed mixed or little change. There was little difference in these overall trends between NCAs that were partly inside or outside of protected landscapes. Figure 11.2 shows the types of change and where these declines and improvements in the attributes of NCAs were happening.[508]

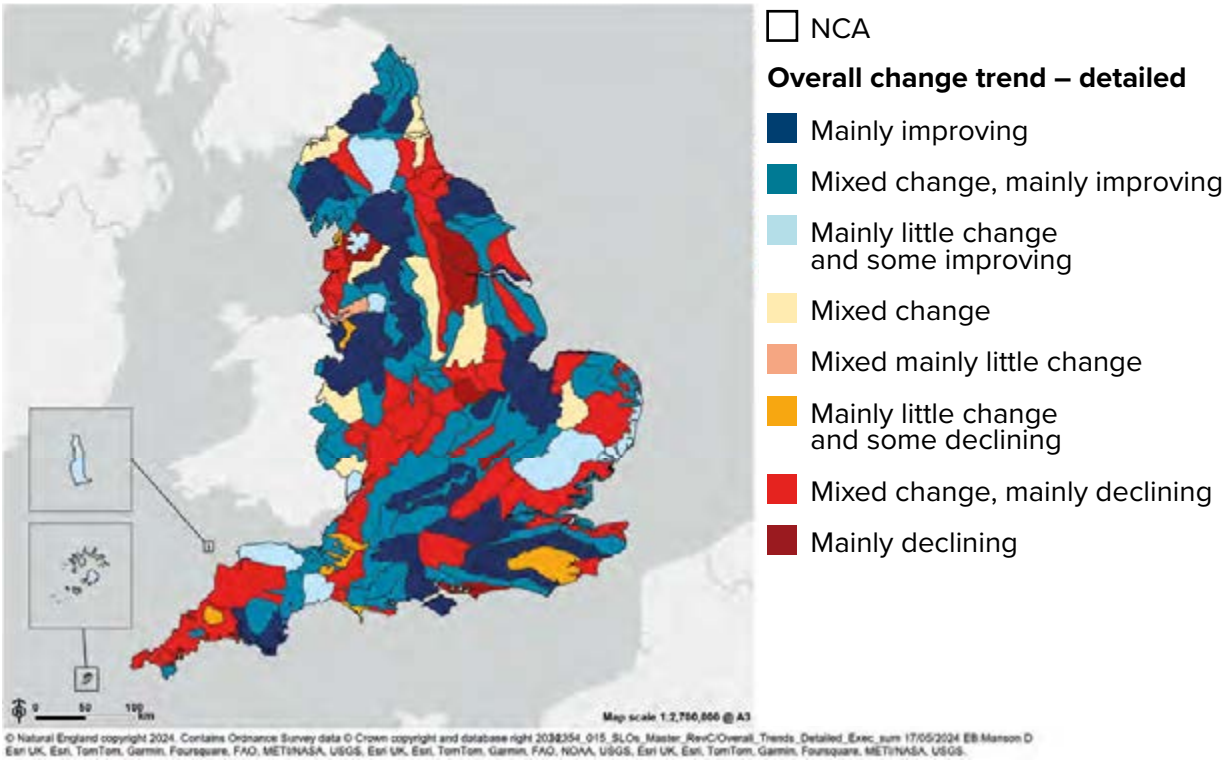


Figure 11.2. Map of NCAs showing the trend in changes in their attributes

Agri-environment schemes (AES) are one of the major drivers of improvements in landscape and waterscape character. The percentage of NCAs that were positively influenced by AES fell from 77% in 2013 to 60% in 2018.[507] These changes cover a time when AES were in flux, transitioning from legacy schemes to the new environmental land management (ELM) schemes. More recent, as yet unpublished, data show that the figure had returned to 83% in 2023.

The data show which attributes of NCAs are being influenced by AES, such as woodland and tree cover, historic environment and coast. As such, they provide useful monitoring, evaluation and learning for the iterative design and implementation of AES over the long term.

The insights from this indicator can also be helpful for improving coherence among, and efficacy of, spatial planning at the national and local levels, ensuring that they work together to tackle declining attributes and enhance the potential outcomes provided by NCAs. This will be important for more built-up areas that are unlikely to be affected by AES or protected landscapes.

Engagement

From 2009 to 2019, a Natural England survey reported an upward trend in the proportion of adults visiting the natural environment at least once a week over the last year, recording a high of 65% in 2018/2019.[509]

In 2020, a new survey began, asking a similar but not directly comparable question. From 2020/2021, the total proportion of adults visiting the natural environment at least once a week was 71%, although this dropped to 69% in subsequent years with little or no change since (Figure 11.3).[605] There is a positive relationship between frequency of visits and

increasing income as well as higher qualification levels, whereas older age, non-white ethnicity and poor general health are correlated with less frequent visits.

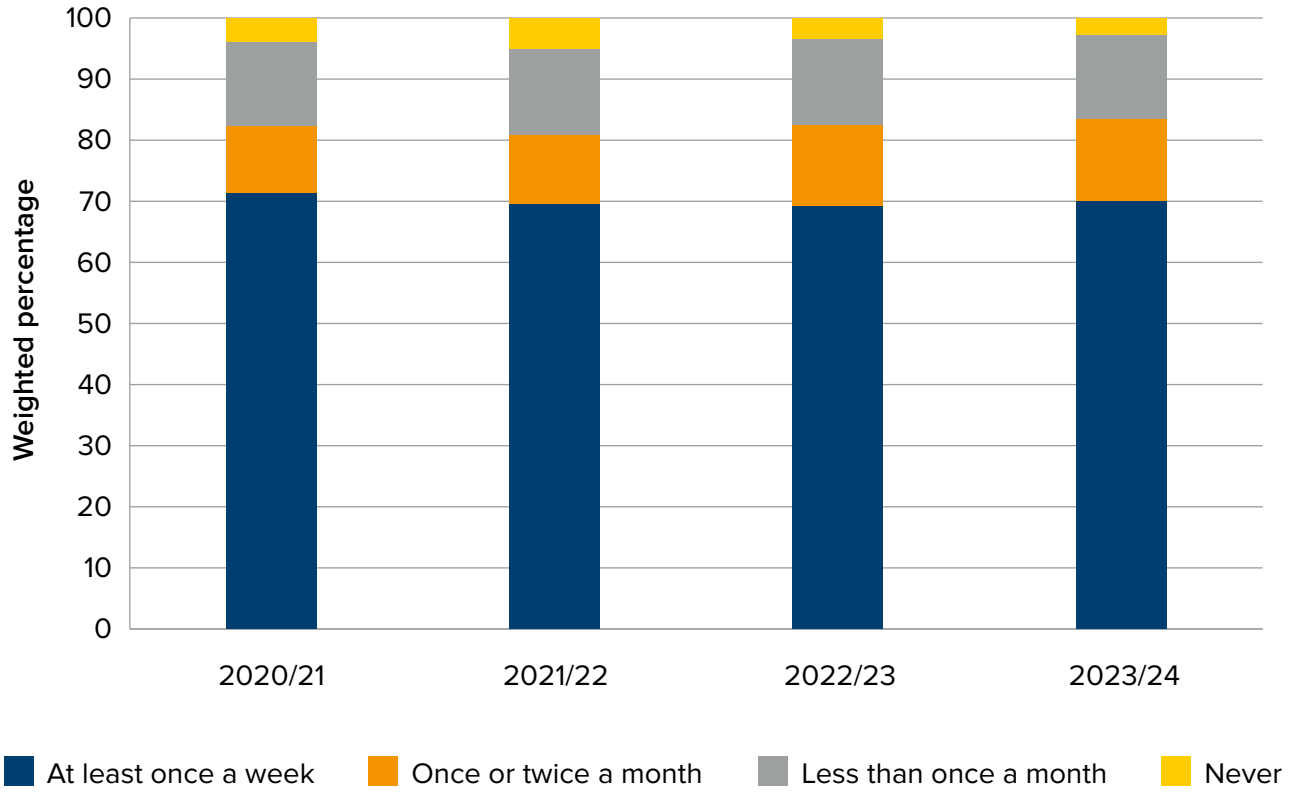


Figure 11.3. Frequency of visits to green and natural spaces by adults, 2020 to 2024

For children, the overall trend is less positive. Although almost 90% of children report spending time outside every day or most days during the past week during school term time, that figure drops to around 50% outside school term time and has declined from 2020/2021 to 2022/2023 (Figure 11.4).

Across the school system there are big differences and pockets of deprivation in the amount of green space and time available to children to enjoy it. A recent survey showed that only 27% of schools have integrated outdoor learning into their curriculum for all pupils.[510] Similarly, lower-income families were less likely to report spending time in their garden and more likely to report not having access to a garden at all.

Overall time spent in nature is as important as the frequency of visits, especially for health and wellbeing benefits. Combining data on both frequency and duration of visits shows that, by 2022, rates had returned to pre-pandemic levels. This decline is equivalent to 1.1 million less people spending time in nature and £390 million of health benefits not realised.[511]

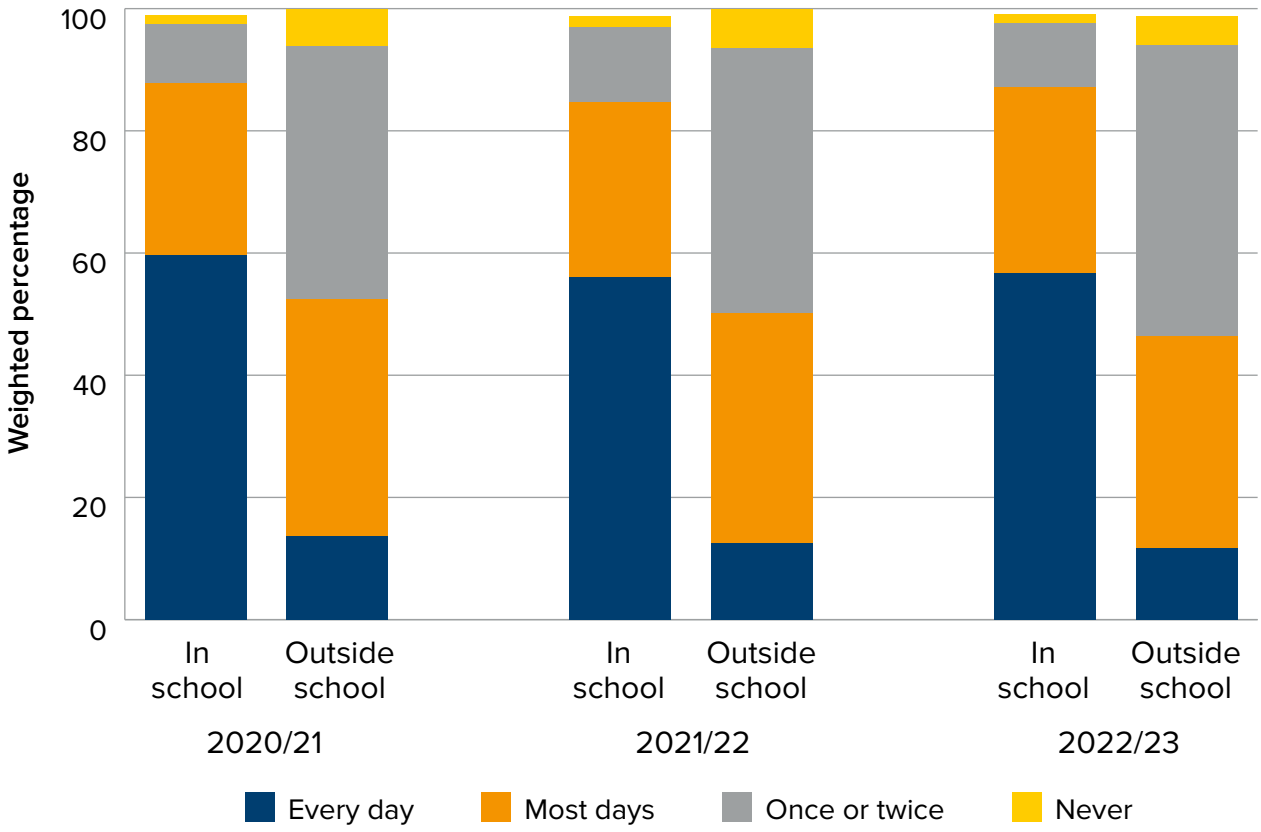


Figure 11.4. Frequency of time spent outside in the past week by children in school and outside of school, 2020 to 2023

Pro-environment behaviours are another indication of the way people engage with the environment. From 2020 to 2023, indices of low (0) to high (100) amounts of pro-environmental behaviours, such as recycling, sustainable consumption and learning about nature, showed little change for adults (around 50) but a decline for children (from 45 to 40).[512]

A summary assessment of the key trends we assessed is provided in Table 11.2.

Table 11.2. Enhancing beauty, heritage and engagement with the natural environment – summary assessment of key trends

Indicator	Indicator trend	Trend time period
Percentage of the total population in England living within 15 minutes' walk of green space, as of 2023		N/A
Changes in landscape and waterscape character		2015–2019
Visits to green and natural spaces by adults		2020–2024
Frequency of time spent outside in the past week by children during school term		2020–2023
Frequency of time spent outside in the past week by children during school holidays		2020–2023
Pro-environmental behaviours of adults		2020–2024
Pro-environmental behaviours of children		2020–2023

11.4. Progress towards ambitions, targets and commitments

Overall progress on enhancing beauty, heritage and engagement with the natural environment has been mixed, with most progress in improving access. A summary assessment of the targets and commitments we assessed progress towards is provided in Table 11.3 with further detail given below.

The APR 2024 details 20 distinct activities that the government has undertaken, of which 18 were led by Defra, and two, regarding active travel, were the responsibility of the Department for Transport and Active Travel England. Most actions were in the early stages of the policy cycle, announcing policy design developments and future funding commitments. Four actions were about delivery or collaboration on the ground, along with one policy evaluation.

Access

Around half of actions reported in the APR 2024 focused on improving the accessibility of protected landscapes, woodlands and other green spaces. Significant steps have been taken in developing and designing policies with potentially widespread benefits. These include increasing the size of protected landscapes by starting the process for designating a new National Park and a new National Forest, as well as improving access to existing ones through the Access for All programme. This programme will continue to invest in infrastructure works to remove practical barriers to access.

In 2023, an Action Plan for Protected Landscapes was published alongside additional funding commitments for specific projects.[513,514] New targets and outcome frameworks were set for the 44 protected landscapes, which included a target to 'improve and promote accessibility to and engagement with protected landscapes for all, using existing metrics in our Access for All programme'. This is a welcome development that should ensure widening access is embedded in management plans and decision-making. Its link to an established monitoring indicator will enable consistent reporting on progress in future APRs.

Outside of protected landscapes, policies are being developed to improve access to woodlands, private farmed land, and other types of green and blue spaces. The Woodland Access Implementation Plan was published in November 2023, with the stated aim to 'make sure the provision of safe and appropriate public access is a feature of as many woodlands as possible'.[515] The Plan cites many specific government activities relating to woodlands that can be leveraged and should ensure a coherent approach. It also takes a spatial evidence-based approach to understanding current levels and distribution of woodland access, so as to target interventions most effectively.

In June 2023, new incentives for increasing access to and through farmland were added to ELM schemes. These included new and longer routes for cyclists and horse riders, accessible gates and bridges, and path improvements to accommodate prams, mobility scooters and others. However, the new and existing incentives for accessibility in ELM schemes are not spatially targeted, so their uptake may not be in the places that need it most.

Spatial targeting of such government actions as planting trees and enhancing green and blue spaces is vital for maximising benefits and tackling inequalities in access. This was evident in some of the tree planting actions reported in the APR 2024, such as the £2.5 million fund for micro woodlands in urban areas and community orchards. A fund for rural areas was also launched in March 2024 to support community green spaces.[516]

An Environment, Food and Rural Affairs Select Committee inquiry into urban green spaces ran during the APR 2024 reporting period, concluding with a letter to the Minister that offered suggestions for tackling the concerning decline in the quantity and quality of green space.[517] We support the Committee's call for statutory targets or requirements to develop and maintain urban green spaces, as well as more consistent and co-ordinated support from central government to ensure that resource-constrained local authorities can prioritise access to green spaces.

The APR 2024 notes that Natural England has started to embed the Green Infrastructure Framework through training and support.[518] However, at the time of writing there are no published insights from its early uptake nor any explanation of how it is working alongside other key spatial tools, such as Local Nature Recovery Strategies (LNRS) and the National Planning Policy Framework (NPPF).

Another way in which the spatial mapping that underpins the Green Infrastructure Framework – and the new access to green space statistics – can help direct government action is by linking to walking and cycling routes. In 2023, Active Travel England was made a statutory consultee on all large planning developments, meaning they can work with Defra and MCHLG to ensure walking and wheeling to and through green spaces is designed into new developments.[519]

However, the two active travel actions included in the APR 2024 – relating to funding for local authorities and schools to deliver cycling and walking schemes – should be viewed within the context of a £233 million cut to the overall direct funding for active travel. The actions have unclear impacts and the government is off track to deliver 2025 targets.[134]

Enhancement

As well as aiming to improve accessibility and engagement, the Action Plan for Protected Landscapes has a range of other aims, including linking management plans and outcome frameworks to national environmental targets. Management plans are the mechanism by which public authorities and delivery partners achieve their environmental, social and economic outcomes for protected landscapes.

The government has a new target to decrease the number of nationally designated heritage assets at risk in protected landscapes.[46] This is linked to a well-established Heritage at Risk Register, managed by Historic England, for tracking changes in the condition of heritage assets.[520] This new target and outcome framework is a much needed step towards improving the delivery and coherence of protected landscapes, so they result in better outcomes for access and heritage. However, this target does not encompass the range of reasons why people value landscapes. A target reflecting the broader range of dimensions captured in the indicator on landscape and waterscape character could drive improvements in the physical, visual, cultural and experiential attributes of England's protected landscapes.[507]

Much of the land in protected landscapes is privately owned, so nature-friendly farming policies can contribute to reducing pressures on the environment from agriculture. Although not reported in the APR 2024, a recent evaluation of the Farming in Protected Landscapes programme (2021 to 2024) provided evidence of the programme's popularity, flexibility and value for money.[521] This led to an announced extension to 2025 and doubling of its total spend to £10 million. There has also been continued progress on the Landscape Recovery tier of ELM and on tree planting actions to enhance urban environments.

Engagement

Health and wellbeing

The designation of 27 new bathing water sites (see Chapter 4) is a good example of an action that will help to realise the health and wellbeing benefits of engagement with the natural environment. However, there have been limited other announcements relating to recreational use of nature specifically for health and wellbeing.

Regarding using nature to tackle health and wellbeing issues in society, the previous government's pioneering green social prescribing programme concluded in April 2023 with no announcements about its future, despite evaluation evidence of its positive impacts and scalability being published in January 2024.[522,523] The cost savings generated by some specific projects involved in green social prescribing or involving NHS partners were published in June 2023, suggesting a potential £635.6 million could be saved annually.[524]

During the reporting period, the government commissioned research to fulfil a commitment to develop a standard evaluation framework for examining the health benefits of outdoor interventions. Involving environment, health and travel public bodies, this work has the

potential to standardise the way different government programmes capture evidence of the health benefits of engagement with nature, further strengthening their credibility.

Another Natural England initiative that is helping to bring evidence on environmental and health benefits together is the Health, Wellbeing, Nature and Sustainability tool. Intended to bolster integrated decision-making in local contexts, early insights from pilots suggest that its accessible evidence dashboards and local-scale application have helped decision-makers find a shared language and grapple with the complexity of competing priorities in local planning contexts.

LNRS continue to be developed and, although their primary aim is to improve habitats and biodiversity, government guidance includes a steer to consider the co-benefits from nature improvement, such as improved health and wellbeing. If responsible authorities can overcome potential tensions and make these links to public health, they can encourage wider buy-in among local stakeholders and increase the impact of LNRS.

