



Office for
Environmental
Protection

Methodological Statement

Progress in improving
the natural environment
in England 2023/2024

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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I. Setting the scene

The background of the slide is a solid teal color with a repeating pattern of stylized, light teal leaves or branches. The pattern consists of vertical stems with several pairs of leaves branching out to the left and right, creating a rhythmic, organic texture.

Chapter 1: Introduction

1.1. Purpose of this document

In line with our commitment to transparency and the three pillars of the UK Statistics Authority Code of Practice for Statistics¹ – trustworthiness, quality and value – we have developed this second edition of our Methodological Statement to accompany our report ‘Progress in improving the natural environment in England 2023/2024’.

This Methodological Statement provides further detail of our approach to assessment, including the data sources we have used, our analytical methods and the stakeholder engagement we have undertaken. We also identify limitations and areas for development, and clearly set out changes in our assessment methodologies between years.

1.2. Our assessment process

Governance

The OEP’s role in monitoring, assessing and reporting on the government’s progress is set out in Section 28 of the Environment Act 2021 (EA21) (‘the Act’). The EIP assessment process takes a wide perspective to enable annual progress reporting and connect a range of activities within the OEP such as monitoring progress, development of the evidence base, capacity building and stakeholder engagement.

Our EIP progress reports and Methodological Statements are developed in accordance with the OEP’s Strategy and Enforcement Policy² and Governance Framework,³ reporting on which is undertaken annually in the OEP’s Annual Report and Accounts.⁴

Oversight and strategic input are provided by the OEP’s Executive Committee (ExCo) and the Board. On an annual basis, ExCo and the Board approve the scope of the EIP progress report, review the draft report, and oversee the development of key messages and communication activities. The Board approves the final report.

Each year an implementation plan is developed for the EIP progress report. Regular updates are provided to ExCo and the Board in line with the OEP’s governance framework, and individual Board members act as critical friends during the development of the assessment.

Assessment development

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

Our integrated assessment approach aims to be credible, relevant and legitimate. To ensure it is credible, we use reliable and technically adequate methods and approaches and have formal procedures for quality assurance. To ensure it is relevant, we assess progress towards the government’s own ambitions, targets and commitments, and analyse issues related to the challenges faced by the government and stakeholders in improving the natural environment. To ensure it is legitimate, we are transparent with respect to our evidence base, methodologies and stakeholder interactions.

We develop our assessment in an iterative way. We start with a scoping process that sets out the structure and initial content of the assessment. Content is developed through a combination of individual analyses and interactive team working sessions that address key topics and cross cutting aspects such as summary assessments and development of recommendations. Weekly team working sessions ensure effective project management and co-ordination.

Risk management is undertaken in accordance with the OEP framework,⁴ which defines the approach to identify, manage and report on risk and is based on HM Treasury's Orange Book: Management of Risk – Principles and Concepts.⁵

Issues, actions and changes made during the EIP assessment process are recorded at project and process levels in a risks, assumptions, issues and dependencies log. This has developed our previous approach to change control by integrating our existing logs to provide a single source of information and audit trail for decisions and approvals.

Roles and responsibilities

The Head of Assessments oversees the planning and development of the EIP progress assessment. They report to the Chief Insights Officer/Chief Scientist, who is accountable to ExCo and the Board.

Team roles and responsibilities focus on process and content development. Process focused roles include quality assurance and peer review, graphics, stakeholder engagement, development of the Methodological Statement and our statement of compliance with the UK Statistics Authority Code of Practice for Statistics.⁶

Content focused roles include development of different aspects of the assessment approach, and authorship of the report. Assessment strands include the methodological approach to past trends, progress and prospects assessments, and summary assessments (see Chapter 2).

Each chapter of the EIP progress report has a lead author and, in the majority of cases, other contributors. The Head of Assessments acts as the co-ordinating lead author and has responsibility for integration of analyses and ensuring overall coherence of the assessment.

The development of the EIP progress assessment is supported by a multi-disciplinary team with representatives from across OEP directorates to ensure that the assessment process draws on, and informs, activities across the organisation.

Stakeholder engagement

Stakeholder engagement and review are essential to producing a high-quality assessment and ensuring our analysis and findings are credible, relevant and legitimate.

For our 2023/2024 progress report, we engaged with experts across EIP23 goal areas to develop our assessment, particularly in areas that are less rich in publicly available evidence and delivery plans, as well as through a multi-stage peer review process.

We engaged with key stakeholders from a range of sectors including central government, Defra arm's-length bodies and wider public bodies, as well as non-governmental organisations (NGOs), industry and academia.

Those engaged with during our 2023/2024 progress report are listed in [Table 1.1](#). This list is not exhaustive, as it focuses on those stakeholders with whom we engaged directly, and so does not include wider engagement, for example respondents to calls for evidence or project-level workshop attendees.

Table 1.1. Organisations engaged during development of our 2023/2024 progress report.

Organisations engaged
Aldersgate Group
Biomathematics and Statistics Scotland
ClientEarth
Climate Change Committee
Mining Remediation Authority (Coal Authority)
Environment Agency
Environmental Standards Scotland
Eunomia Research and Consulting
Fera Science
Forest Research
Forestry Commission
Friends of the Earth
Government Departments (Department for Environment, Food and Rural Affairs; Ministry of Housing, Communities and Local Government; Department for Transport)
Great Britain Non-native Species Secretariat
Green Alliance
Health and Safety Executive
Historic England
Institute for European Environmental Policy
Joint Nature Conservation Committee
National Audit Office
National Farmers Union
National Highways
Natural England
Nature Friendly Farming Union
OEP College of Experts (and wider subject-matter academic experts)
Resource Futures
Royal Society of Chemistry
RSPB
Rural Payments Agency
Town and Country Planning Association
UK Centre for Ecology & Hydrology
UK Chemical Stakeholder Forum
Water UK
Wildlife and Countryside Link
Wildlife Trusts
WWF

Quality assurance

We undertake a rigorous quality assurance procedure, consistent with our application of the UK Statistics Authority Code of Practice for Statistics, to ensure the data and evidence we use and publish are trustworthy, of high quality and provide value to the public.

The quality assurance process consists of a range of activities. These include quality assurance of the accuracy of the data and calculations underpinning our assessment of indicator trends; and the accurate use and referencing of wider evidence throughout the assessment.

A series of workshops are undertaken to ensure that the analytical methodologies used to assess past trends, progress within the reporting year, and prospects, are applied consistently, and that the assignment of red-amber-green (RAG) ratings are consistent and coherent. A review was also undertaken by our General Counsel team to ensure accuracy of legal content.

Quality assurance is integrated into our commitment to continuous improvement and we welcome feedback after publication of our EIP progress reports to identify areas of improvement for future iterations. We can be contacted via our website.⁷

Peer review

In addition to our quality assurance process, we have also implemented a peer review process. Most of the data and evidence underpinning our EIP progress reports have previously been peer reviewed and/or quality assured. For example, almost all the data underpinning the indicators we use to assess past trends are based on official or national statistics (see Chapter 3 and Annex).

For our 2023/2024 progress report, we also undertook a comprehensive peer review exercise. This is particularly important for areas where publicly available evidence is lacking, and it was necessary to use a greater degree of expert judgement to assign assessment ratings.

The overarching aim of peer review was to provide feedback to ensure the overall narrative, analysis, findings and recommendations were comprehensive, objective and transparent. The following questions guided the review:

1. Do the authors adequately explain the importance of the issue(s), and are there any important issues missing?
2. Is there sufficient evidence, and a logical thread, to substantiate the chapter's analysis, conclusions and recommendations?
3. Is there any additional evidence or policy areas we have missed that should be included?
4. Do the recommendations target the most important issues?

Peer review consisted of two stages. The first involved an internal peer review of a first draft by OEP experts who were independent of the authorship team. A second draft of the report was prepared taking into consideration the review comments. The second stage consisted of external peer review. Two external reviewers were invited per chapter ([Table 1.2](#)).

Reviewers were either members of our College of Experts or other external experts where an appropriate college member could not be identified or was unavailable. Comments were provided by external reviewers independently of each other. A third draft of the report was prepared following receipt of external reviewer comments, and this was provided to ExCo and the Board for feedback before finalisation.

Table 1.2. The OEP would like to thank the following external peer reviewers for their contribution to our 2023/2024 progress report (College of Experts members are identified with 'CoE').

External peer reviewer
Jan Brooke, CoE
Professor Richard D Gregory, CoE
Professor Tom Oliver, CoE
Environmental Standards Scotland
Professor Jo Barnes, UWE Bristol
Liz Buchanan, CoE
Professor Gary Kass, CoE
Alastair Chisholm, Chartered Institution of Water and Environmental Management
Dr Nic Bury, CoE
Dr Aoife Dillon, CoE
Scott Butler, CoE
Alan Potter, CoE
Professor Jim Harris, CoE
Dr Emanuela Orlando, CoE
Climate Change Committee
Professor Andrew J Jordan, CoE
Dr Andreas Heinemeyer, University of York
Dr Richard G R Mitchener, CoE
Dr Niall Moore, Great Britain Non-native Species Secretariat
Dr Olaf Booy, Great Britain Non-native Species Secretariat
Natalya Kharadi, CoE
Julia Thrift, Town and Country Planning Association
Thomas Viegas, CoE
Alexa Culver, CoE
Dr Kenisha Garnett, CoE
Dr Elizabeth Cooke, CoE
Dr Jenny Hodgson, CoE

1.3. Our assessment framework

Our overall approach consists of four main components: past trends, progress in the reporting period, overall prospects of meeting ambitions, targets and commitments, and identification of opportunities for improvement.