Children and young people

In November 2023, the previous government announced £2.5 million for helping children engage with nature. Building on the successes of the Generation Green project that ended in 2022, this is an opportunity to continue working with a large consortium of delivery partners to achieve impressive reach.[525] [526]

Activities by other government departments, such as the Youth Investment Fund administered by DCMS and MHCLG, which launched a second round of funding for 2022 to 2025, are also helping children and young people from disadvantaged backgrounds to volunteer in nature and have impactful experiences in the outdoors.[527]

As part of its long-term vision for connecting children and nature, the government has championed the idea of schools as one big nature park. However, successive APRs have given no specific information on how this is progressing or what it is achieving.

At the time of writing 1,800 educational sites out of a possible 40,000, approximately, have become part of the National Education Nature Park.[528] The Department for Education and its delivery partners drew on Natural England's spatial data about access to green space and indices of multiple deprivation to target support for the schools that are most in need. While this is a good example of a policy being delivered where it is most needed, there is a long way to go for the policy to have a big impact. As of August 2024 it included just over 200 hectares out of an estimated 50,000 hectares of land across the school estate.[529,530]

There is also slow progress on the Department for Education's Climate Action Awards and on the Natural History GCSE that was promised for 2025. During the reporting period, the Department for Education continued to develop content for the new qualification, but it is now within the scope of the government's wider review of assessment and curriculum.

Table 11.3. Enhancing beauty, heritage and engagement with the natural environment – summary assessment of progress over the annual reporting period towards meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Progress
Everyone should live within 15 minutes' walk of a green or blue space.	**Mixed**
Conserve and enhance the natural, geological and cultural diversity of landscapes, and protect the historic and natural environment for the benefit and enjoyment of future generations.	**Good**

11.5. Prospects of meeting ambitions, targets and commitments

Overall, the prospects of the government meeting its commitments are only partially on track. A summary assessment of the targets and commitments we assessed progress towards is provided in Table 11.4, with further detail provided below.

Actions that are in place for widening access and enhancing landscapes appear credible and increasingly coherent. However, more action is needed in the education and health sectors if the benefits of embedding nature in education and public health are to be realised.

Statistics for access to green space show that there are some seemingly entrenched patterns of difference in access to green space between rural and urban areas and among different social groups. These are long-established patterns whose causes, implications and potential solutions have been well researched.[531] The government has some of the tools at its disposal, such as spatial evidence and the Green Infrastructure Framework, but these need to be applied more consistently and comprehensively. Therefore, we assess the prospects of meeting the commitment that everyone should live within 15 minutes' walk of a green or blue space as partially on track.

Statistics on the character of landscapes and waterscapes show that attempts to enhance them through Protected Landscape designations and AES are having some limited success. Pressures on biodiversity and habitats continue to hinder efforts to enhance the wildlife aspects of landscapes. Alongside these, climate change poses a significant risk to the physical and cultural heritage embodied in landscapes and waterscapes, so we assess prospects as partially on track.

Social and economic drivers, such as urbanisation, socio-economic inequality and health disparities, are also affecting access and engagement. The application and influence of the Green Infrastructure Framework will need to be a material consideration via the NPPF to ensure that green and blue spaces are a prominent part of planning reforms, and that local environments and communities are protected from the impacts of climate change (see Chapter 9).[532,416]

The government needs to do more to bring nature into school life, through the places in which children learn, as well as through their subjects and activities.[533] The reporting period has seen insufficient engagement from the education sector, which is reflected in the limited and often non-existent opportunities for outdoor learning reported in some schools.[510]

The Children and Nature programme (2019 to 2022) was an excellent example of multi-departmental collaboration, between Defra, the Department for Education and Natural England. The programme benefited 53,000 children from schools in disadvantaged areas, despite practical and funding limitations due to the pandemic.[534]

Evaluation evidence from this programme showed that there is a strong desire among schools, teachers and pupils for greater engagement with nature, and many different and low-cost ways to support that engagement and generate benefits.[535,536] These findings were published in September 2024 and provide a basis for valuable learning with delivery partners, as well as the business case for further investment and policy development. However, despite these well-evidenced benefits, there is no planned follow-on for the Children and Nature programme.

Regarding health, green social prescribing was a successful cross-government programme that enabled more than 8,000 people, many with poor mental health, to engage with nature and improve their wellbeing. Its evaluation generated evidence that could help to further embed nature into health policies and inform the government's design and delivery of similar schemes in the future.[522]

Table 11.4. Enhancing beauty, heritage and engagement with the natural environment – summary assessment of prospects of meeting targets and other commitments

Targets and commitments (EIP23 unless otherwise indicated)	Prospects
Everyone should live within 15 minutes' walk of a green or blue space.	**Partially on track**
Conserve and enhance the natural, geological and cultural diversity of landscapes, and protect the historic and natural environment for the benefit and enjoyment of future generations.	**Partially on track**

11.6. Opportunities for improvement

The government has clear opportunities to improve progress and harness synergies with its priority missions on education and health. The decline in the frequency of children's visits to the environment outside school and in their pro-environmental behaviours is concerning. The upcoming Children's Wellbeing Bill is a golden opportunity to integrate nature with improving children's educational attainment and mental health.

The government can also improve progress by maximising the use of the spatial evidence base. The development of the new indicators on access to green space and on landscape and waterscape character provide valuable spatial information that, in combination with the mapped layers of information available in the Green Infrastructure Framework, can inform policy design and delivery. This includes spatial planning at national and local levels and AES.

In some instances, this is already happening, but it is only on a voluntary basis and it is not going far enough. For example, the NPPF and LNRS suggest, but do not require, decision-makers to consider communities' access to and engagement with nature. As new and large-scale policies are developed, such as housing, infrastructure and new protected landscapes that work for wider society, it should be clear that these have been informed by the evidence about where actions are needed most to improve environmental outcomes.

In addition, the spatial nature of the data enables the combination of environmental and socio-economic information to target actions to reduce environmental inequalities.

Harnessing support from across government is also essential, as the policy levers needed to deliver ambitions, targets and commitments are spread across government departments.

This is true of improving access to the environment, through outreach activities involving multiple sectors and through such physical interventions as local development and active travel. It is true of enhancing the environment through investment in urban green infrastructure. It is especially true of improving engagement, which should be a priority for any government that wants to realise the physical and mental health benefits that nature brings for adults and children and the financial savings it generates in avoided health care costs.[497,499,498]

In our 2022/2023 progress report, we made three recommendations relating to policy development and implementation and the evidence base. Progress during the reporting period regarding these issues has either been good or limited. These issues remain relevant and are reflected in the recommendations below.

Enhancing beauty, heritage and engagement recommendation 1: To ensure housing and infrastructure development improves, rather than impedes, people's access to nature, MHCLG should in addition to recent changes in the NPPF make sure that the Green Infrastructure Framework is a material planning consideration.

Enhancing beauty, heritage and engagement recommendation 2: To plan for and deliver the commitment that everyone should live within 15 minutes' walk of green or blue space, the government should use the new access to green space indicator to direct interventions where they are most needed and monitor progress.

Enhancing beauty, heritage and engagement recommendation 3: The government should harness synergies between its departments' objectives and remits and minimise competing priorities between planning and access to nature to maximise the health and education benefits associated with engagement with nature.

Chapter 12: EIP23 cross-cutting themes

Chapter 12: EIP23 cross-cutting themes

12.1. Introduction

The EIP23 identifies cross-cutting themes that are intended to tie together delivery across policy areas. These include nature-friendly farming, land use and planning, green finance, green jobs and skills, and green choices.

Each of these themes not only enables change in its own right, but it also affects the speed and scale of change more broadly. We focus on green finance because of its important contribution to ensuring nature's recovery and on green choices because achievement of goals and targets is a shared endeavour.

12.2. Green finance

Our 2022/2023 progress report provided a broad overview of government plans and issues related to green jobs and mobilising green finance. It also highlighted the absence of clear definitions and monitoring in both areas, along with significant gaps in governance arrangements and skills and capacity that would hinder progress if left unaddressed.

This year we have built on this and carried out a more in-depth analysis of the green finance agenda. It is a complex, evolving and multi-faceted area, which cuts across diverse sectors, including demand-side investors, supply-side actors delivering environmental outcomes, and stakeholders involved in market creation and standardisation. This has involved a review of available evidence[537] and consideration of options on how to best mobilise green finance at the scale needed to deliver the government's environmental goals, especially for nature and EA21 biodiversity targets.

Existing plans for mobilising green finance

It is widely acknowledged that mobilising green finance will be an important enabler for the government to achieve its priority of ensuring nature's recovery.[538–540] The EIP23 includes a commitment to mobilise 'at least £500 million of private finance per year into nature's recovery in England by 2027, rising to more than £1 billion per year by 2030'.[148] But the scale of finance needed to deliver on environmental goals would appear larger. For instance, the Green Finance Institute (GFI) has assessed that the 'finance gap' for the UK's nature-related goals is in the region of £44 billion to £97 billion over the period 2024 to 2034.[538]

The first Green Finance Strategy (GFS) was published in 2019[541] and updated in 2023.[39] The Strategy sets out the government's vision and brings together the complex landscape of related policies and enabling frameworks.

As described in the GFS 2023, there are two distinct elements within the green finance agenda. Firstly, 'align' (often called 'greening finance'), which is focused on integrating environmental impacts, risks and opportunities into finance and corporate decision-making. Secondly, 'invest' (often called 'financing green'), which is focused on mobilising and tracking private investment flows going into environmental goals.

In the UK and globally, much of the initial focus and the majority of green finance raised to date has been directed towards mitigating climate change by, for example, integrating the consideration of climate-related risks into the financial system and/or accelerating investment into the energy transition.[537] Over time, the scope has widened, and a key strength of the GFS 2023 is its explicit consideration of nature and climate adaptation.

'Financing green' developments

Published alongside the GFS 2023 was the Nature Markets Framework (NMF), an important element of the strategy for securing finance for nature. Plans centre around establishing 'nature markets' to enable trading of ecosystem services – a key mechanism to stimulate both demand and supply, linking buyers and sellers of nature outcomes.

For example, a key nature market is currently Biodiversity Net Gain (BNG). This requires developers to deliver a minimum 10% increase in biodiversity on the level present beforehand, driving investment into natural capital. It establishes a nature market by allowing development impacts to be mitigated off-site and through the purchase of biodiversity credits (see Box 12.2).

These markets are a relatively new concept globally, and the NMF outlines the core principles for the design and operation of nature markets. It also covers the rules for those participating in nature markets, including the ability for sellers of nature-related outcomes to combine income streams across markets, known as 'stacking'.[542]

A key element of the NMF is the development of standards. The government recognises that a lack of standardised processes for nature markets is holding back investment and market development. This is particularly the case with regard to measuring, monitoring and selling the benefits of nature projects. To address these issues, the NMF is working with the British Standards Institution (BSI) to create a suite of high-integrity nature investment standards and to develop an accreditation mechanism. The BSI has already published its Overarching Principles and Framework for Nature Markets[543] and nested standards for individual themes, habitats and/or natural capital assets are planned in the coming years.[542]

The aim of this work is to ensure that nature projects deliver high integrity outcomes and to reduce the transaction costs for biodiversity credits or units. A unit is a quantified amount of an ecosystem service, land use or habitat type, such as a tonne of carbon or a defined amount of biodiversity, that can be sold in the market.[542] This work supports investors' confidence and makes it easier for them to participate in nature markets, both of which support the demand side of nature markets.[542]

Ensuring that there is support for the supply side of nature markets as well as the demand side has also been a focus. For example, the government has made support available to landowners and farmers considering selling nature-related outcomes, including through the Natural Environment Investment Readiness Fund. In addition, the GFI has developed an investment readiness toolkit.[544]

'Green financing' developments

With regard to stimulating private sector demand and investment into nature projects, an important mechanism identified in the GFS 2023 has been to support disclosures on associated information by financial institutions and large businesses. Common, consistent

and comparable environmental financial disclosures, such as those on climate and nature, are viewed as useful to investors in understanding material risks and opportunities for their investments, and thereby directing and scaling investments into companies, activities and projects that can support green outcomes.

The UK has introduced mandatory climate disclosures, based on the Task Force on Climate-related Financial Disclosures (TCFD) monitoring and reporting framework.[545] The UK has also committed to exploring how the corresponding Taskforce on Nature-related Financial Disclosures (TNFD) framework (see Box 12.1) can be incorporated into UK policy, disclosure and the legislative landscape.[539]

Actions to identify and mitigate environmental-related risks and enhance resilience are also seen as important in directing private finance to support desired environmental outcomes. Globally, central banks and financial supervisors have acknowledged that the degradation of nature, and actions aimed at restoring it, could have significant macro-economic implications and be a source of financial instability. The evidence for this is becoming increasingly clear. For example, the GFI has recently assessed a wide range of material risks and cascading effects from the deterioration of the UK's natural environment. It quantified this as potentially leading to an estimated 12% loss to GDP.[546] To support embedding of nature into monetary policy work and activities, the Network for Greening the Financial System, a global group of over 130 central banks and supervisors including the Bank of England, recently published a conceptual framework to guide action on nature-related financial risks.[547]

Box 12.1. Nature-related financial disclosures and reporting

An increasing number of voluntary sustainability reporting standards and frameworks have been created in response to the demand for climate and broader environmental sustainability information from market participants. Given the global nature of financial systems and supply chains, the UK supports harmonisation and interoperability between jurisdictions.[539]

Under the UK's Presidency of the United Nations Framework Convention on Climate Change (UNFCCC) COP26 in Glasgow in 2021, the International Sustainability Standards Board (ISSB) was established to help harmonise disclosure standards. In 2023, the ISSB released its inaugural sustainability standards (IFRS S1 and S2), including the incorporation of the TCFD recommendations into S2. It is now starting to draw on the work of the TNFD.[539]

Nature-related disclosures and reporting have increasingly been seen as useful tools for influencing investment decisions, fostering sustainable changes in the use of nature across both direct operations and supply chains, and reorienting financial flows towards actions that mitigate adverse, and/or support positive, impacts on the state of nature.

The TNFD is market-led, science-based and government-backed initiative providing organisations with the tools to act on evolving nature-related issues. It aims to shift global financial flows towards nature-positive outcomes aligned with the Kunming-Montreal Global Biodiversity Framework (GBF) by integrating nature into decision-making.[537] The TNFD's work is supported by the World Wildlife Fund (WWF), Global Canopy, the United Nations Development Programme (UNDP) and the United Nations Environment Programme Finance Initiative (UNEP-FI).[548]

Box 12.1. Nature-related financial disclosures and reporting (cont.)

The TNFD has developed a set of disclosure recommendations and additional guidance to encourage and enable business and finance to assess, report and act on their nature-related dependencies, impacts, risks and opportunities.[537] Since the final TNFD recommendations were released in September 2023, around 440 businesses and financial institutions globally have voluntarily committed to adopt and report against them.[549]

Sectoral pathways for nature recovery – what investment is needed?

In our 2022/2023 progress report, we identified the need for the government to develop an evidence base to robustly assess the finance gap for its environmental goals. An important element of this is defining sectoral pathways for future investments.

The creation of sectoral pathways should reduce uncertainty and increase transparency over future planned actions and sector milestones. In this way, they should provide a critical path for new interventions that are likely to be needed, and a clear vision and direction for future investments.

The National Audit Office recently revisited learnings from multiple past reports on the government's environment and climate change goal delivery, covering a range of individual projects and programmes. This work highlighted the critical need for long-term plans that can inform decisions and investment across government, delivery bodies and the private sector, and support preparation for any regulatory changes that may be required.[10] The WWF and Aviva also recently articulated the concept of and case for 'nature-positive sectoral pathways', providing an illustrative pathway for the agricultural sector.[550]

The GFS 2023 acknowledged the importance of sectoral pathways. For Net Zero, the government confirmed that it will articulate investment needs by sector and summarise the relevant government policy and funding to make the sector investable. The government has since published roadmaps for offshore wind, heat pumps, carbon capture, usage and storage, and hydrogen.

For nature, it has committed to 'publish an investment roadmap by 2024 to support the nature-positive transition pathway for these sectors [such as agriculture, forestry, water, resources and waste] and will update them as policy develops.'[539] The EIP23 also committed to 'scope out the investment pathway for key sectors for the transition to a nature positive future'.[148] Government is currently revising the EIP, and it is uncertain whether work to publish investment roadmaps will continue.

In our view, sectoral pathways for agriculture, forestry, water, resources and waste are essential to unify and lead plans for green finance, including prioritisation of public funding, and to galvanise private investment. Defining the necessary scale and timing of actions, including those by landowners, businesses and the public, is a complex task. However, it is key to the successful delivery of the EA21 targets and should already be part of delivery planning.

Tracking investment flows – what investment is currently happening and where is it directed?

Another important aspect of understanding the progress towards closing finance gaps to support environmental goals is strengthening capability in tracking investment flows. Without an accurate understanding of baseline spend and where it is directed, it is challenging to assess whether environmental strategies and plans have adequate access to resources, to quantify what additional investment may be needed or to evaluate whether investments are delivering value for money.

The GFS 2023 stated that the government was working 'with external partners and data providers to better track private investment into the net zero economy going forward. We are also committed to monitoring annual private finance flows into nature's recovery in England against our target.'[539] The government has recently confirmed that it is still in discussion with partners to establish a cost-effective and feasible means of gathering data with the necessary credibility. At the time of writing, no further updates on the methodology are available.

It is also important to acknowledge that private investment is only part of the picture in terms of green finance. A comprehensive review of global biodiversity finance by the Organisation for Economic Co-operation and Development (OECD) found that around 75% of spending currently comes from domestic public expenditure.[540] Published statistics are available on the total spend on UK biodiversity by public sector and non-governmental organisations (NGOs) (Figure 12.1).

Public expenditure reduced steadily from 2012/2023 to 2017/2018; however, since then it rose by 41%, almost returning to the level seen in 2012/2013. With the exception of the 2020/2021 period, when a decline was likely caused by the Covid-19 pandemic, expenditure by NGOs has steadily increased since records began in 2010/2011[551,552] Despite these rises, public investment in nature remains low as a proportion of GDP (at around 0.03% in 2021/2022).

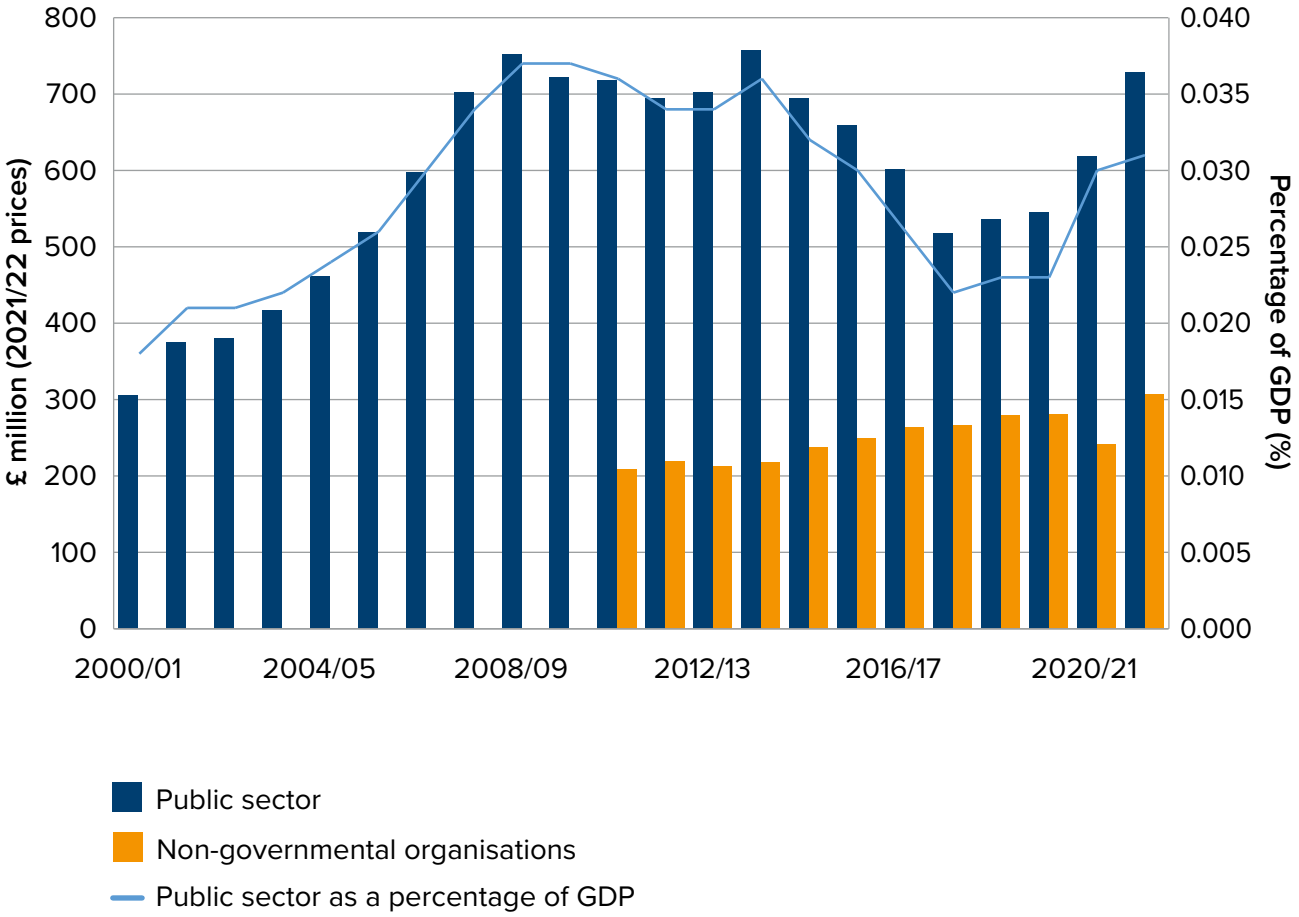


Figure 12.1 Expenditure on biodiversity in the UK from 2000/2001 to 2021/2022. No data are available before 2010/2011 for NGO expenditure on UK biodiversity. Wherever possible, NGO spend is net of government funding.[551]

This provides only an aggregate view of public spending for biodiversity. A more detailed breakdown is required to assess government progress in mobilising the necessary investment and to establish whether public investment is well targeted. There should be greater transparency over investment sources and flows, providing a golden thread from funding sources to desired outcomes. This would first involve gathering diverse investment and project outcome data into one publicly accessible place, including investments made through and outside of nature markets, and from both private and public sources.

Public spending on biodiversity outcomes should also be monitored alongside, and in comparison with, the subsidies that are harmful to or have perverse impacts on biodiversity, including in relation to agriculture, forestry, transport and energy projects.[553] The UK has committed to the GBF Target 18 – to identify by 2025 and eliminate, phase out or reform incentives, including subsidies, harmful for biodiversity, in a proportionate, just, fair, effective and equitable way, while substantially and progressively reducing them by at least US$500 billion per year by 2030. Environmental land management (ELM) is seen as the main mechanism for achieving this target in England.[81] However, this only addresses one type of subsidy and the UK will need to develop an overall approach to identifying and quantifying such subsidies.

Addressing the barriers to mobilising investment – how can investments be scaled?

The UK needs to substantially upscale the amount of finance directed towards its nature goals. Based on the GFI estimates for the UK's finance gap for nature goals over the next 10 years,[538] recent public and NGO funding would need to multiply between around four and nine times relative to its 2021/2022 level.

At the core of the previous government's plans was the establishment of nature markets. We recognise that this is a potentially important mechanism to get right, and that it will take time to mature and grow. However, we note a significant mismatch between the capacity of nature markets to deliver and the scale of the finance needed to achieve targets.

The government must address early issues with scaling its flagship nature market, BNG. As the first statutory compliance scheme to facilitate the trading of nature credits, its principles and approach have gained attention globally, and its success is critical to the growth in nature markets more widely. According to research commissioned by Defra, BNG was originally expected to establish a biodiversity unit market of between £135 million and £274 million annually, with up to 50% of the 4,300-hectare habitat delivered annually coming from off-site projects.[554,555] As of November 2024, there are 19 sites registered for off-site projects, totalling only 511 hectares. This highlights the current implementation gap. According to the National Audit Office, Defra does not know how rapidly the biodiversity unit market can scale up, or whether the market can satisfy demand.[555]

One issue is the prioritisation of on-site BNG, which does not support the establishment of a nature market. Other issues include the extent to which development falls outside the scope of BNG due to exemptions, and variability in the ways BNG has been implemented regionally, given that local authorities may choose, through local plans, to complement (but not contradict) national BNG policy. These issues, in combination, are likely to have reduced demand for biodiversity units for off-site BNG, eroded supply-side confidence and hindered the development of a functioning competitive nature market.

Box 12.2. Biodiversity Net Gain (BNG)

BNG is an approach to enabling sustainable development. It makes sure that habitats for wildlife are left in a measurably better state than they were before development. It is also a key policy for creating a nature market, as it facilitates trading of biodiversity units.

BNG requires all developments covered by the Town and Country Planning Act 1990 to deliver a minimum 10% increase in biodiversity on the level present beforehand. Some local planning authorities may choose to raise this figure to 20% to deliver more nature recovery.

The level of biodiversity is calculated using Natural England and Defra's BNG metric, which is designed to provide ecologists, developers, planners and other interested parties with a means of assessing changes in biodiversity value (losses or gains) brought about by development or changes in land management.[556]

Box 12.2. Biodiversity Net Gain (BNG) (cont.)

The scheme prioritises on-site BNG based on the mitigation hierarchy principle. This prioritises avoiding adverse impacts from development, and if they cannot be avoided, impacts should be mitigated by prioritising in order, where possible, the enhancement of existing onsite habitats, creation of new onsite habitats, allocation of registered offsite gains and finally the purchase of biodiversity credits.[557]

The location of habitat creation supports different outcomes. On-site habitats mean that the development will have better access to nature but they are also more subject to human disturbance (potentially leading to lower quality). On-site habitat restoration is less likely to support large-scale projects and is less able to connect up priority natural habitats than off-site projects.[558]

The government should undertake a broad review of the policy, fiscal and regulatory landscape to determine if it is adequate for stimulating investment into nature recovery. Based on our evidence review, and on conversations with stakeholders, we found a significant demand-side gap. In a challenging economic and fiscal environment,[559] it is particularly important now to focus on multiple ways and mechanisms to stimulate greater private investment.

One such mechanism could be through widening compliance requirements. For example, water companies could be primary and major sources of private investment, were greater nature-based solution approaches to be mandated in the management of pollution and flooding.[537] Another mechanism could be to mandate nature-related corporate reporting, which could stimulate investment voluntarily, especially directed at mitigating those nature risks and impacts that surface through disclosure reporting requirements.

There are also major barriers for suppliers offering nature outcomes, irrespective of the nature market or delivery scheme. For example, to offer up land for nature projects involves foregoing agricultural use over the long term. Within BNG, once created or enhanced, the habitat must be maintained for at least 30 years.[555] According to a review of the project pipeline by the Ecosystems Knowledge Network, 76% of nature projects are not yet generating revenue. Government policy on 'stacking' is important in this regard, as it enables sellers of nature outcomes to combine income streams across markets.[560]

Another widely acknowledged barrier is the limited capacity within local authorities.[555,561] Local authorities provide many important roles administering initiatives such as BNG, including processing planning applications, linking developers with suppliers of green projects and securing legal agreements.[555] However, they face chronic resourcing and ecological skills gaps.[561] To address this, we welcome Defra's BNG project board's indication in March 2024 that it will use 'all levers available' to understand local authority capacity[555] and encourage the government to commit more dedicated funding to local authorities for implementing nature-related initiatives.

In our 2022/2023 progress report, we made four recommendations relating to governance, monitoring and evaluation, the evidence base and skills gaps. Progress during the reporting period regarding these issues has been limited. Therefore, these issues remain relevant. This year, we have focused in on key areas we consider critical for mobilising and targeting green finance effectively.

Green finance recommendation 1: To ensure that investment is directed efficiently and effectively, to promote economic opportunities and growth, and to provide a critical path for new interventions, Defra should define sectoral pathways for nature recovery and publish these alongside a revised EIP. This should cover, as a minimum, the agriculture, forestry, water, resources and waste sectors, as committed to in the GFS 2023.

Green finance recommendation 2: To enable independent scrutiny of progress in mobilising investment at the scale necessary and the targeting of that investment, Defra should develop a monitoring and evaluation framework for tracking investment flows, gather project investment and outcome data on a public platform, and report on progress annually. This should provide transparency over investment flows, from funding sources (private and public) to desired outcomes.

Green finance recommendation 3: Defra should support the growth of nature markets and stimulate greater investment in nature by systematically reviewing the risks and opportunities for such markets and investments, publishing an action plan to address these and reporting on progress annually. This should consider demand side, supply side and local authority capacity constraints.

12.3. Green choices

Throughout our 2022/2023 progress report, the importance of enabling non-government stakeholders to play their part in protecting and improving the environment was apparent. The government needs to find ways of leveraging the powers of citizens, communities and business to deliver change.

In its Net Zero Strategy[562] and the EIP23, government has referenced the importance of behaviour change as part of the transition to a more sustainable society and economy. It has set out six principles to enable everyone to make greener choices (see Box 12.3).

In our 2022/2023 progress report, we noted that the EIP23 and the APR 2023 had not elaborated on the importance of the green choices principles in contributing to improved environmental outcomes or tying together delivery across policy areas as intended. The EIP23 did not provide any applied examples, as the Net Zero Strategy does, to illustrate how these principles can make a difference in specific areas of environmental improvement.

Some of the actions in the APR 2024 can be seen as expressions of the green choices principles. For example, in relation to clean air, guidance on outdoor burning best practice was published, along with a communication campaign on the impact of domestic burning on air quality and health.

However, the extent to which government actions could be described as being based on behavioural science and green choices principles varies across policy areas. Waste management and transport policies directly address behaviour change regularly, while other areas, such as chemical use and nature-based recreation, less so.

Box 12.3. The government's principles for enabling green choices

1. We will make our society greener by design, reducing the ask of individual citizens by sending clear regulatory signals and targeting measures at government, local authorities and business.
2. We will make green action easier by addressing major practical barriers.
3. We will make green action affordable, supporting this across all sectors of society.
4. We will empower people and businesses to make informed choices, by providing clear information about the environmental impact of different products, services and actions.
5. We will build public acceptability for major changes, inviting those affected to inform policy making, including the most marginalised.
6. We will present a clear vision of a sustainable society, including the role of different actors in achieving our environmental goals.

Expanding on the principles: why they matter for environmental improvement

Behavioural insights are an established and fundamental component of the policy-making process. Based on behavioural science evidence, these principles should help the government's strategic thinking and policy design.

The six principles can be grouped into three complementary areas of government activity that need to work together to achieve transformational change. Firstly, fundamental changes to sectoral structures and the rules of engagement among governments, businesses and organisations (Principle 1). Secondly, changes to daily life that make green choices more likely (Principles 2, 3 and 4). Thirdly, personal engagement with individuals that builds a shared vision and intrinsic motivation (Principles 5 and 6).

Principle 1 emphasises interventions targeting businesses, governmental and non-governmental organisations through system design and clear regulatory signals. There is a long history of governments using targeted interventions, such as regulation, to restrict environmentally harmful practices. Governments in the UK and around the world have also increasingly turned to market mechanisms and technological innovation to tackle environmental issues.[563] Relevant examples include establishing new markets such as the one underpinning BNG, using cross-sector collaboration to establish technical standards for plant health and biosecurity,[564] and the Genetic Technology (Precision Breeding) Act 2023, which uses legislative powers to support crop innovations that reduce the need for pesticides.[565]

Principles 2, 3 and 4 address some of the main factors affecting decision-making and tackle general practical barriers, affordability and awareness. They reflect successive UK governments' interest in using the 'choice architecture' surrounding decision-making to nudge us towards more desirable outcomes. Government actions that express these principles can go some way towards greening consumer behaviour in many sectors, helping to move people from simply being concerned about sustainability implications through to paying a premium to reduce harm and improve the environment.[566]

Principles 5 and 6 describe things the government can do to personally connect individuals to the bigger picture and empower them to act. Giving people a voice in policy making, and explaining how policies relate to them and others, fosters a sense of ownership that is needed for large-scale, long-term behaviour change. Transparency about who is expected to do what helps to avoid free-riding and feelings of disempowerment or dissociation from environmental problems and solutions. These are particularly pertinent for environmental challenges, such as climate change, that have global causes, delayed impacts and different implications for different people and places in society.[567] A shared and clearly articulated vision also helps to protect environmental policies from being revoked or revised out of alignment with long-term targets and commitments, including EA21 targets.

Providing such stability and certainty for stakeholders encourages investment in green technologies and infrastructure, and helps sustainable behaviours become more widely adopted and normalised. Monitoring data can show how well this is working. For example, the Farm Practices Survey tracks businesses' propensity over time to engage with environmental issues and flagship policies like ELM. Similarly, Natural England's People and Nature Surveys track changes in individuals' environmental attitudes and behaviours over time.[568]

Applying the principles: a case study of their expression in the food system

Improving our understanding of how well green choices principles have been applied, as well as how their use can be strengthened, requires consideration of their application to a specific area.

The food system is a major driver of environmental, climate and health impacts, including resource depletion, biodiversity loss and ecosystem degradation, pollution and unhealthy dietary choices. It is also an important factor in connecting communities, defining identities, expressing values and preserving cultural traditions.[569]

Food systems are shaped by many factors: economic, environmental, political, technological and social, including cultural norms and lifestyles.[11] These factors encompass a broad range of policies, including those that address agriculture and fisheries, environment and climate protection, health, products, research and innovation, and trade.

This creates challenges for policy coherence and governance. It also means that there are diverse views on the problems with the food system and where and how to intervene. However, a substantial body of scientific evidence identifies the need for action to reduce the environmental and health impacts of food production and consumption. The EAT-Lancet Commission on Food, Planet, Health argues that achieving healthy and sustainable diets within planetary boundaries will require nothing less than a 'great food transformation'.[570]

The UK Food Strategy

In 2022, the previous government published its Food Strategy in response to an independent review of the UK food system.[571,397] It outlines the strategic vision for the food system and provides basic information on actions related to production, consumption and global trade.

The EIP23 describes the Food Strategy as a complementary strategy that will drive delivery of its targets and commitments relating to using resources from nature more sustainably, as well as mitigating and adapting to climate change.

The green choices principles were first introduced publicly in the Net Zero Strategy in 2021.[562] The independent review of the UK food system flagged many associated behavioural issues and potential policy responses. We therefore analysed the extent to which the Food Strategy expressed the green choices principles and tried to harness their role in behaviour change.

The Food Strategy articulates a vision, desired outcomes and policy objectives organised by three themes: food security and sustainable production, healthier and sustainable eating, and the UK as part of a global food system.

It includes a large range of actions, such as research and evidence gathering, funding, innovation, collaboration and stakeholder engagement, regulatory instruments, and affordability initiatives. These are at different stages in the policy cycle, ranging from 'under consideration', to 'in development' and 'being delivered'.

All six principles are apparent in general terms throughout the Food Strategy and some are used to frame and operationalise specific actions. However, overall, the expression of the principles is weak and implicit, with little or no explanation of how they inform actions or deliver outcomes. In other words, there is no clear evidence that green choices principles and the behavioural science they rest on were strong influences on the Food Strategy.

Expressions of Principle 1 ('greener by design') were evident throughout. However, they were weakest in relation to 'healthier and sustainable eating'. This is concerning given strong evidence that the onus is too often, and unfairly and ineffectively, placed on the individual in this regard.[572]

Actions that apply this principle and have implications for environmental outcomes include long-term organic farming initiatives and research investment for innovative protein sources.[573]

Principle 1 actions tend to focus on exploring solutions to problems and supporting more sustainable and diverse food supply chains. Most are either 'in development' or 'being delivered', with only one, relating to offshoring negative impacts, 'under consideration'.

Expressions of Principles 2, 3 and 4 were evident across themes, with particular emphasis on 'empowering individuals and business to make informed choices' in the chapter on 'healthier and sustainable eating'. Although the Food Strategy regularly mentions affordability, it does not directly address the affordability of green choices.

Examples of actions strongly expressing Principles 2, 3 and 4 include removing practical barriers to food waste collection, protecting farmers in commercial relationships and the development of the Food Data Transparency Partnership, which includes a focus on environmental impacts through its eco working group.[574]

Again, most of these actions are currently 'in progress' or 'being delivered', although many relating to the principle of 'addressing practical barriers' are aspirational and, as such, lack specific delivery mechanisms. The actions do not address the potential tension between green and affordable choices. While the Food Data Transparency Partnership is a commendable undertaking, more could be done to make it accessible and engaging to consumers and small businesses and to use its reporting mechanism to inform policy.

The Food Strategy expresses Principles 5 and 6 by including stakeholder engagement and identifying the roles and responsibility of different actors in achieving its vision. It provides a weak expression of collaboration, often committing to 'working with' rather than truly embedding affected and marginalised groups in policy making, and not explaining how complexity will be managed and buy-in secured for ambitious actions and environmental objectives.

Most of the actions relating to 'building public acceptability and involving people in policy making' focus on consultations and partnership working regarding policies that are 'in development' and 'being delivered' respectively.

We have identified strengths, weaknesses and gaps in the way the Food Strategy expresses and applies the green choices principles. There is an opportunity to make greater use of behavioural science to reduce impacts on the environment and make the food system more sustainable.

Strengthening the use of the green choices principles

The government has made supporting farmers to boost Britain's food security a priority. However, this will need to be achieved in a way that does not increase the environmental impacts from food production. This is essential if the government is to achieve its other environmental priorities of cleaning up rivers, lakes and seas, ensuring nature's recovery and moving to a zero-waste economy.

The government has an opportunity to revise the Food Strategy and strengthen the use of the green choices principles to achieve better outcomes. We commissioned a review of a selection of research and policy sources relating to food systems, which identified examples of the strong expression of all six principles. The review also provided many examples of commitments and actions that the government could use to strengthen its use of the green choices principles in relation to the food system.

The 163 specific actions identified were aggregated into 17 headline actions covering seven different areas of government activity (Table 12.1). Most actions (127) related to the principles of greener by design and addressing practical barriers (96). The remainder were fairly evenly focused on the other principles. Affordability was the area addressed by the fewest actions (21). General actions, such as innovation investment funds and actions aimed at making farming more sustainable, were linked with the most principles simultaneously.

Table 12.1. Seven areas of government action with illustrative examples

Area of action	Illustrative examples of actions the government could take
Strategy and governance	Set up a joint food systems cross-government commission to bring considerations of population and planetary health together.[575]
	Develop sustainable and healthy dietary guidelines to underpin all policy development.[576]
	Create a Rural Land Use Framework based on the three-compartment model.[397]
Targets, standards and regulations	Define minimum standards for trade, and a mechanism for protecting them.[397]
	Set clear targets and bring in legislation for long-term change.[397]
	Implement existing legislation on junk food advertising and volume promotions.[577]
	Ensure that regulatory bodies are sufficiently resourced to carry out inspections and act on non-compliance.[578]
Financial instruments	Ensure that price is not a barrier to choosing more sustainable and healthy options, especially for people on low incomes.[579]
	Use environmental taxes and fiscal measures to incentivise and enable desired behaviours and outcomes.[580]
Innovation and data	Invest £1 billion in innovation to create a better food system.[397]
	Create a National Food System Data programme.[397]
Local action	Support local authorities in adopting food partnerships and plans.[581]
	Prioritise progress in school food.[576]
	Strengthen government procurement rules to ensure that taxpayer money is spent on healthy and sustainable food.[397]
Sustainable farming	Introduce a horticulture strategy to boost fruit and vegetable production and consumption.[577]
	Incentivise and adopt sustainable farming practices.[580]
Waste	Adopt a Food Waste Reduction Roadmap 'Target Measure Act' approach, to tackle food waste across the whole value chain, including household.[578]

Making highly specific recommendations to increase the environmental sustainability of food systems is challenging due to the number of variables at play and the complex ways in which they interact.[582] This analysis identifies a range of actions that express green choices principles and can contribute to making the food system more sustainable and improving a range of environmental outcomes.

The analysis presented here has focused on the food system, but it could be applied more widely. Most environmental pressures are linked to the societal systems that meet society's needs for food, energy, mobility and the built environment.[11] The government's strategies and policies for intervening in complex systems involving society, economy and the environment should fully express the green choices principles as transforming systems. This means rethinking not just production processes and technologies but also

consumption patterns and lifestyles. This requires government to harness input from all parts of society for an effective and equitable transition.