We use summary assessments throughout the report to present analyses in a concise and accessible way. We assign assessment ratings to past trends, progress within the reporting year, and prospects of meeting ambitions, targets and commitments. Their different timeframes mean they can have different assessment ratings. Our assessment aims to support decision-making, so we are transparent about the quality of evidence, assumptions and uncertainties and include this in our summary assessments.

In Part II Progress and prospects we provide an integrated assessment of each EIP23 goal area.⁸ We assess environmental trends and respond to the government's Annual Progress Report 2023 to 2024 (APR 2024)⁹ 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 EIP23 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. Further detail on our assessment methodologies is provided in Chapter 2.

In Chapter 4: EIP23 Cross-cutting themes, we analyse the themes of green finance and green choices. EIP23 cross-cutting themes are intended to tie together delivery across EIP23 goal areas and include new farming schemes, land use and planning, green finance, green jobs and skills, and green choices.

In Part III A focus on improving nature, we provide an in-depth assessment of the government's progress towards delivering the apex goal of thriving plants and wildlife. In our 2022/2023 progress report, this focused on achievement of the EA21 2030 species abundance target and the 30 by 30 commitments. This year we focus on nature-friendly farming, including the potential effectiveness of environmental land management schemes in contributing to meeting targets and commitments for biodiversity and water.

Development of our assessment approach this year

The approach to our 2023/2024 progress report is consistent with last year but has developed further in line with our commitment to continuous improvement.

We have amended the structure of the chapters on EIP23 goal areas to introduce separate sections on progress and prospects to make a clearer distinction between them and align with the structure of the summary assessment tables.

We have amended the terminology used in our RAG summary assessment ratings for our assessment of progress in the reporting period. For both individual targets and commitments and for EIP23 goal areas we now use the terminology 'good', 'mixed' and 'limited' instead of the 'on track' terminology used in the prospects assessment. This provides a clearer distinction between the assessment of progress and of prospects. The assessment methodology remains the same as last year.

Each year we review the set of environmental indicators we use, to ensure we are using the best available data. This led to an increase in the number of indicators used this year to 55, of which, 37 were used last year, eight have been amended, and 10 new indicators have been added. Two indicators used last year are no longer included.

We also review the set of targets we assess, to ensure they are an accurate representation of the current policy landscape. While the legally binding targets created under EA21 remain

a constant, this year, we have added three targets and commitments. Further details on both the indicators and targets are provided in Chapter 3 and the Annex.

Other developments include use of geospatial analysis to support our assessment of the thriving plants and wildlife, clean air and enhancing beauty, heritage and engagement with the natural environment goals, which are described further in Chapter 3.

1.4. The overall evidence base

In developing our assessment, we consider the government's Annual Progress Report (APR), and data published by the Secretary of State that relate to that reporting period. We also look beyond, where we consider it appropriate. The government's APR must be a report on implementation of the EIP, describe what has been done, and consider whether the environment has improved. It must also consider progress towards targets. In our view, the APR 2024 provided a very limited overview of actions and plans, rather than an effective assessment of progress.

Our scrutiny of progress remains hampered by the lack of detailed delivery information made available by the government. Across many EA21 targets and interim targets, and EIP23 targets and commitments, this lack of detailed information relating to delivery constrains our ability, and that of Parliament and society, to assess the current and future effects of policy measures and actions.

To ensure we can assess progress, we must complement the APR 2024 with evidence-gathering from wider sources, such as targeted information requests to central government and arm's-length bodies, to address data and information gaps. We also ran a call for evidence on the drivers and pressures impacting the achievement of good environmental status in the marine environment. Further details on the evidence base used in the analyses is provided in Chapter 3.

1.5. Code of Practice for Statistics

We have continued to develop our application of the UK Statistics Authority's Code of Practice for Statistics ('the Code') and have updated our voluntary statement of compliance.¹

The Code sets out the standards to which the organisations that produce official statistics should commit but can also be applied by any organisation that publishes data, evidence and statistics. While we do not produce official statistics, we use and analyse and publish those produced by others. We have applied the Code to improve transparency and ensure users of the report have confidence in its robustness, due to our consideration and application of the three pillars of the Code, which are:

- Trustworthiness – confidence in the people and organisations that produce statistics and data.
- Quality – data and methods that produce assured statistics.
- Value – statistics that support society's needs for information.

Our statement of compliance with the Code is provided alongside this Methodological Statement and demonstrates how we have adhered to the pillars and principles of the Code

in our work. It is a process of continuous improvement, so we will regularly review and update our statement of compliance.

II. Progress and prospects



Chapter 2: Assessment methodologies

This chapter sets out how we assessed past trends, progress in the annual reporting period and the overall prospects of meeting EIP23 ambitions, targets and commitments. It sets out our summary assessment methodology and indicates the type of evidence used in the analyses.

2.1. Assessment of past trends

Background

For our first statutory progress report (2021/2022),¹¹ we identified headline indicators that enabled assessment of progress against the 25 Year Environment Plan (25YEP).¹² We developed selection criteria, which were used to ensure indicators relate to key aspects of the environment, make intuitive sense to a wide range of users and enabled assessment of progress towards key targets and commitments. The selection criteria are set out in our Methodological Statement for our 2022/2023 progress report.¹³

As part of the preparatory work for each progress report, we conduct an internal review to ensure the data underpinning the indicators we use are the most appropriate available.

The indicators used for this assessment are set out by EIP23 goal area in Chapter 3 and any changes relative to our previous assessment are described. The methodologies for our own indicators, or where there has been a deviation from similar Outcome Indicator Framework¹³² (OIF) indicators are described in detail in the Annex.

Trend assessment

To summarise and communicate change in indicator trends, we use a combined symbol of red-amber-green (RAG) and directional arrows ([Table 2.1](#)). The arrows indicate the direction of change, and 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.








For our 2023/2024 progress report we have assessed 55 indicators. Typically, we assess one trend per indicator; however, for the emissions of five key air pollutants indicator we present five trends, one for each pollutant. We did not make a trend assessment for seven indicators, either due to a lack of sufficient data to present a time series, or a lack of appropriate data sources, which are identified in the main report.

We have continued to make a necessarily simple assessment of trends by calculating the percentage difference between the first and last year of the given time period. Most indicators are assessed across the latest 5 years of available data. We apply a threshold of 3% to the change between the first and last data point to determine improvement or deterioration, as is widely used across government and for assessments in the OIF and England/UK Biodiversity Indicators.^{14–17} For the species abundance indicator, we follow the same credible interval methodology developed for the UK Biodiversity Indicators to assess the significance of change.¹⁸

After testing our approach with stakeholders, we decided not to apply data-smoothing approaches, such as Loess smoothing, to trend analyses. We compared the calculated trends based on smoothed and raw data for a subset of indicators and the differences were minimal when calculating short-term trends. Smoothing methodologies also sometimes require the removal of the most recent year of modelled data due to their not being influenced by the full extent of data affecting earlier data points, as is the case for many OIF indicators. This omission can exacerbate issues with time lags between data collection and publication. Furthermore, for smoothing techniques to be applied in the most robust way, the parameters that determine the degree of smoothing should be calculated based on the data, tailored to each indicator, rather than applying default parameters. This has not been feasible for all indicators.

In some cases, smoothing techniques can make trends more visible when there is high interannual variability. However, in other settings, outliers that could be “smoothed out” might reflect real changes caused by a policy decision or a major event, such as a global pandemic. In these cases, smoothing techniques extend the influence of specific events into other years, which may not be appropriate. For some of the datasets we use, such as for the species abundance indicator, the data have already been smoothed, within the means of their production, to correct for interannual variability.

Table 2.1. 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

2.2. Assessment of progress towards ambitions, targets and commitments

We have applied the same assessment approach as last year with some minor changes. We assess progress in the reporting period at two levels: firstly towards individual targets and commitments, including those set under the Act, and then at the level of EIP23 goal areas. This fulfils our statutory obligations under Section 28 of the Environment Act 2021 to monitor progress towards meeting EA21 targets and interim targets and in improving the natural environment in accordance with the current EIP.

Selection of targets and commitments

The targets we assessed in our 2023/2024 progress report include the legally binding EA21 long-term and interim targets, those considered within the government's Significant Improvement Test,¹⁹ those identified in the targets and commitments sections across the EIP23 goals, or key outcomes that are identified in EIP23 as necessary to achieve overarching goals. We refer to the underpinning legislation in Chapter 3. Where appropriate, we have simplified the target descriptions to make them more accessible rather than presenting the source legislation wording.