Green choices recommendation 1: Government departments should catalyse change, from system level to individual level, by applying the green choices principles holistically to strategies and policies, avoiding overreliance on information provision to affect consumer choices.

Green choices recommendation 2: Defra should revise the Food Strategy to make better use of all green choices principles and explain how it helps deliver the actions necessary to meet government's environment targets and commitments, while providing food and nutrition security.

III. A focus on improving nature

Chapter 13: In-depth assessment of improving nature

13.1. Introduction

In our 2022/2023 progress report, our assessment focused on achievement of the 2030 species abundance target (an EA21 target) and the 30 by 30 commitments. Our review of actions identified that the most important for achieving terrestrial and freshwater nature recovery were those supporting nature-friendly farming.

'Nature-friendly farming' is used in the EIP23 to describe a range of measures that ensure agricultural land is managed in a way that protects and improves the environment. This includes agri-environment schemes (AES) such as environmental land management (ELM) (see Box 13.1) and wider grant schemes such as Farming in Protected Landscapes (FIPL).[583] Compliance with farming regulations and the adoption of voluntary codes of practice are also part of nature-friendly farming.

Box 13.1. Environmental land management schemes

The government is paying land managers and farmers for nature-friendly farming via environmental land management (ELM) and other rural payment schemes. ELM comprises three agri-environment schemes (AES).

Firstly, the three-year Sustainable Farming Incentive (SFI) scheme, which is designed to be universal and not require specialist advice. The actions are intended to be straightforward for farmers to carry out.

Secondly, the expansion and refinement of the Countryside Stewardship (CS) scheme will target funding to incentivise co-ordinated action.

Thirdly, Landscape Recovery (LR) scheme provides funding for long-term, large-scale environmental projects delivering significant environmental benefits.

Our 2022/2023 progress report highlighted the high dependency on nature-friendly farming to achieve EA21 targets and EIP23 commitments. It recommended that the government should identify and mitigate the risks associated with this. It is essential to get nature-friendly farming right if the government is to achieve improved environmental outcomes. This means that there is significant risk regarding ELM and other voluntary schemes if they do not deliver as foreseen.

We have undertaken further analysis of these voluntary schemes to identify where the greatest risks lie with their implementation. This analysis has been informed by a qualitative impact assessment of land management interventions on ecosystem services (QEIA) published by Defra.[80] It assessed the impacts of 741 potential land management actions, classifying impacts into 53 environmental and cultural service indicators.

Drawing on the QEIA, we assessed the potential effectiveness of AES in supporting the delivery of the 2030 species abundance target and the long-term target to reverse the decline of species abundance (both EA21 targets). Since around a quarter of the species

within the EA21 targets are freshwater invertebrates and fish, our assessment has also considered the EA21 target on agriculture water.

Our analysis considered three aspects related to the effectiveness of these schemes. Firstly, the level of development and maturity of the policies underpinning nature-friendly farming. Secondly, the pathways by which AES can contribute to achieving targets. Finally, the role of advice and guidance in improving outcomes.

Further analysis on the role of land management in supporting protected sites is provided in our forthcoming, in-depth review on the implementation of England's protected sites laws.

13.2. Appraisal of the policy system underpinning ELM

Recent policy activity

In January 2024, the previous government updated its Agricultural Transition Plan.[17] The update restated the intention to have universal compliance with the regulatory baseline, and 70% of farmers engaged in ELM, by 2028.

It detailed the steps being taken to scale up and increase the ambition of ELM, as well as providing some additional explanation of how it would deliver specific environmental outcomes. These developments address some of the concerns we highlighted in our 2022/2023 progress report (see Chapter 2).

Payment rates are a key driver of uptake, so the government has committed to review and update rates across ELM. This is long overdue for actions that are associated with protecting and enhancing heritage. Payment rates for habitat creation and maintenance, as well as for upland and lowland actions, are now given greater parity.

Changing payment rates is an example of the iterative and flexible approach of ELM delivery, enabling targeted improvements to make the scheme work for as many farmers as possible. Alongside more targeted and proactive advice to support regulatory compliance, the government makes a clear case for how it intends to scale up nature-friendly farming.

However, a key concern is the government's ability to complement this scaling up with an increase in ambition and, ultimately, in the delivery of environmental outcomes. Entry-level Environmental Stewardship[584] achieved uptake rates of 70% but delivered very little environmental improvement. ELM needs to be designed and delivered differently if it is to help achieve government targets and commitments.

To this end, the updated Agricultural Transition Plan introduced 50 new actions as well as premium payments for 21 high-priority actions. Promises to keep pushing uptake of CS agreements are welcome, as doubling the number by the end of the 2025/2026 year would be a significant achievement. The launch of the second round of LR projects is another welcome development and we hope to see the government learn from the challenges of the first round and move more quickly towards implementation.

Most farmers entering into AES will be focused on SFI, so introducing more ambitious actions there is also important. While the Agricultural Transition Plan does note the importance of advice and guidance, the emphasis is more on business models, veterinary services and carbon, rather than specialist environmental expertise.

A review of the ELM policy system

We developed an analytical tool to identify, gather information about and assess the quality of the key components of any given policy system, such as the vision, evidence base, strategic approach, plans and delivery arrangements, and monitoring and evaluation. We applied our tool to the ELM policy system (see the Methodological Statement). This included all three tiers: SFI, CS and LR.

At the time of the analysis, we drew exclusively on publicly available information. Although this likely under-represents the work that underpins the policy system, it does represent the public face of ELM as seen and understood by farmers and other stakeholders.

The government's vision for ELM is ambitious. The fundamental shift from a land-based payment system to one of public money for public goods was prominent in early messaging. However, it is unclear how well the implications of this shift have been communicated and understood. Messaging around ELM also lacks any holistic explanation of its interactions with wider factors affecting farmers, such as trade deals, supply chains and food systems.

We have some familiar concerns regarding the strategic approach to ELM and whether it focuses on the right measures to address environmental pressures and deliver targets. The perceived prioritisation of large-scale uptake of SFI schemes ahead of potentially more impactful CS and LR implementation is chief among these concerns. Equally worrying is the lack of spatial prioritisation through either scheme design or coherence with such spatial tools as Local Nature Recovery Strategies and the Land Use Framework. Similarly, there is a lack of detail on the required strategic synergy with effective farming regulation, beyond the aspiration of universal compliance with the baseline.

The plan for ELM requires high levels of farmer engagement, as well as increasing the involvement of stakeholders in supply chains and the wider food system. Engaging and upskilling farmers and land managers will be critical for achieving and monitoring impacts. We are unsure whether the current level of funding will be sufficient to deliver the outcomes needed for the government's targets. Private sector finance is mentioned in ELM documents, but it is unclear how much is needed, where it will come from or how it will be leveraged.

We welcome the adaptive approach to ELM delivery seen so far through tests and trials and early successive iterations of SFI. This could be further strengthened by greater levels of local innovation and involvement in monitoring – for example, by testing and evidencing whole-farm approaches. Continued support for forums for lesson sharing and local collaboration is needed, noting the successes of such previous initiatives as the Countryside Stewardship Facilitation Fund.

Some of the same key risks and areas for improvement in the ELM policy system we identified through our analysis have also been highlighted in the National Audit Office July 2024 review of the wider Farming and Countryside Programme, within which ELM sits.[585] For instance, the National Audit Office also commended the iterative approach to ELM, but called for greater clarity and dialogue with farmers along the way to minimise uncertainty and facilitate open discussions about the implications of the visions for land-use change and farm businesses.

Similarly, regarding uptake and ambition, early signs from SFI are positive, but the government has not articulated when the focus will need to shift to the higher tiers

and the most impactful land management actions to deliver the required outcomes. We explore this further in the next section.

13.3. Prospects of meeting targets and commitments on biodiversity and water

In this analysis, we considered the potential effectiveness of delivery pathways to achieve key biodiversity outcomes. Evidence on the response of farmland birds to AES was used as a proxy to understand the likelihood of meeting the 2030 species abundance target and the long-term target to reverse the decline of species abundance. This work was supplemented by further assessment of the QEIA evidence to assign the benefits of ELM schemes to butterflies, moths, mammals, plants, bats and birds.

Furthermore, we assessed the potential of nature-friendly farming to benefit freshwater species through reductions in agricultural diffuse pollution. This takes into account how ELM, universal compliance with regulations and wider land-use changes can support the delivery of the EA21 target on agriculture water.

AES pathways for farmland birds

The monitoring of farmland birds provides some of the best available long-term regional evidence on the response of species to AES. However, the degree to which a single taxon, like farmland birds, can accurately represent the status and trends in other taxa is a matter of debate. Previous studies have shown a pattern of associated change in different taxa, including plants, birds and insects.[586]

Defra has previously used evidence on the response of farmland birds to AES as a broad proxy to help determine the prospects of achieving both EA21 species abundance targets through nature-friendly farming.[587] Defra's research found that around 40% of farms in lowland England would need to be in a high-tier type agreement in order to stabilise farmland bird abundance, coupled with around 35% in a low-tier type scheme. This aligns closely with the Agricultural Transition Plan's objective of 70% of farmers being engaged in ELM by 2028.

Furthermore, the research showed that an increase in the abundance of farmland bird species would require a higher uptake of up to 80%, broadly in line with EIP23's separate commitment that 65–80% of landowners and farmers adopt nature-friendly farming on at least 10–15% of their land by 2030.

Box 13.2 Definition of high-tier and low-tier type schemes

High-tier type schemes are tailored to achieve a specific biodiversity outcome through a bundle of measures, targeted advice and guidance. Low-tier type schemes are simpler, providing generally positive but often untargeted and less ambitious improvements. Our analysis has identified SFI as the scheme most closely associated with low-tier type schemes. The more ambitious components of CS and LR align with high-tier type schemes.

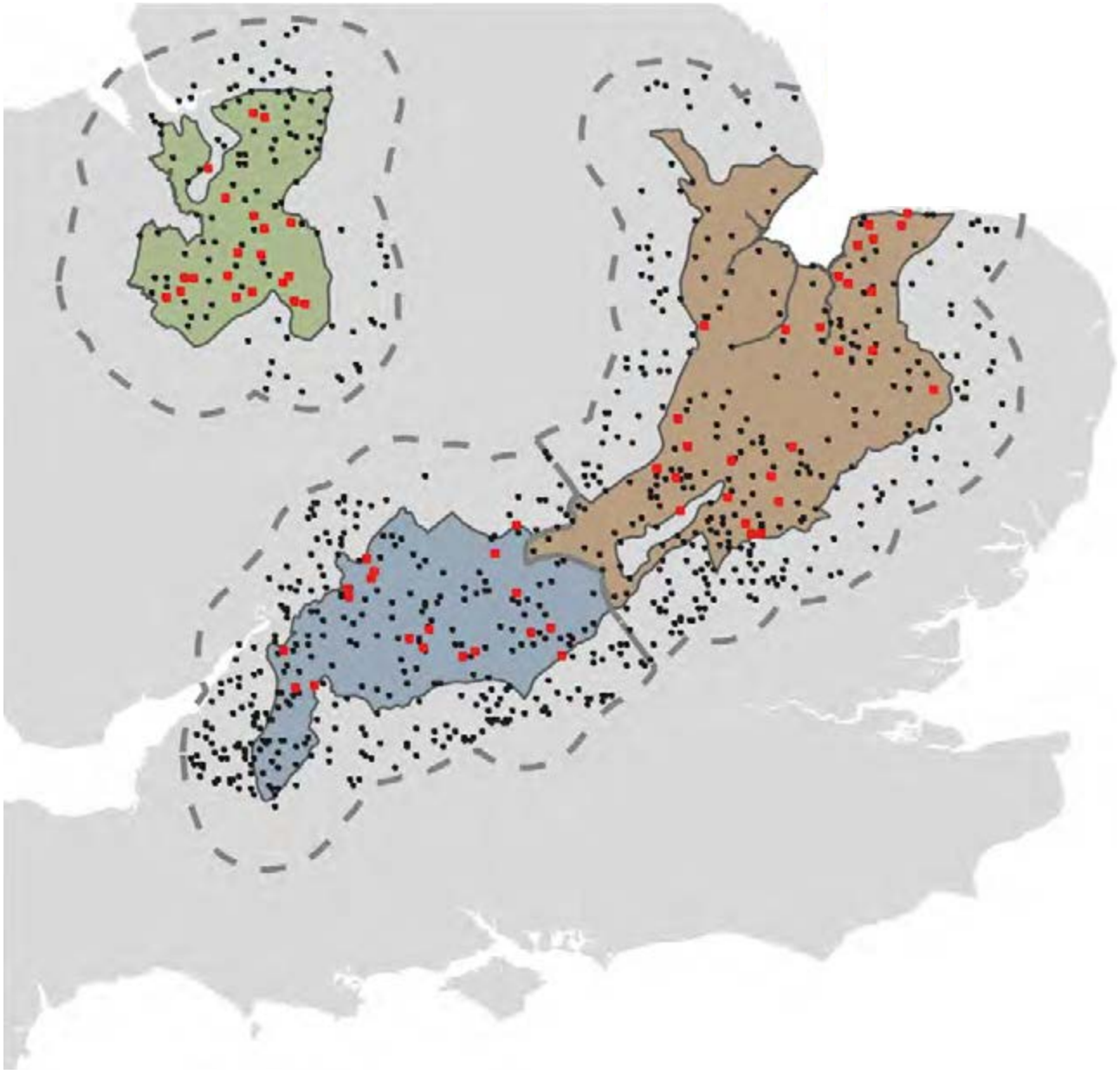
Our 2022/2023 progress report noted that the government's own research did not adequately explore the risks and uncertainties surrounding the level of uptake and type of agreements required to achieve the EA21 species abundance targets.

We assessed the risks associated with different AES pathways towards halting the decline in species abundance and increasing it.[588] The assessment extrapolates the results of a large-scale study in three regions of England (Figure 13.1) to explore how farmland birds could respond to AES in the whole of England through varying levels of uptake of high- and low-tier type schemes. This assessment considered the likelihood of changes in farmland bird species abundance.

The result of the analysis aligns with the levels of uptake previously identified by Defra (65–80%), although the likelihood of stabilising farmland bird species depends greatly on the blend of high- and low-tier AES. We considered pathways with a low (50%), moderate (80%) and high (95%) likelihood of stabilising farmland bird species.

Figure 13.2 presents a sample of the AES pathway scenarios considered. A low (50%) likelihood of stabilising the index is associated with AES pathway delivery dominated by low-tier type schemes. Moderate likelihood is associated with an almost equal balance of low- and high-tier type schemes. A high (95%) likelihood is dominated by high-tier type schemes.

Further analysis also revealed that following a high likelihood pathway towards species recovery could require a smaller proportion of landowners adopting schemes.



Arable region (East Anglia)

Pastoral region (West Midlands)

Mixed region (Oxfordshire)

Figure 13.1. Location of the high-tier farmland (red squares) and low tier/no AES Breeding Bird Survey (BBS) squares (black squares) across three regions in lowland England. BBS squares were also selected from a 20 km buffer around National Character Areas (NCAs, dashed line), but excluding adjacent NCAs with different landscape character. Reproduced with permission from RSPB.[589]

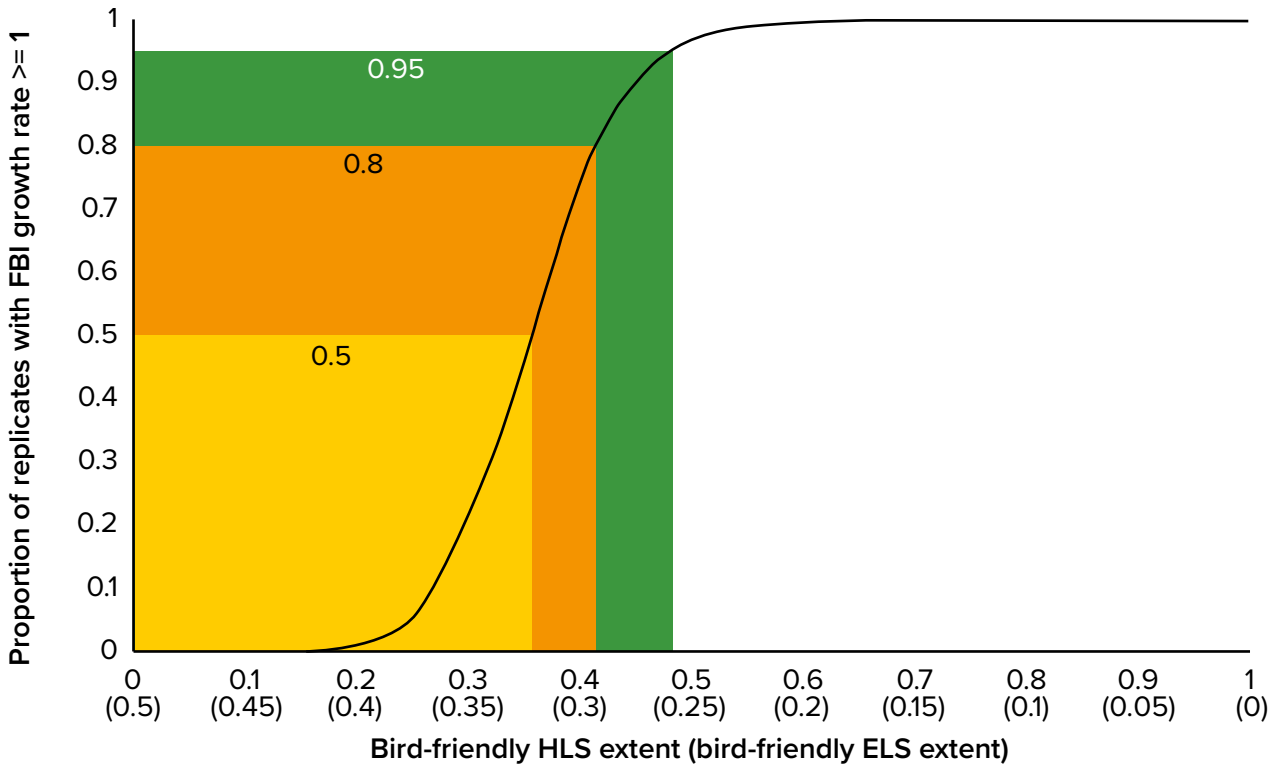


Figure 13.2. The estimated likelihood of stabilising the England farmland bird index under different levels of bird-friendly AES provision. Likelihood, on the vertical axis, is the proportion of results where the farmland bird index was estimated to be either stable or increasing (from 0 where none, to 1 where all met the criteria). At each level of high tier, half the remaining lowland enclosed farms are assumed to be in bird-friendly low-tier agreements (indicated in brackets) and half with no bird-friendly AES.

Broader prospects of nature recovery on land through AES

Nature recovery pathways for wider species groups and policy mechanisms are less developed. In 2024, the government supported the launch of a Biodiversity Pathways project[590] designed to produce both pathways and scenarios for the UK. Defra is also developing scenario pathways towards achieving the 2030 species abundance target and long-term target to reverse the decline of species abundance.

These are welcome developments and will provide additional clarity and confidence in policy making. However, the outputs of the projects are unlikely to be ready in finalised form to inform the EIP revision or other key policy decisions being made by the government in the short term.

The OEP commissioned research to further understand the potential of AES in supporting the achievement of EA21 targets set in the Environmental Targets (Woodland and Trees Outside Woodland) (England) Regulations 2023 and the Environmental Targets (Biodiversity) (England) Regulations 2023. Its aim was to translate the large amount of evidence available on the effectiveness of AES and assess the extent to which it is likely to support these targets. Our analysis focused on the prospects of supporting the apex 2030 species abundance target and the long-term target to reverse the decline of species abundance.[43]

The analysis drew on evidence collated from the recent QEIA of 741 potential land management actions. These actions were linked to the current offerings available under SFI and CS. Since LR is under development, we did not assess the scheme but anticipate that our analysis will be relevant to it.

We considered how these actions are likely to support species groups encompassing 905 species, just over three-quarters of the species in Schedule 2 to the Environmental Targets (Biodiversity) (England) Regulations 2023 (Table 13.1).