For our 2023/2024 progress report, we added three additional targets and commitments, making 43 in total. One target 'to bring at least 40% of England's agricultural soil into sustainable management by 2028 and increase this to 60% by 2030' could not be assessed due to the lack of agreed definition of sustainable soil management and the lack of a published OIF indicator for healthy soils.²⁰

Rationale for the assessment approach

The interaction between government activities and the state of the natural environment is complex. As such, it can be challenging to describe and analyse objectively. Any attempt to do so requires the use of clear definitions, pragmatic choices about scope, and appropriate methodologies.

As we are required to monitor progress towards meeting EA21 targets and interim targets and with the EIP23, we organise our assessment around the 10 goal areas of the EIP23, their targets and commitments (which include EA21 targets), and its cross-cutting themes. While this helps structure our approach and findings, it also raises challenges for the analysis because so much policy activity cuts across multiple areas.

Accordingly, we adopt a flexible approach to setting boundaries around which policies to consider in our assessment for each target and commitment, and each EIP23 goal area. This is based on two key assumptions. First, there is no definitive list set out by the government of the relevant policies for each target, commitment or EIP23 goal area. Second, the policies themselves are often changing (in relevance and in practice), so any definitive list would be quickly out of date.

While the above assumptions introduce a degree of subjectivity to our approach, it also provides the opportunity for analysis that can provide an independent perspective and insights. We believe this is the best way for us to fulfil our duty to monitor progress and our strategic aim to sustain environmental improvement.

Definitions

To assess the progress regarding the government's activities in delivering actions, we developed a working definition of what good progress would look like:

The government's current and planned actions to deliver a target or commitment are comprehensive (they cover the most important issues), credible (their development and delivery are effective) and coherent (they work together).

This definition is necessarily broad and is therefore applicable to any area of the environment or cross-cutting theme and able to consider any type of government activity, for example policy, research, communications. It allows us to comment on the adequacy of activities in sum and on specifics of the activities themselves, that is, their design and delivery.

This definition has a slight difference from the one used in our 2022/2023 assessment. To limit duplication across components, we merged two components (capable and credible) into one (credible). We also added the 'coherent' component to give more prominence to the issue of how well policies and areas of government are working together in our assessment.

In addition to this fundamental definition of good progress, we developed categories and operational definitions for identifying and organising the various government activities that were the subject of our analysis. This enables us to be consistent with our terminology over reporting periods and when comparing across EIP23 goals. It also enables us to be transparent about how we categorised and interpreted the wide range of activities described by the government in the APR 2024 and elsewhere.

These categories are based on the government's own definitions and guidance for policy makers, such as the Green Book and Magenta Book.^{21,22} [Table 2.2](#) shows the definitions we developed to adapt them to our assessment context, as well as their position in the policy making process. For our 2023/2024 assessment, we included the 'funding' category to better distinguish between funds committed for future activities and funds spent on delivering actions during the reporting period.

Table 2.2. Activity types and their definitions, grouped into three stages of the policy process (based on the ROAMEF cycle)²¹

Activity	Definition	ROAMEF Policy stage
Design	Any steps taken towards or announcements about a policy’s mission and vision, strategic objectives, rationale, options appraisal, quantification, scope and key features	<i>Development:</i> Explaining the rationale , setting objectives , and appraisal of options
Research	Commissioning, undertaking or publishing research and consultations to gather evidence to understand the problems and solutions. Any piloting or testing of ideas	
Target	Statements of intent that quantifies the desired level of performance, based on measurable indicators	
Funding	Statements about the amount or types of funding being made available	
Delivery	Steps taken to implement policies and projects, including money being made available or spent, and projects undertaken or supported	<i>Delivery:</i> Monitoring during implementation
Collaboration	Forums and mechanisms that bring stakeholders together to achieve shared objectives	
Monitoring	Gathering information about delivery progress and the environmental context	
Evaluation	Research and analysis to assess the design, implementation and outcomes of policies	<i>Learning:</i> Evaluation of delivery and feedback of learning
Learning	Any activity that uses feedback, or creates opportunities for its use, to improve policy	

Understanding what each activity means for progress towards specific outcomes and long-term targets requires knowledge of the intended delivery pathways. As the government’s delivery pathways for most targets and commitments are currently not available, we used our own knowledge of the environmental and policy systems involved.

To keep our interpretation aligned with the government’s own broad approach to tracking progress, we drew on the 25YEP evidence annex definitions and descriptions of linking policy performance measures to outcomes (Table 2.3). We also used our EIP23 review and analysis of policy area strategy documents to identify key actions across EIP23 goal areas.

Table 2.3. 25 Year Environment Plan evidence annex definitions of performance measures and indicators, with examples from the government’s Annual Progress Report 2020/2021²³

Term	Definition	Example from APR 2020/2021
Performance measure	A metric relating to policy interventions and can be quantitative (for example number of trees planted) or more process based (for example new scheme introduced, legislation enacted, and so on)	We also delivered over 275 projects that will contribute towards creating and restoring 20,000 hectares of priority habitats by 2030
Indicators	A particular type of metric which shows a statistical trend over time	D1: Quantity, quality and connectivity of habitats

Evidence sources

Our analysis focused on the 12-month reporting period of April 2023 to March 2024. This is because we must provide our assessment of progress over the period covered by the APR 2024. However we also considered additional information beyond the reporting period. This longer timeframe is important for contextualising progress within the reporting year, particularly for long-term actions that have multiple phases of development and delivery.

Our evidence sources included the APR 2024, data published by the Secretary of State relating to the reporting period and the EIP23 and the various links and references contained therein. In addition, we looked at policy announcements, policy papers, ministerial statements, action plans, blogs, commissioned research, and monitoring and evaluation reports. This enabled us to consider a larger number and range of actions that were not included in the APR 2024. These additional sources were selected for their value in helping us address our analytical questions (see below).

For some areas, we have identified key actions for achievement of targets and commitments through calls for evidence undertaken for this and previous reports, discussions with stakeholders, and the EIP23 actions analysis described in Chapter 6, which was used to assess progress towards individual targets where possible.

The key policies and other government actions, and the underlying evidence sources, that we considered in our assessment are discussed and referenced in the 2023/2024 progress report.

Analysis

We developed a set of guiding questions to ensure consistency in our approach to analysing progress across targets, commitments and EIP23 goal areas and over reporting periods, and to provide transparency about how we made our assessments. These questions have changed from the ones used in our 2022/2023 assessment, to reflect developments in the definition of good progress.

The analytical questions were:

1. Are the government's actions addressing the most important issues? (*comprehensive*)
 - a. To what extent are the actions addressing the important issues?
 - b. Are there any gaps in the environmental policy system for this goal?
2. Are the government's actions being developed and delivered effectively? (*credible*)
 - a. How well is the environmental policy system functioning?
 - b. Are the actions producing significant and timely outcomes?
3. Do the government's actions work well together? (*coherent*)
 - a. How well is the mix of actions within each goal described and justified?
 - b. Are synergies and trade-offs being managed?

Answering these questions required gathering, sorting and interpreting the content of various evidence sources referenced throughout the 2023/2024 progress report. We used several templates and tools for standardising our analysis. For example, we sorted and categorised actions listed in the APR 2024, linking them to OIF indicators and targets and commitments, as well as exploring their interactions with pressures and enablers based on expert judgement.

We extracted key information from the EIP23 and other government strategies to create summaries for each goal area. These showed the links between targets and commitments and indicators, actions to improve understanding and actions to effect change, drivers and pressures acting on a goal area, enablers of change, as well as identifying delivery partners and stakeholders.

These templates and tools enabled us to have a consistent approach to summarising information, to check the methodology had been applied consistently across all goals, and to contextualise our analysis within the broader policy and environmental context.

Following the guiding questions above, we developed a narrative assessment of progress in each goal area. The summary narratives were developed iteratively, drawing on stakeholder and expert engagement as well as formal internal and external reviews.

Ratings and conclusions

Having finalised our narrative assessment of progress for individual targets and across the breadth of government action for each EIP23 goal area, we converted our findings into a red-amber-green (RAG) rating for our summary assessment based on expert judgement ([Table 2.4](#)). This is a simplification of the underlying analysis, but a useful step to ensure transparency and accessibility. The summary assessments were developed and refined in an iterative process to ensure consistency across assessments of individual targets and commitments and EIP23 goal areas. These ratings descriptions have been updated to reflect changes in this year's assessment definitions.

Table 2.4. Descriptions of RAG ratings of progress in the reporting period

Assessment rating		Descriptions
Good		Important issues are all being addressed. Development, delivery and learning are progressing. Actions are working well together.
Mixed		Most but not all of the important issues are being addressed. Development, delivery and learning is mixed. Some actions work well together whereas others do not.
Limited		Some of the important issues are not being addressed. Development, delivery and learning are not progressing. Many actions do not work well together.
Not assessed		No assessment of progress has been possible because of a lack of available evidence.