Table 13.1. Species considered as a proportion of the 1,195 species in Schedule 2 to the Environmental Targets (Biodiversity) (England) Regulations 2023

Subgroup	Number of species considered	Proportion of the species in Schedule 2
Birds	168	14.1%
Mammals	16	1.3%
Bumblebees	11	0.9%
Moths	446	37.3%
Butterflies	55	4.6%
Vascular plants	209	17.5%
Total	**905**	**75.7%**

We adopted a similar scoring system to the original QEIA research, where evidence on the likely effect of an action is scored on a sliding scale from 'clear evidence of a benefit', to 'no benefit' through to 'disbenefit'. The review of each action also considered the degree to which benefit or disbenefit is likely to occur, whether they require targeting through advice, guidance and prioritisation, and the strength of the evidence regarding long-term regional benefits (Table 13.2).

Table 13.2 Scoring system adopted to assess the effectiveness of SFI and CS actions

Evidence number denoting likely benefits (and confidence in benefit rating linked to type of evidence) vs disbenefit or no likely effect		Benefit or disbenefit level
1	Clear evidence of benefit, empirical evidence	** Major benefit
		* Minor benefit
2	Benefit, at least 1 empirical study showing result	** Major benefit
		* Minor benefit
3	Likely benefit, expert judgement/understanding of species ecology	** Likely major benefit
		* Likely minor benefit
4	Disbenefit from this action	** Major disbenefit
		* Minor disbenefit
5	No likely effects on this species/species group/taxon	X = untested, expert judgement

We found that the scheme has broadly adopted actions likely to be beneficial in achieving the EA21 species abundance targets. Where our analysis observed important actions to be missing, we found that the government is addressing those gaps. For example, SFI agroforestry actions and the application of precision fertilisers are identified as major gaps in the 2023 ELM offerings – and both are being addressed in 2024.

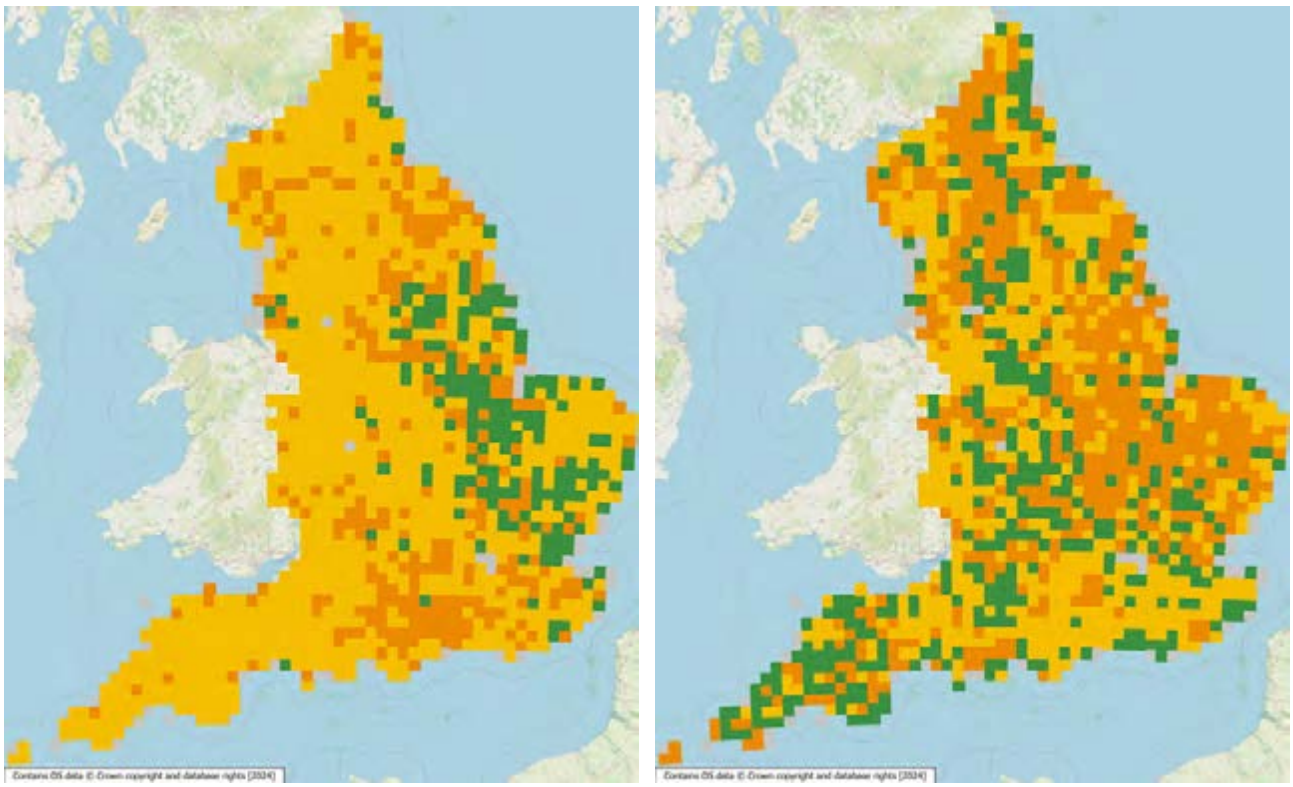
An ongoing concern in the adoption of AES is the risk of trade-offs between species and species groups. We identified some trade-offs. For example, actions related to the creation of woodland through natural colonisation is a long-term passive rewilding tool with the potential to play an important role in increasing biodiversity and increasing bird species richness/abundance. However, due to differences in the habitat preferences of different bird species, effects will be mixed for certain species groups.

Overall, however, we did not identify many actions that would cause significant biodiversity trade-offs between species groups. In fact, many actions are likely to benefit multiple species groups. We identified 137 CS actions (out of 166) and 19 SFI actions (out of 24 scored) as likely to benefit two or more species groups.

The confidence assigned to this benefit was low in most instances due to lack of evidence on the long-term regional changes in species abundance. Much of the evidence shows benefit either in the short term or at a small scale. Bird and moth species groups had the highest number of actions with regional-scale evidence.

We also assessed the extent to which the most beneficial actions are being adopted under SFI and CS for different species groups and observed significant spatial variation. Figure 13.3 provides examples of the analysis for bird and bumblebee species groups, showing the spread of beneficial actions. For birds, the map shows a cluster of beneficial actions in the East of England. The spatial pattern of beneficial actions is less pronounced for bumblebees.

Our research does not determine the cause of this variance, but it does indicate that there is potential scope to improve the deployment of the most effective schemes across England, and where this is most needed.



Clear evidence of benefit (score 1)
Benefit (score 2)
Likely benefit (score 3)

Figure 13.3. Location of CS actions adopted and their predominant benefit score for bird (left) and bumblebee (right) species groups.

Broader prospects of nature recovery in freshwaters through AES

The updated Agricultural Transition Plan[17] outlines the importance of nature-friendly farming for reducing water pollution. As freshwater species respond acutely to levels of agricultural pollution pressures,[178] the achievement of the EA21 agriculture water target is important to achieving wider biodiversity outcomes.

The government has invested in supporting these outcomes through the Catchment Sensitive Farming (CSF) programme. Historically, the scale of roll-out of the programme has been too modest to drive a major reduction in agricultural diffuse pollution. The last evaluation report showed a 4–12% reduction in agricultural pollutant losses on average at a catchment scale where CSF was adopted.[591] Furthermore, no significant relationships were observed between the deployment of CSF and ecological metrics such as freshwater invertebrates. This species group makes up around a fifth of the species abundance index.

Actions to reduce agricultural diffuse pollution and increase the abundance of freshwater species must go much further if they are to achieve the agriculture water target and the 2030 species abundance target. We assessed to what extent active land management is required to reduce diffuse pollution and further support these targets.

We assessed the efficacy of scaling up AES, increasing compliance with farming regulations and adopting changes in land use. Our assessment took into consideration

the potential efficacy of SFI and CS schemes in England, as well as further actions not in these schemes.[592]

Overall, the assessment reinforces previous findings[206] that the levels of pollution reduction required in the long-term target are extremely difficult to achieve everywhere. The scenarios tested demonstrate that, at a national level, a 40% reduction in agricultural pollution, as required under the EA21 target on agriculture water, is more than likely beyond the reach of current environmental policy. Ecological changes can be expected to be proportionately limited.

To reach this level of reduction at a national scale would require significant changes in land management in catchments where agricultural diffuse pollution is a major pressure, and hence prioritisation of action. The results show that it potentially requires a reduction in agricultural intensity and land use beyond the government's EIP23 commitment of 65–80% of landowners and farmers adopting nature-friendly farming on at least 10–15% of their land by 2030.

Our analysis also showed that the importance of compliance with farming regulations should not be underestimated – it is a key component in achieving the pollution reduction. This aligns with the ambition of the Agricultural Transition Plan, which aims for universal compliance with farming regulations.

Universal compliance could make significant contributions towards the EA21 interim targets on agriculture water to reduce nitrogen, phosphorus and sediment pollution from agriculture to the water environment by 10% by 31 January 2028, and by 15% by 31 January 2028 in catchments containing protected sites in unfavourable condition due to nutrient pollution (both relative to a 2018 baseline).

13.4. The role of advice in improving outcomes

Effective in-person advice and written guidance for land managers will be important for driving wide uptake of AES but also, critically, for increasing ambition and for delivering improvements to nature in line with the government's long-term targets. The evidence behind the need for effective advice in particular, and its potential benefits for AES outcomes, is well established and is informing ELM policy design and delivery.

There is a significant skills gap in the sector, with just 35% of farmers having formal agricultural training, which itself contains minimal content on environmental outcomes.[593] Participants in higher tiers of previous AES have often underestimated the land management requirements of more ambitious actions and have reported a lack of experience and confidence to deliver environmental outcomes.[594]

There are several ways in which advice promotes better AES outcomes. It can strengthen farmers' confidence, increase their motivation to adopt ambitious land management actions and develop their ability to deliver the most outcomes possible from their agreements, as shown in examples from CSF and early ELM pilots.[528,529]

Advice and guidance can also enable appropriate and informed choices about the best land management actions, helping farmers tackle the challenges of planning for long-term environmental outcomes at farm level and maintaining progress towards them.[597]

While the need for, and benefits of, AES advice and guidance is clear, the same cannot be said for its provision. In England, the farm advice sector is large and fragmented, with relatively limited availability of advice and expertise around ambitious nature restoration projects or highly targeted species recovery. This can feel overwhelming to farmers and can potentially lead to conflicting messages. To some extent, this is an unavoidable reflection of the diversity of specialisms in the sector. This diversity can also bring benefits in terms of offering a variety of advice sources and types of provision that can cater for the needs of different farmers and land managers.

There needs to be a variety of advice options available, but with the minimum conflict and confusion between them. This is a difficult circle to square. There are varying degrees of skill, competency and capacity in AES across the farming advice sector, meaning that a single source would not be able to cover everything.

Reviewing studies of the provision of AES advice and guidance, we identified seven factors that determined how effective it was at driving uptake and ambition: content and quality, format and flexibility, use of maps, trust, timeliness, farmer situation, and cost.

The government faces a challenge in designing an ELM support system that reflects the diversity of the sector without being overly complex and that delivers all seven factors of effective advice and guidance.

The government's designated ELM delivery partners will play a vital part throughout the typical journey of a farmer's engagement with ELM. We spoke with six of the key delivery partners for ELM involved in developing and providing advice and guidance to farmers and land managers directly and to other public bodies.

There is a fundamental delivery challenge facing public sector advice provision. This is the increasing demand associated with the new ELM scheme, coupled with the loss of skills, local relationships and knowledge over time. There is a risk that resources and capacity do not keep pace with the demand from farmers, partly because of the cap on ELM 'cost to serve' spending at 10% of its total budget.

The initial contact with farmers and land managers is a vital moment for setting the tone and expectations, establishing a relationship and consistent messaging about AES. The CSF evaluation has proven that this approach to engagement is effective,[591] and there are many contact points where public body representatives – and those of partner organisations who can act as trusted intermediaries – can signpost ELM. This will be particularly important for engaging harder to reach farmers and those who have had negative experiences with previous schemes.[598]

A great deal of effort has gone in to developing accessible guidance as part of the SFI offer to enable widespread uptake. Inevitably, this has involved trade-offs in scope and detail, which may have an impact on the efficacy of actions because of where they are adopted and how they are implemented.

Our analysis this year (see Section 13.3) demonstrates that both SFI and CS actions require a greater role for advice to improve their efficacy, particularly through spatial targeting. For example, we found that for birds, around half of the SFI and CS actions require spatial targeting. Spatial targeting was also noted for mammals, bumblebees and plant species groups.[43]

The expansion of SFI in 2023 means that there are now 102 paid actions that land managers can adopt. This includes 79 more ambitious actions that are either new or were previously available under CS but have been made more self-directed. Only one action in SFI requires endorsement, with only a minor role for advice on efficacy. It may be that the endorsement process and use of advice needs to be extended to other new actions in the future, or retrospectively for ones that are underperforming or undersubscribed.

Because of resource limitations, public bodies to date have been proactively targeting their in-person advice provision. This targeting is underpinned by spatial analysis of land types (including the presence of protected sites) and uptake distribution, as well as historical data about previous involvement in AES. It is also informed by considerations of which agreements, and specific actions, have the potential to deliver the highest-value outcomes – and which have the highest potential for error and requirements of sustained land management activities over time.

As ELM delivery continues to roll out, its monitoring, evaluation and learning model will provide useful evidence about the role of advice and guidance in shaping patterns of uptake and ambition. There is an opportunity here to incorporate the method Defra developed for tracking social factors in AES and their links to environmental outcomes.[599] Public body provision of advice and farmer engagement can then be developed and targeted where it is most needed to maximise outcomes.

At the same time, feedback from farmers about the provision of advice will be important to ensure that public bodies, their partners and the wider advice sector applies what is already known about best practice for effective advice and guidance.

13.5. Opportunities for improvement

Overall, we assess the government to have progressed in developing and deploying ELM. Many of the actions available under SFI and CS have the potential, if implemented effectively, to benefit multiple species groups within the 2030 species abundance target and the long-term target to reverse the decline of species abundance.

The commitment in the EIP23 for 65–80% of farmers to adopt nature-friendly farming schemes across 10–15% of their land appears proportionate with the levels needed to stabilise and then increase the abundance of species on land.

However, based on evidence from farmland bird species, only a low likelihood of success is possible if a pathway dominated by SFI action continues. A switch to ELM delivery focused on the more ambitious actions in CS and LR promises a higher likelihood of success. This requires an effective and widely available advice offer that can build trust, confidence and capacity among land managers who may not have engaged with higher-tier AES previously.

Biodiversity outcomes on land can potentially be achieved with fewer farmers in a particular scheme, provided those farmers adopt a higher-tier AES pathway. This switch increases synergies and minimises trade-offs with other government land-use priorities, such as food production and infrastructure development.

The prospect of ELM schemes on their own reducing water pollution sufficiently to achieve the EA21 target on agriculture water is limited. This reduces the prospect of stabilising and then increasing the abundance of species in freshwaters.

Larger changes in land use are likely to be required beyond the commitment of 10–15% of land on all farms to achieve freshwater outcomes. A practical intermediate step could be to focus interventions on smaller upper catchments, where larger proportions of catchments could be de-intensified with greater ecological benefits.[600]

The government has an opportunity to address this by scaling up nature-friendly farming measures beyond ELM schemes. Ensuring significantly greater compliance with farming regulations, as intended in the updated Agricultural Transition Plan, is a key action.

The government has an opportunity to improve outcomes further through deploying advice and guidance services for land managers that help with spatial targeting while also strengthening the skills and motivation required for more ambitious AES agreements.

In our 2022/2023 progress report, we made three recommendations relating to monitoring and reporting, spatial prioritisation and provision of advice. Progress during the reporting period regarding these issues has been mixed. These issues remain relevant.

Nature-friendly farming recommendation 1: Defra should increase prospects of meeting the 2030 species abundance target and the long-term target to reverse the decline of species abundance (EA21 targets), by ensuring that incentives are sufficient to deliver a significant increase in the uptake of the more environmentally ambitious aspects of Countryside Stewardship and Landscape Recovery schemes, and by making full use of spatial prioritisation, farm advice and guidance.

Nature-friendly farming recommendation 2: The government should ensure that the Environment Agency takes the action necessary to significantly increase rates of compliance with farming regulations so as to support the government in reducing water pollution and meeting the EA21 target on agriculture water.

IV. Taking stock

Chapter 14: Taking stock

14.1. The overall picture

The preceding chapters provide an overview of past trends, progress within the annual reporting period and prospects of meeting EA21 targets and interim targets and EIP23 ambitions, targets and commitments. These are brought together here to provide an overview structured by the 10 goal areas of the EIP23.

Viewed against the government's aim of significantly improving the natural environment, our summary assessment remains that, while some progress has been made, very substantial challenges remain and the government is largely off track to meet EA21 targets and EIP23 ambitions, targets and commitments (Table 14.1).

The government has an important opportunity through the revision of the EIP to improve the prospects for meeting the ambitions, targets and commitments, so here we make recommendations on how progress can be improved and highlight key areas in which bold action is needed.

Environmental trends

Our assessment of 59 recent trends shows that 25 are improving, 15 are static, 12 are deteriorating and seven were not assessed due to data availability (Figure 14.1). Improving and deteriorating trends were observed across most EIP23 goal areas.

In relation to the natural environment, while there are signs that the downward trajectory in England's species abundance is slowing, wider biodiversity trends continue to deteriorate (Chapter 2). The overall state of the water environment remains challenging (Chapter 4), with deteriorating trends observed in the marine environment (Chapter 2).

While there has been an increase in the area of land under agri-environment schemes (AES), there has been little or no change in the area of land cover likely to support large-scale nature-friendly habitats. Furthermore, a decline in the condition of protected sites prevents the creation of a coherent and resilient ecological network (Chapter 2).

Pressures on biodiversity have not lessened, with deteriorating trends continuing to be observed for direct drivers of biodiversity loss, such as invasive non-native species (INNS) (Chapter 10), climate change (Chapter 8) and pollution in the form of damaging levels of nitrogen deposition on sensitive habitats (Chapter 3).

However, when it comes to reducing overall levels of pollution, there are improving trends regarding reductions in specific air pollutants (Chapter 3), chemicals (Chapter 5) and greenhouse gases (Chapter 8).

Trends in patterns of production and consumption are mixed. While resource productivity has improved, resource use is increasing (Chapter 7), along with water consumption (Chapter 4), and there has been little change in England's carbon footprint (Chapter 8). In addition, while residual waste generation has stabilised, recycling rates have stalled (Chapter 6).

Regarding sustainable use of natural resources, the percentage of fish and shellfish stocks harvested sustainably has improved but the percentage of woodland that is sustainably managed has decreased and knowledge gaps persist on soil health (Chapter 7).

In relation to human health and wellbeing, improving trends dominate for air quality, but exceedances of nitrogen dioxide, ozone and nickel standards persist (Chapter 3). There are mixed trends in reducing risks from environmental hazards, with little or no change in the number of properties at risk from surface water flooding, and wildfire incidents continuing to increase (Chapter 9).

In terms of engagement with the natural environment, while the frequency of adults' visits to the natural environment and levels of pro-environmental behaviour both showed little or no change, deteriorating trends were observed for children (Chapter 11).

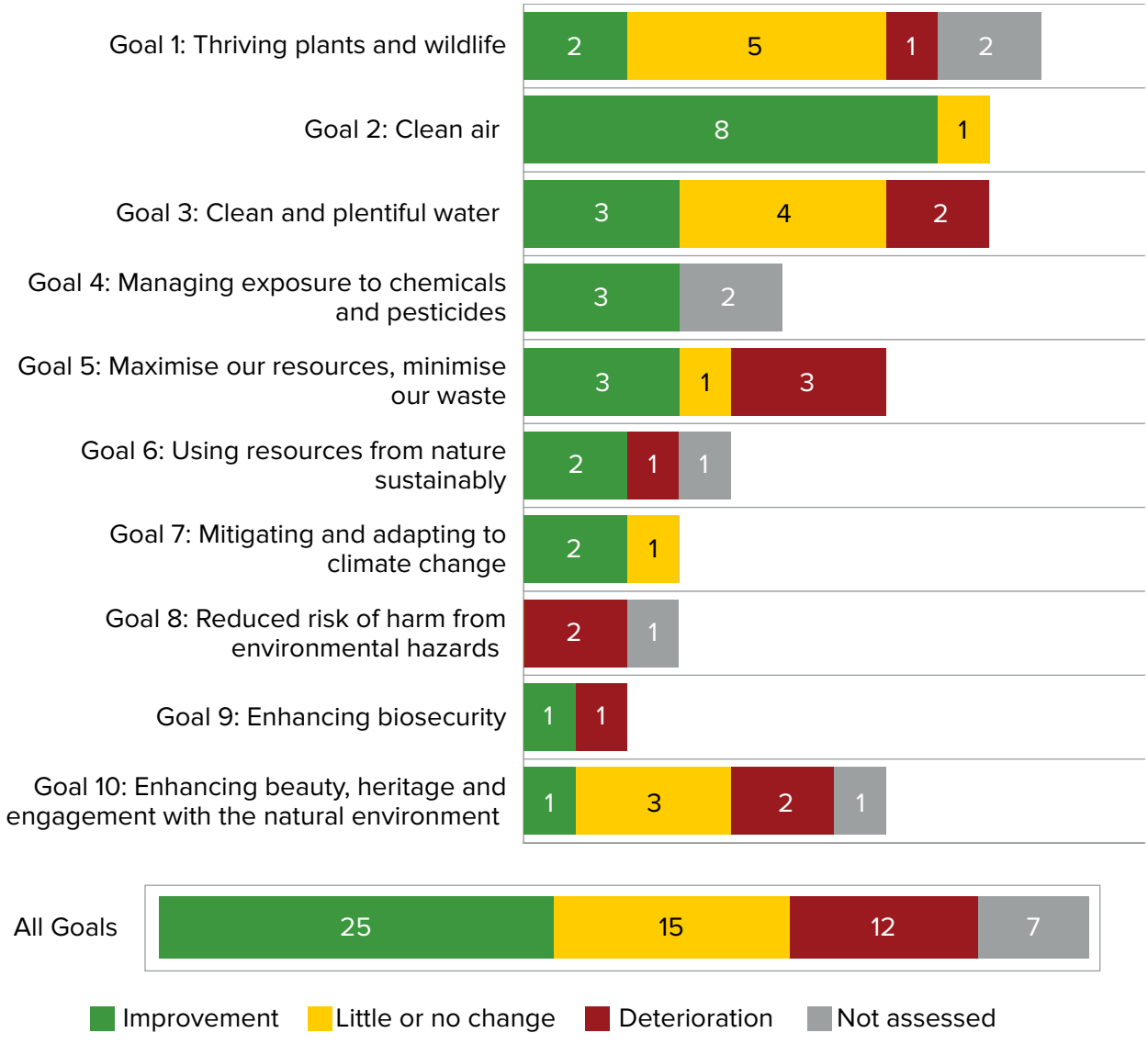


Figure 14.1. Summary of the OEP's assessment of 59 trends in 55 environmental indicators in the 10 goal areas of the EIP23. Green indicates improvement, amber is little or no change, red is deterioration and grey is not assessed.

Our assessment ratings for the majority of trends have not changed from our 2022/2023 progress report. Overall, compared with last year there is a lower proportion of trends showing improvement but this is mainly because improvements in data availability mean that we were able to assess more trends.

However, there have been improvements in the assessment rating of trends in residual waste arisings (from deterioration to little or no change), as well as emissions of fine particulate matter ($PM_{2.5}$) and ammonia (from little or no change to improvement). Assessment ratings have got worse for trends in the extent of landcover more likely to support nature-friendly habitat and for consumption-based greenhouse gas emissions (both from improvement to little or no change), the amount of raw material consumed (from improvement to deterioration) and the percentage of woodland that is sustainably managed (from little or no change to deterioration).

The assessment of individual trends forms part of our overall assessment of trends at the level of the 10 goals of the EIP23, where we conclude that in one goal area and for climate mitigation, improving trends dominate; in seven goal areas and for climate adaptation, trends show a mixed picture; and in one goal area, deteriorating trends dominate (Table 14.1).

Progress during the annual reporting period

We assessed progress during the annual reporting period towards meeting 43 individual targets and commitments, as well as overall progress by EIP23 goal area.

Our assessment of progress towards 43 individual targets and commitments is that good progress has been made over the annual reporting period towards 10, mixed progress towards 17 and limited progress towards 15, while progress towards one could not be assessed due to a lack of sufficient evidence (Figure 14.2).

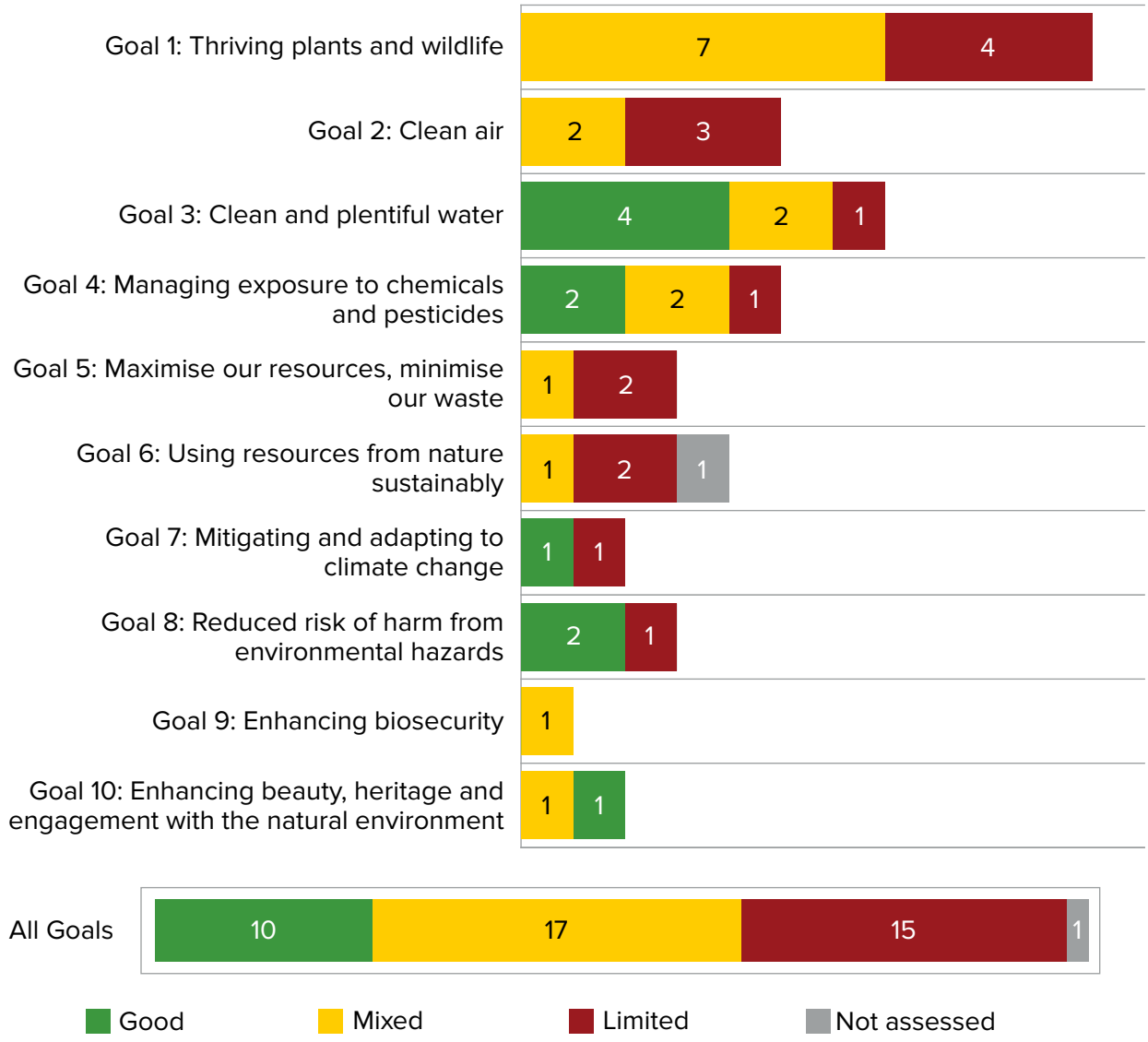


Figure 14.2. Summary of the OEP's assessment of progress over the annual reporting period towards 43 environmental targets and commitments. Green indicates good progress, amber is mixed progress, red is limited progress and grey is not assessed.

Areas where good progress has been made mainly relate to tackling specific sources of water pollution (Chapter 4), chemical pollution (Chapter 5) and greenhouse gases (Chapter 8).

In relation to the natural environment, progress towards achieving a growing and resilient network of land, inland waters and sea that is richer in plants and wildlife was mixed. While progress on environmental land management (ELM) schemes continued at pace, progress was more limited across wider actions and policies essential to nature's recovery, most noticeably in the freshwater and marine environments (Chapters 2 and 4).

There was limited progress in relation to patterns of production and consumption, including improving resource productivity and eliminating avoidable waste (Chapter 6) and more sustainable use of natural resources (Chapter 7).

In relation to human health and wellbeing, there was limited progress regarding some air pollutants (Chapter 3) and reducing the risk from exposure to high temperatures (Chapter 9).

Although good progress was made on improving protection from flooding and coastal erosion (Chapter 9) and enhancement of landscapes (Chapter 11).

Compared with our 2022/2023 progress report a higher proportion of targets have been assessed as showing good progress and limited progress within the annual reporting period. This is primarily due our additional analysis, which has enabled us to assess 11 more targets than last year rather than government publishing additional evidence.

Our assessment ratings for the majority of targets that were also assessed last year have not changed. There was improved progress in relation to the commitment that water companies will only be permitted to discharge from a sewer overflow where they can demonstrate there is no local adverse ecological impact; and the reduction of land-based emissions of mercury (mixed to good). However, in relation to clean air targets, elimination of avoidable waste, protecting properties from flooding and coastal erosion, and maintaining major flood and coastal erosion risk management assets, there was less progress during this reporting year than the previous.

Of the 13 EA21 targets, our assessment is that good progress has been made over the annual reporting period towards three, mixed progress towards nine and limited progress towards one (Figure 14.3).

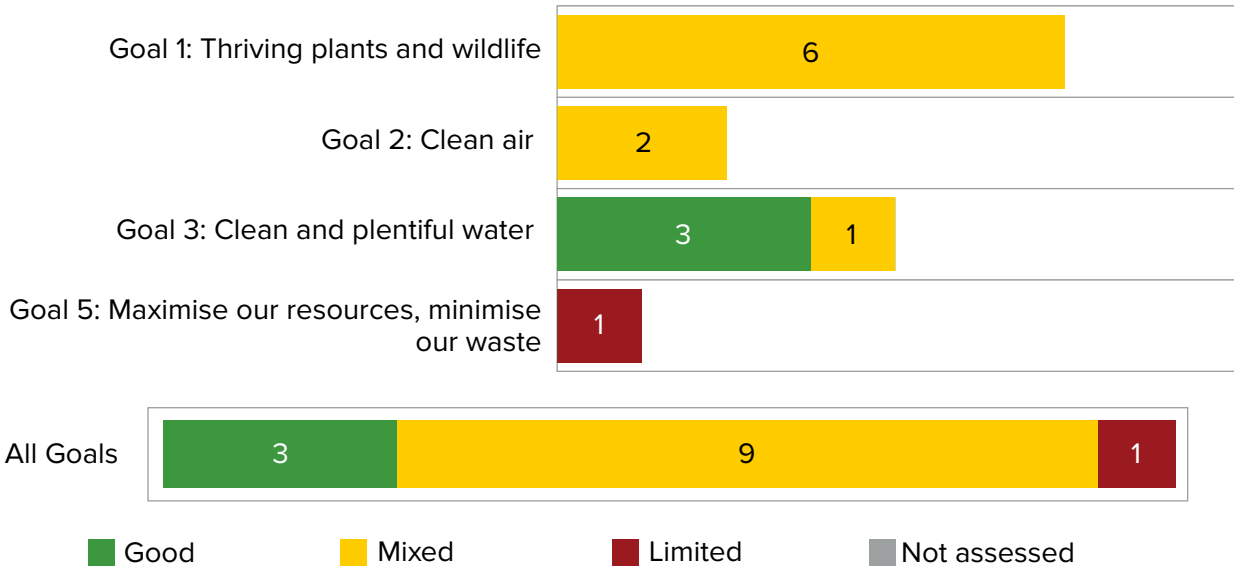


Figure 14.3. Summary of the OEP's assessment of progress over the annual reporting period towards EA21 targets. Green indicates good progress, amber is mixed progress, red is limited progress and grey is not assessed.

Of the six EA21 targets for which we had sufficient evidence to assign assessment ratings in our 2022/2023 progress report, there has been an improvement in the assessment rating for the 2030 species abundance target (from limited to mixed progress) and water demand target (from mixed to good progress). There were no changes in the assessment ratings for the residual waste long-term target and wastewater target. However, the assessment of progress during the annual reporting period for mean annual concentration of $PM_{2.5}$ and population exposure reduction for $PM_{2.5}$ has changed from good to mixed.

The assessment of individual targets and commitments forms part of our wider assessment of progress at the level of the 10 goals of the EIP23, where we conclude that in five goal

areas progress has been mixed and in five goal areas progress has been limited (Table 14.1). Compared with last year, there was less progress in relation to the goals of clean air and maximising our resources, minimising our waste.

Prospects

Informed by our assessment of trends and progress, we assessed the prospects of meeting 43 individual targets and commitments, as well as overall prospects by EIP23 goal area. We did not assign assessment ratings to the prospects of meeting individual targets and commitments in our 2022/2023 progress report, so our first comparison between years will come next year.

Our assessment of prospects of meeting 43 individual targets and commitments is that the government is largely on track towards meeting nine, partially on track towards meeting 12 and largely off track towards meeting 20, while the prospects of meeting two could not be assessed due to a lack of sufficient evidence (Figure 14.4).

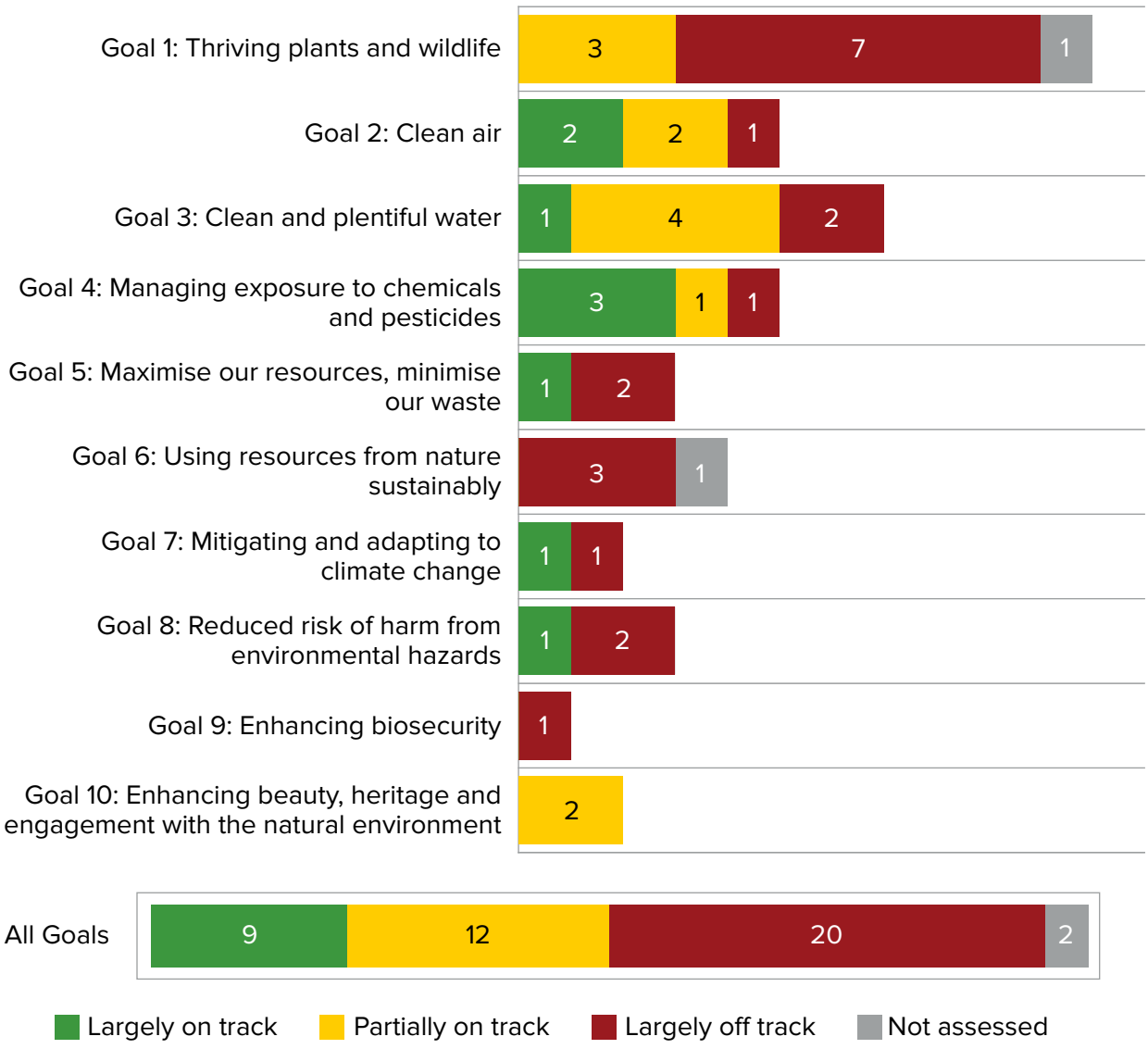


Figure 14.4. Summary of the OEP's assessment of prospects of meeting 43 environmental targets and commitments. Green indicates largely on track, amber is partially on track, red is largely off track and grey is not assessed.

Areas where prospects of meeting targets or commitments are largely on track mainly relate to specific air pollutants such as $PM_{2.5}$ (Chapter 3), specific sources of water pollution such as phosphorus loadings from wastewater (Chapter 4), chemical pollution such as land-based emissions of mercury (Chapter 5) and specific greenhouse gases such as hydrofluorocarbons (HFCs) (Chapter 8).

In relation to the natural environment, while the prospects of achieving nature-friendly farming commitments are partially on track, prospects relating to wider actions and policies essential to nature's recovery are largely off track. This is mostly due to continued delays and a lack of urgency in the implementation of important actions in the freshwater (Chapter 4) and marine environments (Chapter 2). Sustainable soil management remains a significant gap (Chapter 7).

The prospects of meeting targets and commitments relating to patterns of production and consumption are largely off track (Chapters 6, 7 and 8), with the exception of tackling waste crime and illegal waste sites. In relation to human health and wellbeing, while the prospects of meeting the two EA21 targets for $PM_{2.5}$ are largely on track, the same cannot be said for other air pollutants (Chapter 3). The prospect of significantly reducing levels of harmful chemicals entering the environment is largely off track (Chapter 5) and the prospect of reducing the risk from environmental hazards is only partially on track (Chapter 9).

In addition, there is a persistent lack of progress in reducing exposure and vulnerability to climate change risks and a need to increase the scale and pace of adaptation actions to improve the prospects of meeting targets and commitments across many EIP23 goal areas (Chapter 8).

Of the 13 EA21 targets, our assessment is that the government is largely on track for meeting three, partially on track for four and largely off track for five, while the prospect of meeting one could not be assessed (Figure 14.5).