2.3. Assessment of prospects of meeting ambitions, targets and commitments

The third component of our assessment framework looks forward and assesses the prospects of meeting individual targets and commitments, and the overall prospects for each EIP23 goal area. We provide a narrative assessment of prospects and then convert our findings into a summary assessment. We use a red-amber-green (RAG) rating where green is defined as ‘largely on track’, amber is ‘partially on track’ and red is ‘largely not on track’ ([Table 2.5](#)).

Our assessment of prospects is largely based on expert judgement, in combination with stakeholder input during its development, and wide-ranging available evidence including past trends, policy evaluation, and forward-looking evidence such as quantified projections and qualitative assessments on the drivers of change.

For our 2023/2024 progress report, we have undertaken a more in-depth review of the evidence on the drivers of change causing environmental degradation and explored the systemic effects of these drivers on the EIP23 goals. This involved working with our College of Experts and an internal systems mapping workshop. Consistent with our commitment to continuous improvement, we will further develop our capability and approach to prospective assessments.

2.4. Goal-level summary assessment

We developed summary assessments at the goal level to enable integration of our analyses and clear and concise presentation of our findings. The goal-level summary assessment tables summarise our assessments of past trends, progress over the reporting period, prospects of meeting targets and commitments, and the robustness of the evidence base

(Table 2.5). Our approach has adapted that used by the European Environment Agency when assessing the state and outlook of the European environment.

Table 2.5. Goal-level summary assessment (adapted from European Environment Agency²⁴)

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 3: Assessment of Environmental Improvement Plan 2023 goal areas

3.1. Introduction

This chapter presents further details of our analysis. The selection of indicators assessed in each EIP23 goal area is presented. We outline in the Status column in the environmental trends sections whether an indicator is existing (used in the 2022/2023 assessment), amended (change to the source data or methodology) or new (added for the 2023/2024 assessment), and describe any indicators removed from the framework relative to our 2022/2023 progress report.

Data sources are provided for all indicators. Where we have developed our own indicators, or where one of the indicators we have used represents a deviation from similar Outcome Indicator Framework (OIF) indicators, indicator reference tables with more detailed metadata are provided in the Annex.

We also note where we have used UK indicators in the absence of appropriate data for England ([Table 3.1](#)). The rationale for this is described in the EIP23 goal area sections and in the indicator reference tables (Annex).

Table 3.1. UK-level indicators used in our 2023/2024 progress report

Goal area	Indicator
Thriving plants and wildlife	Threat of extinction to UK species
	Extent of UK area protected for nature on land and water
	Extent of UK area protected for nature at sea
Clean air	UK emissions of five key air pollutants
Managing exposure to chemicals and pesticides	Total bank of in-use polychlorinated biphenyls (PCBs) remaining in the UK
	UK Pesticides Load Indicator
Using resources from nature sustainably	Global environmental impacts of UK consumption of key commodities
Mitigating and adapting to climate change	UK emissions of greenhouse gases

We present the selection of targets and commitments assessed within each EIP23 goal. Most are referred to in the EIP23; however we provide further detail on the origin of the targets and how the selection has developed since our 2021/2022 progress report.

The policies and actions considered in our assessment of individual targets and commitments and at EIP23 goal level are discussed and referenced in the 2023/2024 progress report.

We also present detail of the geospatial analysis carried out to support our assessment of the ‘Thriving plants and wildlife’, ‘Clean air’ and ‘Enhancing beauty, heritage and engagement with the natural environment’ goals.

3.2. Thriving plants and wildlife (Chapter 2)

Key environmental trends

The indicators used to assess the ‘Thriving plants and wildlife’ goal are outlined below ([Table 3.2](#)).

For the ‘Relative abundance of species in England’ indicator, statistical significance levels have been defined for the source England Biodiversity Indicators (EBI) dataset,²⁵ and used in this assessment, instead of the 3% threshold applied to all other indicators.

Even though the magnitude of change (+7.1% to +7.5% increase between 2017 and 2022 depending on the smoothing option used) exceeds our definition of an increasing improvement ([Table 2.1](#)), we have applied an amber trend rating (little or no change). This is because, on average, the 95% credible interval in 2022 spanned the value in 2017, indicating no statistically significant change had occurred, which is the same as the government’s assessment of the short-term trend.²⁶

All the indicators are based on national or official statistics, apart from the ‘Extent of land cover more likely to support nature-friendly habitat’ indicator, which was developed for this assessment ([Annex, Table A.6](#)). One indicator, ‘Threat of extinction to UK species’, is assessed at a UK level, as at the time of publication, OIF indicator D5 (‘Conservation status of our native species’) had only one datapoint. We have used the same UK-level data as our 2021/2022 progress report as a proxy for England, as previous work has shown that approximately 80% of Great Britain Red List taxa occur in England, which is a major component of the UK index.^{27,28} We will update the source of this indicator when the Red List Index for England dataset enables a trend assessment.

For our 2023/2024 progress report, we have amended the data source for our ‘Relative abundance of species in England’ indicator due to publication of the OIF all-species indicator, D4 (‘Relative abundance of species in England’), replacing our use of D6 (‘Relative abundance of priority species in England’). We have also updated the source of the ‘Condition of Marine Protected Areas’ indicator after publication of baseline MPA feature condition data in the APR 2024.

Table 3.2. Selected indicators – Thriving plants and wildlife

Indicator	Status	Source	Trend assessment
Condition of Sites of Special Scientific Interest (that are in favourable or unfavourable recovering condition)	Existing (Annex, Table A.1)	OIF, EBI ^{29,30}	-8.9% (2018–2023)
Achievement of marine ‘good environmental status’	Existing (Annex, Table A.2)	Cefas ³¹	N/A
Extent of UK area protected for nature on land and water	Existing (Annex, Table A.3)	UK Biodiversity Indicators (UKBI) ³²	Land and water +0.1% (2018–2023)
Extent of UK area protected for nature at sea	Existing (Annex, Table A.3)	UK Biodiversity Indicators (UKBI) ³²	Sea +61.5% (2018–2023)
Relative abundance of species in England	Amended	OIF, EBI ^{18,33}	+7.1% to +7.5% (smoothing option 1 and 2) (2017–2022)
Area under agri-environment schemes	Amended (Annex, Table A.4)	Defra ³⁴	+61.3% (2018–2023)
Threat of extinction to UK species	Existing (Annex, Table A.5)	UN Sustainable Development Goals (SDG) ²⁸	+0.0% (2018–2023)
Extent of land cover more likely to support nature-friendly habitat	Existing (Annex, Table A.6)	UKCEH ³⁵	-0.1% (2018–2023)
Area of woodland in England	Existing (Annex, Table A.7)	OIF, Forest Research ^{36,37}	+1.7% (2019–2024)
Condition of Marine Protected Areas	Amended (Annex, Table A.8)	Defra ⁹	N/A

Geospatial analysis

Spatial analysis to support our assessment of the thriving plants and wildlife goal was carried out using Geographic Information System (GIS), by AtkinsRealis. The aim of the analysis was to support our scrutiny of plans published in the annual reporting period to achieve 30 by 30 commitments, to help our understanding of whether agri-environment scheme option agreements locations are being spatially prioritised at catchment level. The methodology applied and data sources used are described in [Table 3.3](#).

Table 3.3. Methodologies applied and data sources used for the geospatial analysis, commissioned to support our assessment of agri-environment schemes

EIP goal	Thriving plants and wildlife
Developed	October 2024
Description and rationale	Summarising environmental characteristics of Protected Landscapes. The objective of this analysis was not to undertake comprehensive analysis of all spatial datasets but provide context to wider analysis presented.
Methodology	<p>Project 1: Countryside Stewardship and Water Framework Directive</p> <p>Data were downloaded and imported into QGIS for the ‘reasons for not achieving good status’ (RNAGS), along with locations of the Water Framework Directive 2017 (WFD) surface water bodies. The RNAGS dataset was intersected with the WFD water bodies dataset to identify which RNAGS related to which water body in one shapefile and then filtered for relevant Surface Water Objectives.</p> <p>Data points for the current Countryside Stewardship (CS) scheme were downloaded and imported into QGIS. The point schemes were filtered and only the codes with ‘SW’ related to surface water were used in the analysis. The surface water codes were intersected with the RNAGS and surface water bodies, to identify which water bodies had RNAGS and CS schemes. The outputs included a box and whisker plot which presented the data to see the distribution between water bodies with CS schemes with RNAGS and those without.</p> <p>Project 2: Biota, land cover map, SSSIs, national parks and areas of outstanding national beauty</p> <p>CS (current and old) and Environmental Stewardship (ES) scheme locations were intersected with proportion of agricultural land class types and land cover typologies within each AONB and National Park were calculated. This was repeated to look at the coverage of ALC within each AONB and National Park. The data were then exported to Excel and processed to identify the percentage coverage of different ALC classes across these undertaken through the application of spatial intersects between vector layers. These data were additionally visually represented in bar graphs.</p> <p>Land cover management classifications, developed by UKCEH to classify habitats and land uses,³⁸ were also looked at in relation to the AONBs, along with National Parks and SSSIs across England. This looked at the proportion of habitats across each of these designations, such as fen, urban and arable habitats. The data were then exported to Excel and processed to identify the percentage coverage of different land covers across these AONB’s, National Parks and Sites of Special Scientific Interest (SSSIs).</p>

Table 3.3. Methodologies applied and data sources used for the geospatial analysis, commissioned to support our assessment of agri-environment schemes (cont.)

EIP goal	Thriving plants and wildlife		
Methodology	Project 3: Sites of Special Scientific Interest		
	<p>A buffer of 500m and 1km was added to the SSSI data and the use of raster calculators to extract summary statistics from raster layers using the buffer tool and clipped to the high-water line obtained from the Ordnance Survey to remove SSSIs below mean water level. The clipped dataset was then intersected with the current and old CS schemes and ES schemes. The same method was used with the CS and ES polygon dataset, which was overlaid on the SSSI layer to determine the proportion of coverage of schemes in SSSIs. The three polygons were merged and overlaid onto the SSSI to ensure removal of duplicates. The data were exported to Excel to be processed to find and calculate percentage coverage.</p>		
	Data layer	Dataset	Licence
	Agricultural Land Classification (ALC) grades – Post 1988	Sub section 6 LNRS Data Viewer (arcgis.com) Polygon shapefile	Open Government Licence
	Areas of Outstanding Natural Beauty (AONB)	Sub section 6 LNRS Data Viewer (arcgis.com) Polygon shapefile	Open Government Licence
National Parks	National Parks (England) – data.gov.uk Polygon shapefile	Open Government Licence	
Land cover map	Land Cover Map 2023 (1km summary rasters, GB and N. Ireland) – EIDC (ceh.ac.uk) Raster layer	Ownership of the data and all rights subsisting in the data, including copyright, database rights and rights to apply for patents or any other intellectual property rights, rests with UK Centre for Ecology and Hydrology (UKCEH)	

Progress towards ambitions, targets and commitments

Table 3.4. Selected targets and commitments – Thriving plants and wildlife

Target or commitment	Source
By the end of 2030, we will halt the decline in species abundance.	Environmental Targets (Biodiversity) (England) 2023
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.	
By the end of 2042, we will improve the Red List Index for species extinction compared to 2022 levels.	
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.	
By the end of 31 December 2050, at least 16.5% of all land in England is covered by woodland and trees outside woodland.	Environmental Targets (Woodland and Trees Outside Woodland) (England) Regulations 2023
Ensure that 70% of designated features in marine protected areas (MPAs) are in favourable condition by 2042, with the remainder in recovering condition.	Environmental Targets (Marine Protected Areas) Regulations 2023
Restore 75% of protected sites to favourable condition by 2042.	Environmental Improvement Plan 2023 commitment
65–80% of landowners and farmers adopting nature-friendly farming on at least 10–15% of their land by 2030.	
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).	Marine Strategy Regulations 2010
Ensure that by 2030, at least 30% of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration (Target 2).	Convention on Biological Diversity commitment (UN Nature Summit COP15)
Ensure and enable that by 2030 at least 30% 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 (Target 3).	

Supporting research

Improving nature at sea is a priority work area for the OEP, as the UK's marine environment is in a highly depleted state. A call for evidence was issued as part of a programme of research projects, developed to provide a strong evidence base for our 2023/2024 progress report and for future work on the marine environment.

Call for evidence on the drivers and pressures impacting the achievement of good environmental status

We ran a call for evidence³⁹ between November 2023 and the end of January 2024. The call for evidence posed five questions exploring the drivers, pressures and data gaps affecting the achievement of good environmental status (GES) in UK marine waters. Follow-up workshops were run with respondents and other key stakeholders in March 2024 to gain further insight into the issues raised.

Opergy Ltd were commissioned to undertake a review and analysis of the responses to the call for evidence. Findings are published as a final report alongside our 2023/2024 progress report. The final report details the feedback received in response to the call for evidence and subsequent comments gathered during stakeholder workshops. A total of 24 responses were received from NGOs, academia and research institutes, public bodies, independents, industry representatives and special interest/lobby groups.

The review carried out by Opergy used NVivo,⁴⁰ a qualitative analysis software, which allowed for comparison and consolidation of key themes. Commercial fishing, offshore energy production, climate change and pollution/release of contaminants were the most frequently cited stressors impacting the achievement of GES. Invasive species were also considered a key pressure.

UK Marine Strategy data review

GES was to be achieved by 2020 and maintained thereafter under the Marine Strategy Regulations 2010. Part One of the UK Marine Strategy (UKMS), last published in 2019, provided an assessment of the extent to which GES had been achieved using 60 indicators. The assessment found GES had not been met for 11 of 15 GES descriptors/ecosystem components.

Under the Marine Strategy Regulations, the UKMS should be updated every six years. An updated Part One assessment which was due by the end of 2024, will confirm whether GES has been missed. The OSPAR Commission published an updated Quality Status Report in September 2023 (QSR 2023),⁴¹ which uses many of the same indicators applied for the UKMS Part One.

We carried out a review of GES indicators to better anticipate the findings of an updated UKMS Part One, by better understanding whether GES was likely to have been met for descriptors and to support our 2023/2024 progress report trends and targets assessment.

The analysis critically evaluated the latest available data concerning the UK's marine environment, with the aim of identifying the primary factors affecting marine health and gaps in monitoring. We did this by carrying out a systematic assessment of the impact of multiple pressures on biodiversity indicators, which were identified using the 'pressures' section within each QSR 2023 thematic assessment (such as marine litter, bycatch, collision and the various impacts of climate change).

Primarily, the analysis focused on QSR 2023 data from the Greater North Sea and Celtic Seas (regions II and III respectively). This was supplemented with descriptor-specific data and reports, such as the UK seabird census, annual reports to the Agreement on the Conservation of Small Cetaceans of the Baltic and North Seas, Marine Climate Change

Impacts Partnership reports, and Scientific Advice on Matters Related to the Management of Seal Populations reports.

We found that GES was unlikely to have been met in 2024 for nine of 15 descriptors/ ecosystem components (Tables 3.5 and 3.6). As the UK marine area does not correspond directly to OSPAR’s assessment area, we have not used this assessment to define past trend ratings in the main report. This work has been submitted for publication in a peer-reviewed journal.

Table 3.5. UKMS Part One 2019 GES status of biodiversity ecosystem components, compared to the likely 2024 assessment rating in the updated Part One assessment based on OSPAR 2023 data and other relevant data and reports. Red = GES was not (likely to have been) achieved; amber = (likely to have been) partially achieved; green = (likely to have been) achieved; grey = could not be determined.

UKMS 2019 status	Cetaceans (D1 & D4)	Seals (D1 & D4)	Birds (D1 & D4)	Fish (D1 & D4)	Pelagic habitats (D1 & D4)	Benthic habitats (D1 & D6)	Food webs (D4)
Predicted 2024 status	Cetaceans (D1 & D4)	Seals (D1 & D4)	Birds (D1 & D4)	Fish (D1 & D4)	Pelagic habitats (D1 & D4)	Benthic habitats (D1 & D6)	Food webs (D4)

Table 3.6. UKMS Part One 2019 GES status of human pressure descriptor, compared to the likely 2024 assessment rating in the updated Part One assessment based on OSPAR 2023 data and other relevant data and reports

UKMS 2019 status	Non-indigenous species (D2)	Commercial fish and shellfish (D3)	Eutrophication (D5)	Hydrographical conditions (D7)	Contaminants (D8)	Contaminants in seafood (D9)	Marine litter (D10)	Underwater noise (D11)
Predicted 2024 status	Non-indigenous species (D2)	Commercial fish and shellfish (D3)	Eutrophication (D5)	Hydrographical conditions (D7)	Contaminants (D8)	Contaminants in seafood (D9)	Marine litter (D10)	Underwater noise (D11)

3.3. Clean air (Chapter 3)

Key environmental trends

For the ‘incidents of exceedance against the Air Quality Standards Regulations’ indicator, where there have been no exceedances over the trend period, the assessment has been marked ‘N/A’ as standards are being met. For this indicator for our 2023/2024 progress report, we have applied a three-year moving average to the total count of exceedance to address feedback from stakeholders on addressing interannual variability due to meteorological factors on pollutants such as ozone.

For our 2023/2024 progress report, we have updated the data source of the ‘PM_{2.5} population exposure indicator’, as the government published the population exposure indicator which is being used to track progress towards the EA21 targets, rather than the OIF indicator A3 (‘Concentrations of PM_{2.5} in air’). For the incidents of exceedance indicator, the methodology has been updated to use a three-year moving average on the total count, to limit the impact of meteorological effects on pollutants such as ozone.

Table 3.7. Selected indicators – Clean air

Notes: NO_x: nitrogen oxides; NO₂: nitrogen dioxide; SO₂: sulphur dioxide; NMVOC: non-methane volatile organic compounds; PM_{2.5}: fine particulate matter (<2.5µm in diameter); PM₁₀: coarse particulate matter (>10µm in diameter); NH₃: ammonia; B[a]P: Benzo(a)pyrene.