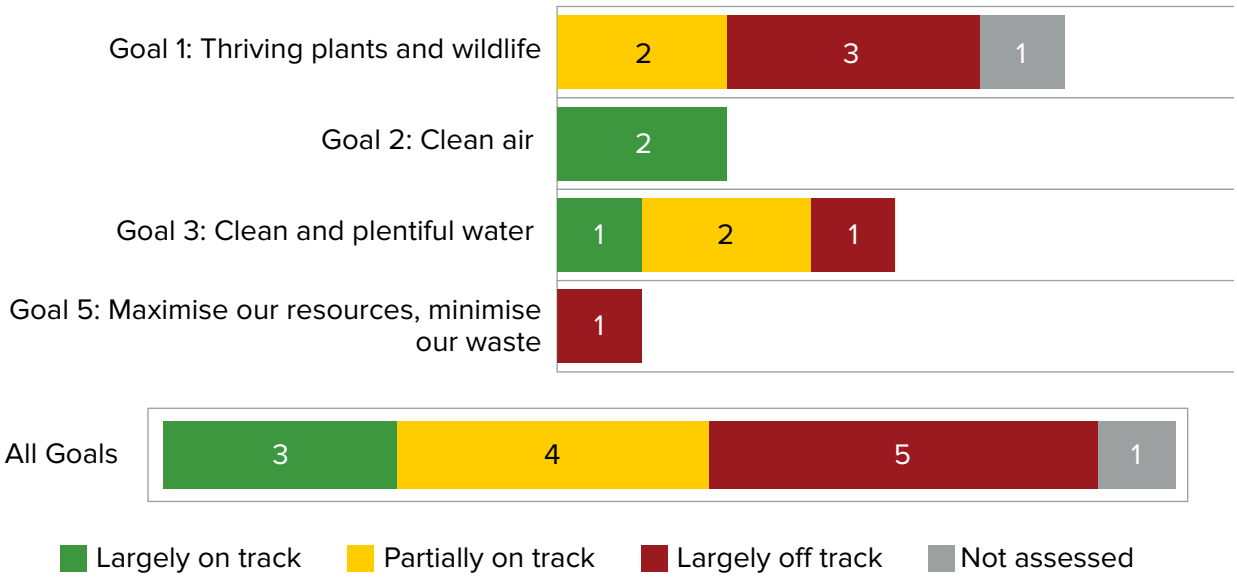


Figure 14.5. Summary of the OEP's assessment of prospects of meeting EA21 targets. Green indicates largely on track, amber is partially on track, red is largely off track and grey is not assessed.

The assessment of the prospects of meeting individual targets and commitments forms part of our wider assessment of prospects at the level of the 10 goals of the EIP23, where we conclude that in three goal areas the government is partially on track, and in seven the government is largely off track (Table 14.1). Compared with our 2022/2023 progress report, our assessment ratings have not changed but we have now been able to assess the goal of enhancing beauty, heritage and engagement, which we assessed as partially on track.

Table 14.1. The Office for Environmental Protection summary assessment of past trends, progress for the year 2023/204 and overall prospects of meeting ambitions, EA21 targets and other commitments, across the 10 goals of the EIP23.

Environmental Improvement Plan 2023 areas	Environmental Improvement Plan 2023 goals		Past trends	Progress	Overall prospects of meeting ambitions, targets and commitments
The apex goal	Goal 1: Thriving plants and wildlife				
Improving environmental quality	Goal 2: Clean air				
	Goal 3: Clean and plentiful water				
	Goal 4: Managing exposure to chemicals and pesticides				
Improving our use of resources	Goal 5: Maximise our resources, minimise our waste				
	Goal 6: Using resources from nature sustainably				
Improving our mitigation of climate change	Goal 7: Mitigating and adapting to climate change	Mitigation			
		Adaptation			
	Goal 8: Reduced risk of harm from environmental hazards				
Improving our biosecurity	Goal 9: Enhancing biosecurity				
Improving the beauty of nature	Goal 10: Enhancing beauty, heritage and engagement with the natural environment				

Assessment rating	Past trends	Progress	Overall prospects
	Improving trends dominate	Good progress	Largely on track
	Trends show a mixed picture	Mixed progress	Partially on track
	Deteriorating trends dominate	Limited progress	Largely off track
	Not assessed		

Progress regarding our 2022/2023 recommendations

Our 2022/2023 progress report identified a range of factors that were impeding progress and prospects. These included delays in key policies, strategies and regulatory frameworks; actions not addressing all major pressures; resources not being given as needed even when tools and actions are well understood; and a lack of urgency with which positive actions are implemented. This remains the case.

We also identified many opportunities for improvement. In many instances, well established solutions exist and their implementation is feasible with sufficient support. We made 52 recommendations focused on these barriers to progress or opportunities for improvement. There were five key recommendations and 47 specific recommendations covering the EIP23 goals and selected cross-cutting areas. Of the 52 recommendations, only five have seen good progress in the last year. There has been mixed progress in relation to 16 and limited progress in relation to 31 (Figure 14.6).

We hope to see our earlier recommendations followed as if the government does so we consider it is more likely to achieve the EA21 targets and interim targets and significant environmental improvement.

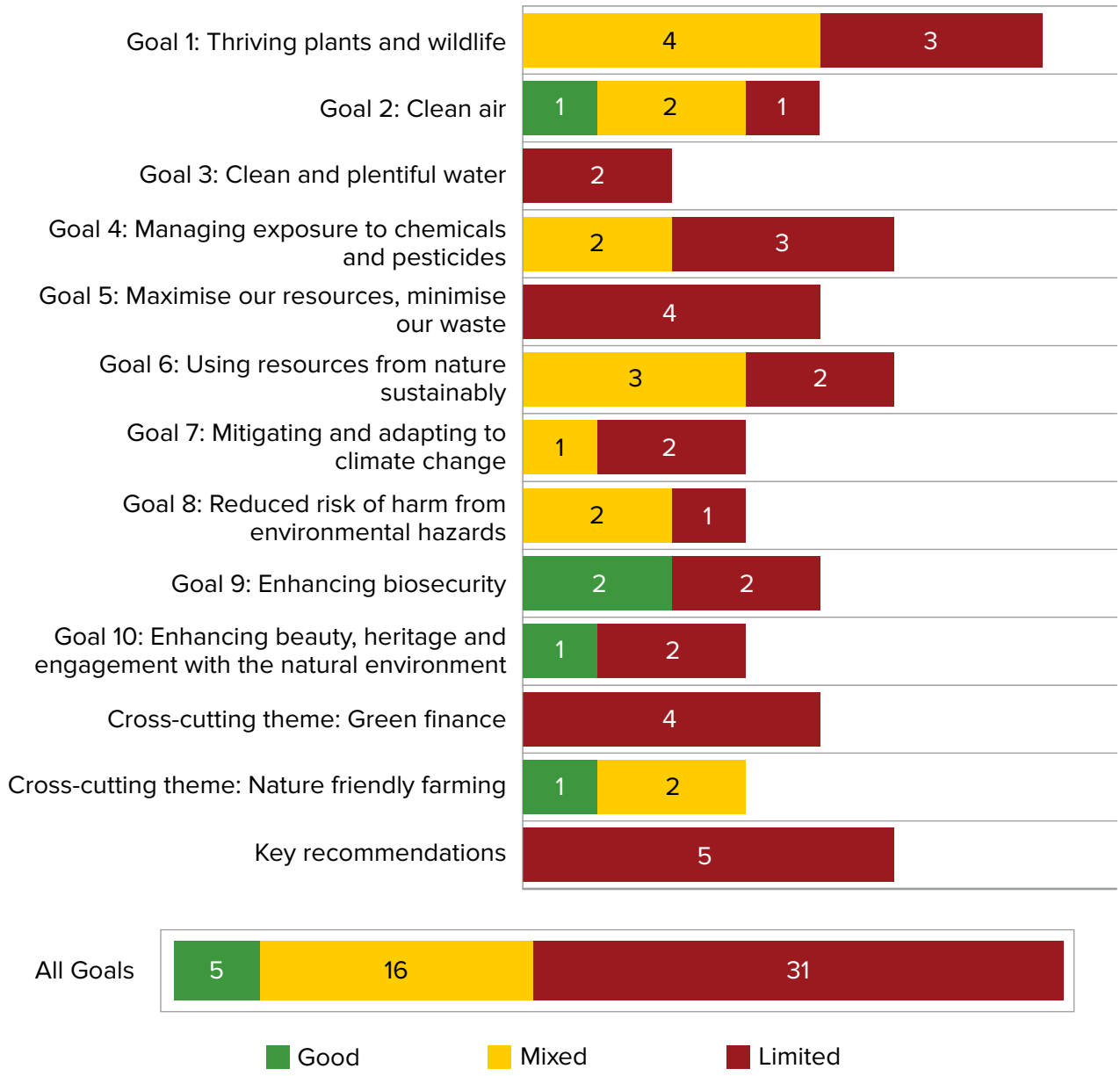


Figure 14.6. Summary of the OEP's assessment of progress in relation to the recommendations in our 2022/2023 progress report. Green indicates good progress, amber is mixed progress and red is limited progress.

Conclusions

Our assessment of progress and prospects continues to be hampered by the level of detailed information made available by the government and gaps in monitoring systems. The degree of disclosure and transparency of delivery planning information to date is not consistent with that needed for scrutiny or government accountability.

Looking across trends, progress and prospects, it is clear that there is much more success in addressing specific environmental problems, particularly pollutants with targeted instruments. However, environmental outcomes are determined by many factors, with synergies and trade-offs among actions. These synergies can be harnessed in policy development – for example, circular economy measures that contribute to the achievement of environment and climate commitments, deliver economic benefits, improve resource

security, and reduce impacts on health and wellbeing. At the same time, trade-offs need to be identified and addressed, so strengthening policy coherence is essential to improving prospects.

In addition, environmental outcomes are linked to economic activities, lifestyles and behaviours. Insufficient action in areas such as enabling green choices is a missed opportunity. Society can be made greener by design, the public better engaged, and businesses, communities and citizens empowered by removing practical barriers to action.

In many areas the scale and pace of actions are currently falling short. Achieving ambitions, targets and commitments requires the government to speed up and scale up actions. For progress to be improved there is still a need for detailed delivery plans that set out who will do what, how and by when. These delivery plans also need to show that when individual actions are taken, specified outcomes are achieved and that plans stack up.

Furthermore, repeated delays means that strategic and delivery plans have not kept pace with the real and significant environmental challenges we now face so plans also now need to catch up and then keep up. Harnessing support from across government is essential as the policy levers needed to deliver ambitions, targets and commitments are spread across government departments.

The needed increase in the pace and scale of implementation means monitoring and evaluation becomes more important than ever as a way to understand what is working and when to change course to ensure that outcomes are achieved effectively.

14.2. An effective Environment Act

The forthcoming revision of the EIP23 offers an opportunity to strengthen the effectiveness of the governance framework for the environment established by the EA21. Our 2022/2023 progress report made five key recommendations which remain standing and relevant so here we reaffirm and update them in the context of the EIP revision.

Setting ambitions

Specific, measurable and time-bound targets are important for operationalising government goals and driving their achievement. They guide policy design and implementation across government, and signal policy direction and continuity for the private sector, helping to unlock investment and innovation.

Target setting is inevitably context specific. However, a consistent conceptual model for how to set targets can help to strengthen them and identify priority gaps.

We have previously advised that all goals in the EIP should have an associated apex target, supported by a range of interim targets.[168,601] By apex targets, we mean those that define, embody and operationalise overarching goals and where appropriate are set in law as an EA21 target, pursuant to the Environment Act. Interim targets are important for defining optimal pathways towards apex targets, further specifying the requisite direction, scale and pace of action. The revision of the EIP23 offers an opportunity to set and vigorously pursue clear and achievable interim targets that are as ambitious as possible in the areas needing most attention.

Targets can operate as a comprehensive and coherent set, maximising synergies in driving the desired outcomes and necessary system change. A good example is for mitigating climate change, where Net Zero provides an ambitious apex target, which is supported by interim targets: Carbon Budgets, alongside non-binding technological and sector-based commitments which are underpinned by transparent, statutory delivery plans explaining how the target will be achieved.

Across other areas of environmental policy the current sets of targets do not seem to be as comprehensive and coherent. Some EIP goal areas lack ambitious apex targets. In maximising our resources, minimising our waste, there are a multitude of targets set for downstream waste management measures but no binding targets focused on resource use and consumption. This runs contrary to the governments stated goal in the Resources and Waste Strategy and target evidence pack: 'Our focus remains on moving waste up the hierarchy and minimising the amount of waste we produce. Waste prevention avoids unnecessary production and processing in the first place, and therefore the costs and environmental impacts associated with those step.'[310]

Likewise for air quality, there is a comprehensive set of targets covering the key pollutants affecting human health, but no statutory targets have been set for reducing the environmental harms of air pollution, such as excessive nitrogen and ammonia deposition.

In other instances, there is a strong apex target but inadequate interim targets. For example, the EA21 apex targets for halting and reversing the decline in species abundance have interim targets that do not bear a clear relation to the apex targets and define the pathway needed to achieve nature recovery. The wildlife-rich habitats target, because it is based on newly created or restored habitat, is a poor proxy for reducing overall habitat loss and degradation, and many other major pressures to nature are not covered by targets.

In addition, there may be a comprehensive set of apex and interim targets, but their scope and delivery timescales are incoherent. Achievement of marine good environmental status (GES) is judged by reference to 11 descriptors, including marine species and habitats and the key pressures affecting them.[15] The EA21 target for the condition of protected features in relevant marine protected areas (MPAs) complements the GES target by driving recovery of protected site features, however, there is a difference of over 20 years in their deadlines. The GES deadline was 2020, while the EA21 marine for MPAs is for 2042.

Regarding water, the EA21 targets also appear largely detached from other relevant targets. The various good status targets under the Water Environment (Water Framework Directive) (England and Wales) Regulations 2017 (WFD Regulations) cover a wide range of habitat quality elements (biological, hydromorphological and chemical) and are currently set for 2027, while the EA21 targets are based on individual pressures on water quality, set for 2038. There is also disparity in the scope of EA21 targets, with some addressing major and widespread pressures to the water environment, such as agricultural nutrient pollution, and others targeting issues such as abandoned metal mines pollution, which only affects approximately 3% of surface water bodies.

We encourage the government to review whether its set of targets is fit for purpose across priority areas. It should also strengthen the methodology for the EA21 Significant Improvement Test (SIT), which requires the government at least every five years to assess whether meeting the existing set of EA21 targets, together with certain other objectively measurable time-bound statutory targets, would significantly improve the natural

environment in England. It is a key mechanism for identifying priorities for setting new targets or strengthening existing targets.

In its previous SIT assessment, the government assessed the effects of meeting the EA21 targets, alongside meeting certain targets set under the National Emission Ceilings Regulations 2018, the Air Quality Standards Regulations 2010, the WFD Regulations and the Climate Change Act 2008. While the Secretary of State concluded that the SIT had been met, no supporting evidence was published,[602] therefore no evaluation of the quality or effectiveness of the SIT was possible.

Meeting ambitions

The EIP and Environmental Principles Policy Statement (EPPS) are two key mechanisms by which the government can significantly improve the natural environment and integrate consideration of the environment across government policy and decision-making.

Our 2022/2023 progress report set out eight attributes of an effective EIP. In our view, the EIP23 and supporting documentation did not provide the level of detail needed to drive delivery at the scale and pace required. It did not contain the level of information and evidence needed to demonstrate how actions would be effectively implemented and come together to significantly improve the natural environment.

Fewer than half the measures mentioned in the EIP23 are unambiguously linked to delivering EA21 targets, and very few have their contribution quantified. This makes it challenging to understand whether or how measures create a pathway towards meeting the government's ambitions, targets and commitments.

The EIP review is an opportunity to put in place a strategic plan to raise environmental ambition and momentum. This should be supported by delivery plans that set out who will do what and by when and how much progress is expected to be made.

Delivery of the EIP requires leadership from the government at the highest level. It also needs to be clear who is accountable, how decisions are made and how delivery of the EIP will be assured across government.

The EPPS can complement and help drive the delivery of actions needed to achieve EA21 targets and the EIP. The legal duty on ministers (subject to exemptions) to have due regard to the EPPS when making policy should enhance the way in which the environment is considered throughout the policy process and provide greater scrutiny of relevant decisions.

Meeting the ambitions of the EIP requires all government departments to fully consider the environmental effects of their policies and to make decisions that address any relevant trade-offs. Where possible, this should minimise harm and maximise co-benefits and having due regard to the EPPS should ensure this happens. It should take policymakers and ministers beyond the step of just describing the potential environmental impacts of their policies, to a proactive search for ways in which their policies can enact well-established principles of good environmental governance. In practice, this means finding ways for policies in all sectors to protect and enhance the environment (integration), avoid damaging the environment (prevention) and address existing sources of damage (rectification), as well as ensure the costs of pollution are borne by those causing it (polluter pays) and take a risk-based approach to managing uncertainty (precaution).

For this duty to have due regard to the EPPS to be the most effective it can be in supporting the delivery of EA21 targets and the EIP, there needs to be a clear and explicit link between the two, coupled with transparent and meaningful application of the principles. The former will help policy makers tailor their policies towards well-defined environmental outcomes, and the latter will enable stakeholders to see, and challenge, how delivery of EA21 targets and the EIP is factored into decisions.

Internal guidance on applying the EPPS should encourage policymakers to consider how their decisions might affect EA21 target achievement and EIP delivery. We would expect policymakers to do this in a meaningful, transparent and evidence-based way. This information could then be included in future APRs to show how decisions from across government have contributed to specific EA21 targets and EIP goals. Similarly, we would expect all future EIPs to provide a fuller application of the five principles of the EPPS, highlighting particular policy areas where they could have most impact and how this has been factored into design and delivery decisions.

Our evaluation of the government's preparation for, and early implementation of, the EPPS is addressing these factors and will be published in spring 2025. We intend to incorporate information about the government's implementation of the EPPS in our future progress assessments.

Assessing progress

The government's approach to assessing progress towards certain long-term environmental targets and commitments was set out in the 25-Year Environment Plan 2018. It was intended to address fundamental questions such as how pressures on the environment are changing, how well interventions are working, whether the natural environment is improving and what this means for the benefits it provides to society.

The integrated monitoring and evaluation framework envisaged included short, medium and long-term assessments, consisting of Annual Progress Reports (APRs) and updates to the Outcome Indicator Framework (OIF); comprehensive state of the environment assessments that could be undertaken with partners every 10 to 15 years; deep-dive and cumulative policy evaluations and sectoral assessments; consistent international reporting and comparative analyses; the development of underpinning statistics and data on the environment; and the adoption of adaptive management frameworks that enable flexible delivery of policies.

The extent and quality of these monitoring and evaluation activities varies. There is still not one single framework that brings them all together to provide a comprehensive picture of progress or to put the evidence to best use through adaptive delivery. The revision of the EIP presents an opportunity to develop, establish and implement an effective monitoring, evaluation and learning framework.

Our annual assessment of progress draws on the OIF and APR and these are also produced annually. The OIF is a useful tool that draws together indicators and in 2024, trends were updated for 44 indicators, including nine that were newly reported. However, its use in assessing progress is limited by the fact that the themes are not aligned with the EIP23 goal areas and there is a difference between OIF indicators and some of the metrics used by the government to track progress towards targets such as the EA21 targets on $PM_{2.5}$ concentration and exposure reduction. In addition, two-thirds of the OIF indicators are

undergoing further development and there are data gaps in relation to soils, the marine environment, noise exposure, resource productivity and climate adaptation.[346]

In our 2022/2023 progress report we highlighted shortcomings with the government's APR and set out seven attributes of a new and informative APR. The APR 2024 differed from the APR 2023 significantly. It included an annex detailing the indicators being used to track progress with EA21 targets. While this is a welcome addition, not all targets have prospective analyses or trajectories and the APR 2024 does not explain why it uses different indicators from those in the OIF.

Other changes to the APR 2024 reduced its quality and usefulness as a source of evidence for assessing progress. The use of a single aggregate figure showing improvement and deterioration in aspects of EIP23 goal areas means that it is necessary to use the OIF online dashboard to understand exactly what has changed, by how much and how this might relate to targets and commitments. Furthermore, the lists of activities undertaken by the government in the annual reporting period are no longer grouped into those that are having an impact now or will do so in the future. Long lists of activities with very limited context or explicit linking to targets and commitments do not provide an informative description of progress.

Perhaps the most significant limitation of the APR 2024 is its incompleteness. Our assessment of progress always considers the APR but has to look beyond it for additional information and evidence to provide a fuller picture. In every EIP23 goal area we found important additional activities and evidence of progress that were not included in the APR 2024. This is a missed opportunity for the government to demonstrate publicly the full range of actions being taken to improve the environment.