Indicator	Status	Source	Trend assessment
UK emissions of five key air pollutants	Existing (Annex, Table A.9)	Defra ⁴²	NO _x -27.0% (2017–2022)
			SO ₂ -35.9% (2017–2022)
			NMVOCs -11.8% (2017–2022)
			PM _{2.5} -11.3% (2017–2022)
			NH ₃ -6.1% (2017–2022)
Percentage of monitoring stations above 10µg/m ³ annual mean PM _{2.5} concentrations	Existing (Annex, Table A.10)	Defra ⁴³	-96.4% (2018–2023)
Incidents of exceedances against Air Quality Standards Regulations in England	Amended (Annex, Table A.11)	Defra ⁴⁴	Overall -24.5% (3-year moving average) (2017–2022)
			NO ₂ -68.9%
			PM ₁₀ (N/A)
			PM _{2.5} (N/A)
			Ozone +7.3%
			Arsenic (N/A)
			Cadmium (N/A)
			Nickel (0 to 2/31 exceeding zones)
			B[a]P (1 to 0/31 exceeding zones)
			SO ₂ (N/A)
			Carbon monoxide (N/A)
Benzene (N/A)			
Lead (N/A)			
PM _{2.5} population exposure indicator	Amended (Annex, Table A.12)	UK AIR ⁴⁵	-21.9% (2018–2023)
Exceedance of damaging levels of nutrient nitrogen deposition in England	Existing	OIF ⁴⁶	-0.1% (3-year moving average) (2014–2016 to 2019–2021)

Geospatial analysis

Geospatial analysis to support our assessment of the ‘Clean air’ goal was carried out by AtkinsRealis. There were two main objectives for the assessment.

Firstly, assess trends in annual mean PM_{2.5} concentration at each Automatic Urban and Rural Network (AURN) station in England, to provide more local context to our analysis of the EA21 annual mean concentration target. Secondly, compare AURN monitoring station locations with government modelled background PM_{2.5} concentrations, to provide a high-level assessment of whether any pollution hotspots might not be represented by the current monitoring network.

The methodology applied and data sources used are described in [Table 3.8](#), and the outputs (map and results table) are provided below in [Figure 3.1](#) and [Table 3.9](#).

Table 3.8. Methodologies applied and data sources used for the geospatial analysis, commissioned to support our assessment of the ‘Clean air’ goal

EIP Goal	Clean air
Developed	October 2024
Description and Rationale	Geospatial analysis was carried out for the ‘Clean air’ goal with two objectives. One was to carry out trend analysis on the AURN data to understand whether any stations that might not be captured in targets analysis due to being under the threshold have a deteriorating trend. The second was to assess how representative the AURN is to hot spots, given EA21 target achievement will be determined by fixed monitoring at AURN stations.
Methodology	<p>All analysis was carried out using QGIS.</p> <p>2022 PM_{2.5} modelled background data were downloaded and inserted into QGIS. They were reclassified based on value in the attribute table. Data were grouped based on the PM_{2.5} categories in Defra’s UK Ambient Air Quality Map.^{47,48}</p> <p>A boundary of England was inserted into GIS and used to clip all data. AURN station locations available in CSV format were converted into a point shapefile in GIS using the spreadsheet-to-points tools. Annual mean PM_{2.5} concentration data at each station were then imported into Microsoft Excel.⁴³</p> <p>Non-England data were removed, and the remaining data were cleaned to exclude points with <85% data capture. The data were formatted and processed to classify based on an increase, decrease, no change, or not enough data to conduct analysis, between two given years of interest (2018 vs 2023 for the short-term trend, consistent with our past trends analysis, as well as 2020 vs 2021 and 2023 to better understand the impact of the Covid-19 pandemic lockdown restrictions, and finally the most recent 12 months, 2022 vs 2023). The data were uploaded to GIS and converted to a point layer file.</p>

Table 3.8. Methodologies applied and data sources used for the geospatial analysis, commissioned to support our assessment of the ‘Clean air’ goal (cont.)

EIP Goal	Clean air				
Methodology	The AURN station location points layer was then buffered using the buffer tool with a 100m distance. The AURN points layer and the buffered AURN layer were then both overlaid with the PM _{2.5} background ambient concentrations grid via the intersect tool. The results were then processed in Excel to determine how many 1 km ² cells in the modelled background PM _{2.5} dataset were not within 100m of a monitoring station.				
Methodology	Data layer	Source	License	Spatial Resolution	Data type
	PM _{2.5} annual mean modelled background and roadside 2023	Air Quality Compliance Data Hub UK Ambient Air Quality Interactive Map Polygon shapefile	Open Government Licence	1km	Modelled
	Countries boundary of England, NI, Wales and Scotland	Countries (December 2023) Boundaries UK BFC Open Geography Portal (statistics.gov.uk) Polygon shapefile	ONS Open Government Licence v.3.0 Contains OS data © Crown copyright and database right	NA	Official
	AURN annual mean PM2.5 concentrations	Annual and Exceedance Statistics - Defra, UK CSV data table	Open Government license	NA	Measured, official statistics
	AURN station locations (layers with trends and 100m buffer also included)	Automatic Urban and Rural Network (AURN) - Defra, UK CSV data table	Open Government license	NA	Official statistics

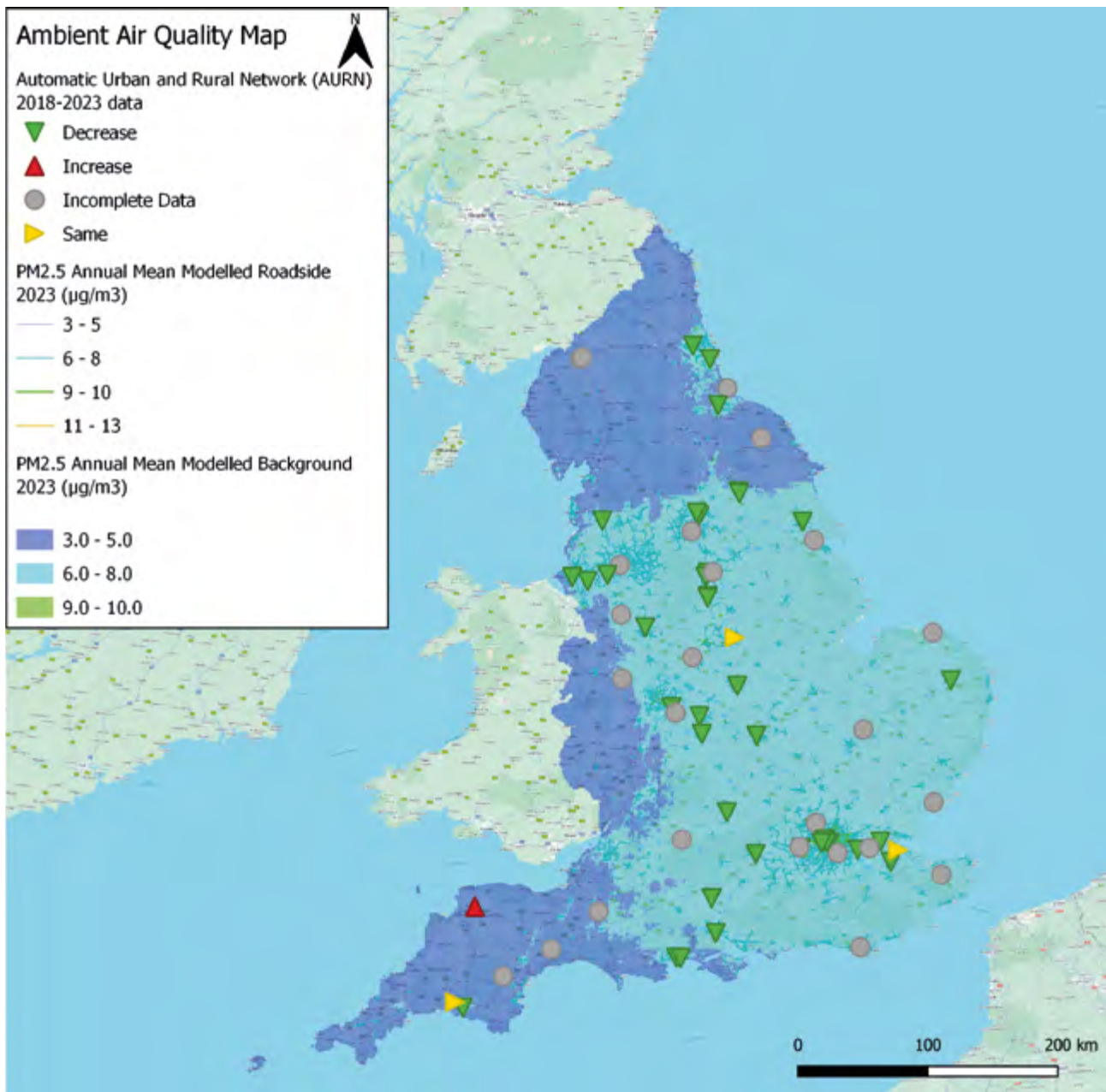


Figure 3.1. Map showing AURN station locations and trends in their annual mean $\text{PM}_{2.5}$ concentrations between 2018 and 2023. Not all stations have trends as those with a data capture less than 85% (grey circles) and others outside of England were also removed. 2022 annual mean modelled background $\text{PM}_{2.5}$ concentrations for 2022 are presented as 1km^2 grid cells, of which 132 exceeded the EA21 target level ($11\mu\text{g}/\text{m}^3$ annual mean or more) and seven (5%) had an AURN monitoring station in them (including a 100m buffer). However, this does not account for modelled roadside concentrations