The lack of non-Defra activities included in the APR 2024 is notable. Without a full picture of relevant activities in all parts of government, it is difficult to tell whether the government is mitigating trade-offs, harnessing synergies, improving policy coherence and applying the systems based approach that is required for ambitious environmental improvements.

Lastly, and perhaps most concerning, there is limited available information about how APRs, the OIF, policy evaluations, data development and other monitoring and evaluation activities are being used to drive progress. This information can, and does, inform policy development and delivery improvements. The government has an opportunity in its progress reporting to showcase this learning and provide reassurances in key policy areas where we, and others, have called for scaling up and speeding up. There are excellent examples of monitoring, evaluation and learning in specific programmes – such as ELM – but this is rarely mentioned in APRs and is not complemented by the same sort of adaptive management frameworks for EA21 targets or EIP goals.

14.3. Key recommendations

The EIP review aims to prioritise actions that can have the biggest impact on significantly improving the natural environment. To complement our recommendations on an effective EIP and informative APR, we have identified a number of actions that deliver benefits across EIP goals, the government's five environmental priorities as well as contributing to meeting several EA21 targets. Greater scale and pace is needed with respect to each of these actions if the government is to secure the long-term improvements it has committed to.

Key recommendation 1: Get nature-friendly farming right. It is essential that the government strengthens engagement with farmers and landowners if it is to achieve Environment Act targets and many other environmental ambitions and commitments. Our analysis shows the latest Environment Land Management schemes are promising with respect to recovery of landscapes and halting the decline in species abundance on land. However, this is conditional on a significant increase in the uptake of the more environmentally ambitious aspects of Countryside Stewardship and Landscape Recovery schemes, and by making greater use of spatial prioritisation, farm advice and guidance. We identify limited capacity for reducing water pollution, supporting the government's environmental priority of cleaning up rivers and lakes, without changes to how land is used, the current schemes and regulatory approach, and greater collaboration between delivery partners.

Key recommendation 2: Maximise the contribution of protected sites for nature. Protected wildlife sites contribute towards achieving the set of national biodiversity targets and international commitments, such as 30 by 30, as well as providing wider environmental, economic and social benefits. However, the current framework is not working well enough and the government should enhance and enforce levels of legal protection. Further steps should be taken urgently to correct underinvestment in site designation and management including implementation of conservation measures; improving monitoring and strengthening overall governance and engagement with partners.

Key recommendation 3: Speed up action in the marine environment. The government has not met its commitment to ban all damaging activities in Marine Protected Areas in 2024. The latest data from OSPAR confirm the UK will more than likely not have met the legal requirement of marine good environmental status. The government should deliver the current steps to achieve targets and commitments more rapidly. Overdue Marine Protected Area byelaws urgently need to be put in place. The government should implement a new UK Marine Strategy that focuses action on those descriptors not yet at good environmental status, to maximise progress and minimise the delay in achieving that overall objective.

Key recommendation 4: Set out clear mechanisms for reconciling competing demands for use of land and sea. The ways in which land and sea are used are among the biggest drivers of biodiversity loss. Environmental pressures will become more acute with the need to develop essential clean energy infrastructure and housing, while delivering the government's environmental priorities of food security and protecting communities from flooding. The government needs to progress Local Nature Recovery Strategies (LNRSs), a Land Use Framework, and detailed catchment and marine spatial plans. These can secure coherence between environmental and other priorities but need to be expedited and effectively integrated into planning decisions in practice. However plans on their own are not enough without resources to implement them.

Many issues are context specific, so a place-based approach is also needed to complement national frameworks and guidance. To ensure that infrastructure development enhances rather than degrades nature and people's engagement with it, key spatial tools need to work together. In addition to recent changes to the National Planning Policy Framework concerning LNRSs, the government should also make the Green Infrastructure Framework and emerging LNRSs material considerations for local planning.

In addition, as many environmental pressures are related to how we produce and consume food, the government should use the revision of the Food Strategy to develop more coherent policy interventions to reduce environmental pressures along the whole supply chain going beyond a sectoral approach.

Key recommendation 5: Develop a circular economy framework. Progress in this area has been too slow. The government should update the Resources and Waste Strategy to establish a framework for a circular economy. This would deliver economic benefits and improve environmental outcomes across many areas, including nature recovery, but it requires the efforts to go beyond waste management. This includes the acceleration of a new UK policy and regulatory framework for chemicals, since clean material cycles and products being sustainable by design are crucial steps to achieving residual waste targets and progress towards the government's environmental priority of a zero-waste economy.

In developing a circular economy framework, the government should consider the EPPS principles, particularly integration, prevention and polluter pays, to help identify opportunities, with extended producer responsibility an important mechanism for securing the resources needed to implement measures.

In addition, there are three cross-cutting areas where government can take steps to enable progress and secure effective implementation of the Environment Act targets and a revised EIP:

Key recommendation 6: Mobilise investment at the scale needed. The government's target of private investment for nature recovery is a key enabling step to close the finance gap, alongside continued and well targeted public investment. Given the scale of the challenge, to achieve this the government needs to provide strong incentives, oversight and regulation, to create the market confidence to deliver rapid, substantial growth in investment, as well as the capability and capacity of the environmental sector to make the most of that investment. In addition, local authorities are a key delivery partner and they need support to build and maintain the capacity needed to mobilise investment.

The government should improve transparency and accountability by publishing sectoral pathways that define the scale and direction of investment required to become nature positive and develop monitoring capability for tracking investment flows over time, from funding sources to desired outcomes. Investment choices have long-term implications so there is a need to ensure that they do not lock society into pathways that limit future options.

In addition, the government should generate resources for public investment through application of the EPPS polluter pays principle and actions taken to achieve the Kunming-Montreal Global Biodiversity Framework Target 18 on environmentally harmful subsidy reform.

Key recommendation 7: Regulate more effectively. Full implementation and enforcement of existing regulations would accelerate progress towards targets and commitments. To achieve this the government should ensure the availability of sufficient resources, build capacity and improve engagement of businesses and citizens as well as coordination of relevant authorities.

Effective regulation is all about knowing in sufficient detail how things stand and then using regulatory tools and approaches in a considered way to get people to act in

ways they may not otherwise choose, for the purpose of addressing root causes or consequences of activities that affect the environment.

Effective regulation is essential to address the numerous market and other failures that have led to environmental degradation at a significant cost to society. It is also needed to ensure economic growth is sustainable, given the reliance of the economy on natural resources, ecosystems and biodiversity. We note Defra's review of its current regulation and regulators, however it should ensure there is regulatory coherence and efficiency in delivering the government's environmental goals, alongside its wider mission on economic growth.

Key recommendation 8: Harness the support needed to achieve ambitions.
The government needs to provide clear leadership at the highest level to ensure cross-government delivery and wider stakeholder buy-in. Directly linking the EPPS to statutory targets and their delivery plans and the revised EIP can help secure cross-government delivery of environmental ambitions alongside the government's other priorities.

A revised EIP should be far more transparent and better communicated. It should explicitly state who will do what, how and by when and detail what the intended outcomes of actions are. The government should couple its implementation with greater engagement with non-government bodies and the public to harness their willingness to contribute. There is support for action on the environment with the majority of adults reporting climate change and the environment as an important issue for the UK.[3] Steps in the EIP to enhance engagement are important in building public support for action.

14.4. Conclusions

Our overall assessment of progress is that there was less progress made during this annual reporting period than the last. Our overall assessment of the prospects is unchanged with the government largely off track to meet EA21 targets and EIP23 ambitions, targets and commitments. Many long-term targets are unlikely to be met with existing policy interventions if current trends continue.

However, prospects are not fixed and there are clear opportunities to shape a more positive future but the government will need to act quickly to make up lost ground. The government has a range of commitments for 2030. This is only five years away with the revised EIP due for publication in spring 2025 covering nearly all that period.

In recent years progress on both nature recovery and tackling climate change has been slow. The government is running out of time to avoid the worst impacts of climate change, ecosystem degradation and overconsumption of resources as well as the time and space needed to adapt to such impacts.

It is clear that doing more of the same is not going to deliver improvements at the necessary speed and scale. The revised EIP should not just add up existing policies and actions but clearly set out how actions will make achieving targets and commitments a reality.

This requires responses that go beyond addressing specific environmental problems with targeted instruments. The effectiveness of policy measures will be limited if they do not tackle the underlying causes of environmental degradation related to the societal systems that meet the needs for food, energy, mobility and the built environment; and improve coherence, harness synergies and deal with trade-offs.

Like climate change, nature recovery is a long-term and complex issue. Taking actions that maximise synergies in mitigating and adapting to climate change, alongside restoring nature should be seen as investing in a more prosperous, sustainable future.

The government has responded to the climate challenge with the ‘clean energy superpower’ mission. A mission for nature to drive action would clearly demonstrate that this is a government for Net Zero and for nature and that the two are inextricably linked. The government now has a unique opportunity with the EIP revision to take a more integrated approach and improve EIP delivery and its integration with climate and wider policies, to achieve a significant environmental improvement.

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Annex: Glossary of terms and acronyms

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Term	Description
25YEP	The 25 Year Environment Plan is a prominent government plan to protect, restore and enhance the environment. It was designated as the first statutory Environmental Improvement Plan.
The Act	The Environment Act 2021 – provided a new governance framework for the environment, with four key provisions: a new oversight body; long-term Environmental Improvement Plans (EIPs) to be reviewed and refreshed by government every five years; statutory targets; and an Environmental Principles Policy Statement applicable across government.
AES	Agri-environment schemes
APR	The Annual Progress Report (APR) is a statutory government report that assesses progress made in implementing the current Environmental Improvement Plan.
Assessment	The process of considering all the information about a situation and making a judgement. Assessment is used in its broadest definition here, encompassing evaluation, appraisal, monitoring and analysis.
Barrier	An element of government activity that inhibits delivery, in this context, of EIP goals and outcomes.
Baseline data	A set of information representing the baseline position and used to compare data acquired afterwards to determine changes. In an environmental context, the baseline determines the condition or health of the environment prior to an intervention.
BNG	Biodiversity Net Gain is an approach to development and land management that aims to leave the natural environment in a measurably better state than it was beforehand.
Climate adaptation	The process of adjustment to actual or expected climate change and its effects, in order to moderate harm or exploit beneficial opportunities.[603]
Climate mitigation	Interventions to reduce emissions or enhance the sinks of greenhouse gases.[603]
Coherence	The situation in which the parts of something fit together in a natural or reasonable way. In the policy context, this means multiple areas or activities aligning towards the achievement of the government's goals.
Commitments	Statements that commit to do something but do not define a desired level of performance or include a measurable indicator.
Consultation	An act of external organisations exchanging information/opinions to increase understanding or give advice to the government.
DAERA	Department of Agriculture, Environment and Rural Affairs
Defra	Department for Environment, Food and Rural Affairs

Term	Description
Delivery (plan)	Details of how goals, targets and/or policies are implemented, including the changes that are expected within sectors, who is involved and in what role, and the processes that shape decision-making.
Delivery authorities	Authorities who have assigned responsibilities for implementing delivery plans.
Drivers	The social and economic factors that indirectly bring about environmental change. These can be negative or positive. Examples of drivers include demographic change, economic growth and technological developments.
EA21 interim targets	The interim targets, set out in EIP23 as required by section 11(1) of the Environment Act 2021, in respect of any matter in respect of which there is an EA21 target.
EA21 targets	The legally binding targets set in regulations made under sections 1 to 3 of the Environment Act 2021.
Ecosystem services	The benefits people obtain from ecosystems. Ecosystem services can be divided into supporting, regulating, provisioning and cultural, although many services can sit under more than one category.
ELM	environmental land management
Enabler	An element of government activity which helps to improve delivery of EIP goals and outcomes.
Environment Act 2021 (EA21 or the Act)	See The Act.
Environmental monitoring	Environmental monitoring is the process of detecting, observing and measuring environmental conditions and trends. Consistent observations over time help to ensure accurate determination of environmental change. This provides information to support policy development and its implementation and make assessments of progress.
Environmental Improvement Plan (EIP)	A statutory plan for significantly improving the natural environment in the period to which the plan relates, which is required to be prepared under the Environment Act 2021. The Environment Act 2021 included provisions to treat the 25 Year Environment Plan as the first Environmental Improvement Plan.
Environmental stewardship	The policy process for protecting, restoring and improving the environment, from defining desired outcomes to developing the means to deliver them. This is the responsibility of government, led by Defra.
ERCs	The UK's national emission reduction commitments from 2020, set out in the National Emissions Ceilings Regulations 2018.

Term	Description
Evaluation	A systematic assessment of the design, implementation and outcomes of an intervention. It involves understanding how an intervention is being, or has been, implemented and what effects it has, for whom and why. It identifies what can be improved and estimates its overall impacts and cost-effectiveness.
GBF	Kunming-Montreal Global Biodiversity Framework
Goal (apex goal)	Within the EIP23, Thriving plants and wildlife (goal 1) is highlighted as the goal of the plan. All other environmental goals are shown to contribute towards achieving this apex goal.
Goals	Statements that describe fundamental, broad aspirations that an organisation is aiming to achieve through its activities. They describe components of a vision and can be grouped into distinct areas. The 25YEP has 10 goal areas; and each area may have a set of associated goals, targets and commitments.
Governance	The system by which entities are directed and controlled. It is concerned with structure and processes for decision-making, accountability, control and behaviour, and with influencing how an organisation's objectives are set and achieved, how risk is monitored and addressed, and how performance is optimised.
Indicators	Statistics used to measure current conditions or trends over time. The 25YEP Outcome Indicator Framework includes a set of 66 indicators; these measure environmental changes that relate to the 10 goal areas within the 25 Year Environment Plan.
INNS	Invasive non-native species are species that are introduced, intentionally or unintentionally, outside of their natural geographic range, causing environmental, social and/or economic impacts.
Lag time	The time it takes between an event and an attributable environmental change – for example, the time it takes for species to respond to conservation measures or environmental pressures.
Major projects	Projects/programmes with whole-life costs over £100 million or that are novel or contentious.
Metrics	A set of numbers that gives information about a particular process or activity. Metrics underpin the indicators found in the Outcome Indicator Framework.
MPAs	Marine protected areas are defined geographical areas of the marine environment established and managed to achieve long-term nature conservation and sustainable use. The UK has many different types of protected area; some are established solely for nature conservation, while others serve a range of purposes, including nature, landscape and amenity values.

Term	Description
Natural capital	The parts of nature which directly or indirectly underpin value to people, including ecosystems, species, freshwater, soils, minerals, the air and oceans, as well as natural processes and functions. Natural capital forms part of our wealth, that is, our ability to produce actual or potential goods and services into the future to support our wellbeing.
Nature-based solutions	Referring to the sustainable management and use of natural features and processes to tackle socio-environmental issues.
Nature-friendly farming	An umbrella term used to describe farming systems and practices that enhance and protect biodiversity and contribute to tackling climate change alongside food production.
Nature-friendly habitat	A term is used in the report when assessing land cover that is more likely to support large scale nature-friendly habitats. These are land covers that are typically less intensive in use such as semi-natural grasslands and broadleaved woodlands. This does not equate to wildlife-rich habitats as defined in the Environmental Targets (Biodiversity) (England) Regulations 2023[604] and therefore would not contribute to achieving the long-term wildlife-rich habitat restoration or creation target (an EA21 Target).
Nature markets	A mechanism for private investment in nature through the sale of units of ecosystem services, which are delivered by nature restoration projects or improvements to land or coastal management.
Objectives	Statements of specific, tangible outcomes that an organisation is aiming to achieve within one of the goal areas. For example, in the Clean Air goal area, an objective is to cut public exposure to particulate matter pollution.
ODP	Outcome Delivery Plans set out each government department's priority outcomes and its plan for achieving them.
OECMs	Other Effective Area-Based Conservation Measures – a new conservation approach, separate from protected areas, where conservation is achieved mainly as a by-product of other management.
OEP	The Office for Environmental Protection – a statutory body established by Parliament under the Environment Act 2021. Our mission is to protect and improve the environment by holding government and other public authorities to account.
OIF	The Outcome Indicator Framework (OIF) includes a set of 66 indicators; these measure environmental changes that relate to the 10 goal areas within the 25 Year Environment Plan.

Term	Description
One out all out	An expression commonly used (though not contained in the WFD Regulations) to describe the principle in the WFD Regulations' classification system whereby the overall ecological status of a surface water body is dictated by the lowest status of its various constituent elements. Similarly, the principle provides that for the overall status of any water body to be 'good', both its chemical and its ecological (for surface water) or quantitative (for groundwater) statuses must be at least 'good'.
OSPAR	The mechanism by which 15 governments and the EU cooperate to protect the marine environment of the North-East Atlantic. OSPAR started in 1972 with the Oslo Convention for the Prevention of Marine Pollution by Dumping from Ships and Aircraft and was broadened by the Paris Convention for the Prevention of Marine Pollution from Land-based Sources of 1974. In 1992 these two conventions were unified, updated and extended by the OSPAR Convention for the Protection of the Marine Environment of the North-East Atlantic. OSPAR is so named because of the original Oslo ('OS') and Paris ('PAR') Conventions.
Pathway	A planned route to achieving a specified outcome, such as an environmental goal or target, which takes account of the direct and indirect influence of government policies and external drivers of change.
PM2.5	Particulate matter (in this context with a size of less than or equal to 2.5 µm).
Policies	The core measures that a government takes that affect environmental change, either directly or through influencing the actions of the public and private sector. These vary in scale and type (for example, regulation, standards, information campaigns, grants/subsidies).
Pressures	Pressures directly cause environmental change and are the consequences of socio-economic drivers. Examples of pressures include land-use change and pollution.
Priority outcome	The most important outcomes as defined in each Outcome Delivery Plan. Similar to goals, they define the government's aspirations and help to organise activities that are crucial to the successful delivery of outcomes.
Prospects	The possibility or likelihood of achieving environmental goals and targets.
Proxy indicator(s)	An indirect measure that can approximate or can be representative of a phenomenon without the presence of a direct measure.
RBMPs	River Basin Management Plans set the legally binding, locally specific environmental objectives that underpin water regulation (such as permitting) and planning activities.
REACH	Registration, Evaluation, Authorisation and Restriction of Chemicals

Term	Description
Regulation	A rule made and maintained by a relevant authority and often having the force of law.
SFI	Sustainable Farming Incentive
SMART	Targets that are specific, measurable, attainable, relevant, time-bound.
Species abundance	The sum total of individuals from a given set of species within a given area. The government has set two apex targets for species abundance in England: On 31 December 2030, the overall relative species abundance index indicates that the decline in the abundance of species has been halted. Reverse the decline of species abundance, so that the overall relative species abundance index by 31 December 2042 is: (i) higher than the overall relative species abundance index for 31 December 2022; and (ii) at least 10% higher than the overall relative species abundance index for 31 December 2030 (the specified date for the 2030 species abundance target).
SSSI	A Site of Special Scientific Interest is a protected area of land that is of special interest by reason of any of its flora, fauna, geological, geomorphological or physiographical features.
State	A measure of the condition or health of the environment. This may include the abiotic condition of soil, air and water, or the biotic condition of ecosystems, habitats and species.
Strategies	Provide an overarching rationale and approach to reaching specific targets. Typically, they define the problems and solutions, using principles and/or a vision of the future to propose a set of actions. They should consider, and ideally incorporate, multiple priorities within and across government departments.
Targets	Statements that generally quantify the desired level of performance expected, based on measurable indicators, by a specified time and against a specified baseline. Targets are best if they are SMART.
Targets (apex targets)	Targets that address the environmental outcomes that matter most, rather than areas that are easy to measure and improve. For example, parts of the environment experiencing states of severe deterioration, or facing major or emerging pressures.
Vision	A short statement that embodies the future that a government aspires to achieve.

Term	Description
Wildlife-rich habitat	As defined for the purpose of the wildlife-rich habitat restoration or creation target (an EA21 Target) as a habitat of principal importance for the conservation of biodiversity listed by the Secretary of State under section 41 of the Natural Environment and Rural Communities Act 2006 or another habitat type listed in Schedule 1 of the Environmental Targets (Biodiversity) (England) Regulations 2023[604], and which is of sufficient quality that it is or will be capable of supporting flora and fauna which are typically found in the habitat in question.

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