Table 3.9. Summary table of AURN monitoring station trend analysis comparing two years as a first and last year difference (*for example 2022 vs 2023*). The total count does not correspond to the total number of AURN stations as the data have been filtered for stations outside England and for any data point not exceeding the minimum data capture of 85%. Raw data is provided from Defra in whole values, therefore a ‘no change’ rating does not reflect changes of <math><1\mu\text{g}/\text{m}^3</math> magnitude between two years

	2018–2023	2020–2023	2020–2021	2022–2023
Increase	1	4	11	2
No change	3	20	25	6
Decrease	38	23	14	39

Progress towards ambitions, targets and commitments

Table 3.10. Selected targets and commitments – Clean air

Target or commitment	Source
By the end of December 2040, the annual mean level of PM _{2.5} in ambient air must be equal to or less than 10µg/m ³ .	Environmental Targets (Fine Particulate Matter) (England) Regulations 2023
At least a 35% reduction in population exposure to PM _{2.5} by the end of 31 December 2040 compared to the 2016–2018 baseline period.	
National Emission Ceilings Regulations emission reduction commitments.	National Emission Ceilings Regulations 2018
Air Quality Standards Regulations limits, targets and long-term objectives.	Air Quality Standards Regulations 2010
Reduce damaging deposition of reactive forms of nitrogen by 17% over England’s protected priority sensitive habitats by 2030.	Clean Air Strategy 2019

3.4. Clean and plentiful water (Chapter 4)

Key environmental trends

For our 2023/2024 progress report, we have added two new indicators for this goal. ‘Soil nutrient balance’ has been added to give an assessment of annual nutrient loadings and the potential risk associated with losses of nutrients to the environment.

The ‘Non-household water demand’ indicator has been added to provide further information on water demand across other sectors outside households. See the Annex reference tables for further information.

Table 3.11. Selected indicators – Clean and plentiful water

Indicator	Status	Source	Trend assessment
Pollution incidents to water (Environment Agency categories 1-3)	Existing Amended methodology (Annex, Table A.13)	EA ⁴⁹	+14.9% (2018–2023)
State of the water environment (Water Framework Directive good ecological status)	Existing	OIF, RBMPs ^{50,51}	-2.7% (2015–2019)
Condition of bathing waters	Existing	OIF ⁵²	-2.2% (2018–2023)
Loads discharged to rivers from water company sewage treatment works (of three key pollutants)	Existing	OIF ⁵³	Biological oxygen demand -13.5% (2015–2020)
			Phosphorous -21.5%
			Ammonia -9.7%
Per capita potable water consumption in England	Existing	OIF ⁵⁴	+3.7% (2017/2018–2022/2023)
Water company security of supply performance	Existing (Annex, Table A.14)	EA ⁴⁹	+0.4% (2021–2023)
Water leakage in England (from water company potable water supply)	Existing	OIF ⁵⁴	-4.2% (2017/2018–2022/2023)
Non-household water demand	New (Annex, Table A.15)	EA	-2.6% (2017/2018–2022/2023)
Soil nutrient balance	New (Annex, Table A.16)	Defra ⁵⁵	+40.0% (2017–2022)

Progress towards ambitions, targets and commitments

Table 3.12. Selected targets and commitments – Clean and plentiful water

Target or commitment	Source
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.	Environmental Targets (Water) (England) Regulations 2023
Reduce phosphorus loadings from treated wastewater by 80% by 2038 against a 2020 baseline.	
Halve the length of rivers polluted by harmful metals from abandoned mines by 2038, against a baseline of around 1,500km.	
Reduce potable water demand in England per head of population by 20% from the 2019/2020 baseline reporting figures, by 31 March 2038.	
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.	Water Environment (Water Framework Directive) (England and Wales) Regulations 2017
[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.	Storm Overflows Discharge Reduction Plan
Ensure that, by the end of the bathing season in 2015, all bathing waters are classified at least as ‘sufficient’.	Bathing Water Regulations 2013

3.5. Managing exposure to chemicals and pesticides (Chapter 5)

Key environmental trends

For our 2023/2024 progress report we included three new indicators.

We have included the indicator ‘Total bank of in-use polychlorinated biphenyls (PCBs) remaining in the UK’ due to publication of the interim OIF J5 indicator to track the amount of banned, restricted or soon-to-be restricted chemicals in waste which are being destroyed.⁵⁶

With the recent major update to the OIF H4 indicator (‘Exposure and adverse effects of chemicals on wildlife in the environment’), the indicator was added to evaluate exposure of wildlife to chemicals and complement the emissions indicators presented in this and other chapters.

With the finalisation of the pesticides load indicator to the point where the indicator is ready for routine operational deployment, the ‘UK Pesticides Load Indicator’ was added to track pesticide loads to illustrate relative trends in the potential pressure on the environment arising from the use of pesticides.

The ‘Hazardous waste disposal’ indicator, previously used to fill the gap in assessing the mass of hazardous chemicals in the economy with the potential to impact the environment

if released, has been moved to the ‘Maximising our resources, minimise our waste’ goal trend assessment for our 2023/2024 progress report.

The ‘Chemical status of surface and groundwater’ indicator has been removed from the trend assessment and is now used as a contextual indicator in the main text narrative, due to a lack of new data.

Table 3.13. Selected indicators – Managing exposure to chemicals and pesticides

Indicator	Status	Source	Trend assessment
Total bank of in-use polychlorinated biphenyls (PCBs) remaining in the UK	New	OIF ⁵⁶	+45.4% (2017–2022)
Emissions of Persistent Organic Pollutants	Existing	OIF ⁵⁷	Dioxin-like PCB (polychlorinated biphenyls) –16.5% (2016–2021)
			Dioxins & furans –10.3%
			Hexachlorobenzene –0.1%
			PCB –11.2%
			Polychlorinated naphthalenes +2.7%
			Pentachlorophenol –31.1%
			Pentachlorobenzene –1.1%
Average (composite) –26.2%			
Emissions of mercury to air, land and water	Existing	OIF ⁵⁷	Total emissions –13.4% (2016–2021)
UK Pesticides Load Indicator	New (Annex, Table A.17)	Defra	N/A
Exposure and adverse effects of chemicals on wildlife in the environment	New	OIF ⁵⁸	N/A

Progress towards ambitions, targets and commitments

We have included an additional target in our assessment of progress, which is 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’, after its inclusion in EIP23.

Table 3.14. Selected targets and commitments – Managing exposure to chemicals and pesticides

Target or commitment	Source
Substantially increase the amount of persistent organic pollutants material being destroyed or irreversibly transformed by 2030, to make sure there are negligible emissions to the environment.	EIP23 commitment
Seek to eliminate the use of polychlorinated biphenyls (PCBs) by 2025.	EIP23 commitment
Reduce land-based emissions of mercury to air and water by 50% by 2030.	EIP23 commitment
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	EIP23 commitment (Global Biodiversity Framework Target 7)
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 Environment (Water Framework Directive) (England and Wales) Regulations 2017

3.6. Maximise our resources, minimise our waste (Chapter 6)

Key environmental trends

As described above, the ‘Hazardous waste disposal’ indicator has been moved from the managing exposure to chemicals and pesticides goal assessment for our 2023/2024 progress report.

Table 3.15. Selected indicators – Maximise our resources, minimise our waste

Indicator	Status	Source	Trend assessment
Residual waste	Existing	OIF ⁵⁹	-2.8% (2019–2022)
Number of fly-tipping incidents	Existing	OIF ⁶⁰	+13.1% (2018/2019–2022/2023)
Percentage of sampled fulmars having more than 0.1g of plastic in their stomach, Greater North Sea, 2004–2008 to 2017–2021 (marine good environmental status descriptor marine litter)	Existing	OIF, WUR ^{61,62}	-18.9% (2013–2017 to 2018–2022)

Table 3.15. Selected indicators – Maximise our resources, minimise our waste (cont.)

Indicator	Status	Source	Trend assessment
Resource productivity	Existing	OIF ⁶³	+19.6% (2015–2020)
Number of illegal waste sites	Existing	OIF ⁶⁰	–39.5% (2017/2018–2022/2023)
Amount of raw material consumed	Existing (Annex, Table A.18)	OIF, Defra, ONS ^{63–65}	+21.7% (2016–2021)
Hazardous waste disposal	Existing (moved from ‘Managing exposure to chemicals and pesticides’ goal) (Annex, Table A.19)	EA ⁶⁶	+13.6% (2017–2022)

Progress towards ambitions, targets and commitments

Table 3.16. Selected targets and commitments – Maximise our resources, minimise our waste

Target or commitment	Source
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.	Environmental Targets (Residual Waste) (England) Regulations 2023
Eliminate avoidable waste by 2050 and double resource productivity by 2050.	EIP23 commitment
Seek to eliminate waste crime and illegal waste sites by 2042, prioritising those of highest risk.	EIP23 commitment

Supporting research

Eunomia Research and Consulting was commissioned to support the OEP’s understanding of circularity within England by developing a circular material use rate (CMUR) following the EU methodology.⁶⁷

According to the EU methodology, the CMUR is calculated as the ratio of the circular use of materials (U) to the overall use of materials (M). Using this methodology, estimation of the overall use of materials, is based on domestic material consumption (DMC).

Calculation of the CMUR relies on data inputs for domestic extraction, imports of goods, exports of goods, waste recycled in domestic recovery plants, imports of waste bound for recovery and the exports of waste bound for recovery, for England. [Table 3.17](#) shows the data sources used to gather the data inputs required for calculation of the CMUR for England.

Table 3.17. Data sources used in calculating the CMUR for England

Component of CMUR calculation	Data source
Domestic extraction	Office for National Statistics, <i>Material Flow Accounts (2024)</i> < www.ons.gov.uk/economy/environmentalaccounts/datasets/ukenvironmentalaccountsmaterialflowsaccountunitedkingdom >
Imports of goods	HM Revenue and Customs UK Trade Info, <i>Build a Regional Trade Data Table (2024)</i> < www.uktradeinfo.com/trade-data/rts-custom-table/ >
Exports of goods	HM Revenue and Customs UK Trade Info, <i>Build a Regional Trade Data Table (2024)</i> < www.uktradeinfo.com/trade-data/rts-custom-table/ >
Waste recycled in domestic recovery plants	Environment Agency, <i>2022 Waste Data Interrogator: Wastes Received (2024)</i> < www.data.gov.uk/dataset/aa53a313-f719-4e93-a98f-1b2572bd7189/2022-waste-data-interrogator >
Imports of waste bound for recovery	Environment Agency, <i>2022 Waste Data Interrogator: Wastes Received (2024)</i> < www.data.gov.uk/dataset/aa53a313-f719-4e93-a98f-1b2572bd7189/2022-waste-data-interrogator >
Exports of waste bound for recovery	Environment Agency, <i>2022 Waste Data Interrogator: Wastes Removed (2024)</i> < www.data.gov.uk/dataset/aa53a313-f719-4e93-a98f-1b2572bd7189/2022-waste-data-interrogator >

Data for domestic extraction, imports and exports of goods, domestic recovery, imports of waste destined for recovery and exports of waste destined for recovery were processed, where necessary utilising scaling factors to derive England-level data from the UK aggregate.

The total CMUR for England is 17% (Table 3.18). This is comparable with similar economies, including France and Italy.

Table 3.18. Circular material use rate for England, 2022

Material flow	CMUR, 2022
Biomass	15%
Metal ores	65%
Non-metallic minerals	18%
Fossil energy materials/carriers	4%
Total	17%

It was noted the CMUR for metal ores is high and so further analysis was undertaken. This revealed the high level is due to an added economic incentive, as recycling metals is often more cost-effective than mining and processing new ores.⁶⁸ Table 3.19 shows that the domestic recovery of metal waste and exports of metal waste destined for recovery are relatively high. In particular, exports of waste metal destined for recovery outside of the UK are significant.

Table 3.19. Exports of metal waste destined for recovery

Destination region	Metal ores (thousand tonnes)
Wales	408
Northern Ireland	2
Scotland	10
Outside UK	3,494
Total	3,913

The UK produces more scrap metal than is required for domestic recycling markets.⁶⁹ Further, there is strong international demand for scrap metal, particularly from countries with robust metal recycling industries, such as China and Turkey. These countries often have lower labour and processing costs, making it desirable to export metal waste for recycling.⁷⁰

The low domestic extraction of metals leads to a low DMC value for metals in England, while the high level of domestic recovery of metals combined with a high level of export and very little import of metal waste destined for recovery lead to an overall high level of circular material use (U) for metals. Together, the high level of U and a relatively low level of DMC lead to a high CMUR for metal ores.

Two main limitations are noted for the CMUR calculation for England.

Data on domestic extraction of materials are not available for England. Therefore, the data used in the England CMUR calculation are a scaled version of UK-level domestic extraction. The UK-level data have been scaled based on gross value added (GVA) and, for fossil energy materials/carriers, considering known differences in domestic extraction across the UK nations. However, for other material categories, there could be discrepancies between each UK nation’s share in UK gross value added and their share in UK domestic extraction.

Data on imports and exports of products were obtained from HM Revenue and Customs and they do not account for intra-UK import/export, that is, imports to England from Wales, Scotland or Northern Ireland/exports from England to Wales, Scotland or Northern Ireland. Data on imports and exports of waste destined for recovery were obtained from the Environment Agency’s Waste Data Interrogator and do account for intra-UK trade.

The final report will be published on the OEP website.⁷¹

3.7. Using resources from nature sustainably (Chapter 7)

Key environmental trends

For our 2023/2024 progress report we added a new indicator ‘Global environmental impacts of UK consumption of key commodities’⁷² to assess progress towards the target to halt and reverse forest loss and land degradation globally by 2030.

Table 3.20. Selected indicators – Using resources from nature sustainably

Indicator	Status	Source	Trend assessment
Fish stocks that are sustainably harvested [marine good environmental status descriptor ‘commercial fish’]	Existing	OIF, EBI ^{73,74}	≤FMSY + in FMSY range +18.5% (2015–2020)
Soil health	Existing	OIF ²⁰	N/A
Percentage of woodland that is sustainably managed	Existing (Annex, Table A.20)	Forestry Commission ¹⁶	–3.4% (2019–2024)
Global environmental impacts of UK consumption of key commodities	New	OIF ⁷²	–13.2% (2016–2021)

Progress towards ambitions, targets and commitments

Table 3.21. Selected targets and commitments – Using resources from nature sustainably

Target or commitment	Source
Halt and reverse forest loss and land degradation globally by 2030.	EIP23 commitment
All fish stocks are recovered to and maintained at levels that can produce their maximum sustainable yield.	
Bring at least 40% of England’s agricultural soil into sustainable management by 2028 and increase this to 60% by 2030.	
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 of good environmental status that all commercially exploited fish and shellfish are within safe biological limits.	Marine Strategy Regulations 2010 and Marine Strategy

3.8. Mitigating and adapting to climate change (Chapter 8)

Key environmental trends

Table 3.22. Selected indicators – Mitigating and adapting to climate change

Indicator	Status	Source	Trend assessment
UK GHG emissions	Existing (Annex, Table A.21)	Department for Energy Security and Net Zero, and Department for Business, Energy and Industrial Strategy ⁷⁵	-16.5% (2018–2023)
Consumption-based GHG emissions in England	Existing (Annex, Table A.22)	OIF, Defra ^{76,77}	0.0% (2016–2021)
Emissions of fluorinated gases	Existing	OIF ⁷⁸	-19.7% (2016–2021)

Trends – climate adaptation

Compared with climate mitigation, climate adaptation is difficult to measure directly. Outcomes are generally poorly defined, and assessments of progress typically rely on proxy measures that are often not solely climate driven.

The government’s third National Adaptation Programme (NAP3)⁷⁹ includes a suite of risk-reduction goals that address each of the 61 climate risks and opportunities identified in the third Climate Change Risk Assessment (CCRA).⁸⁰ The indicators across all EIP23 goal areas to the NAP3 risk reduction goals and CCRA climate risks for our 2022/2023 progress report and have been refreshed this year as part of our annual indicator review.

Our indicators were collated primarily to assess progress towards EIP23 targets and commitments, rather than to assess climate adaptation. Therefore, in a climate adaptation context, the indicators provide proxy measures, based on assumptions such as that increased species abundance and improved habitat condition provide enhanced resilience to climate change. As a result, this indicator selection does not represent a comprehensive suite of climate adaptation indicators for the natural environment and instead was used to identify areas where adaptation may be important for delivery of EIP23 goals and therefore areas where we could use existing analysis to suggest whether EIP-relevant climate risks are being managed [Table 3.23](#).

Table 3.23. Mapping our 2023/2024 progress report indicators to the NAP3 risk reduction goals

CCRA3 risk/opportunity	NAP3 risk reduction goal	Relevant 2023/2024 progress report indicator
I7 – Risks to subterranean and surface infrastructure from subsidence	I7 – Water companies will address leakage and drought to reduce the risk that subsidence poses to their operations.	Water leakage in England (from water company potable water supply)
I8 – Risks to public water supplies from reduced water availability	I8 – Water companies will use supply and demand management measures to mitigate risks from reduced water availability.	Water company security of supply performance
N1 – Risks to terrestrial species and habitats from changing climatic conditions and extreme events, including temperature change, water scarcity, wildfire, flooding, wind, and altered hydrology (including water scarcity, flooding and saline intrusion)	N1 – Halt the decline in species abundance by 2030 and protect 30% of land in England in a way that recognises and responds to climate change risks by 2030.	Relative abundance of species in England
		Condition of Sites of Special Scientific Interest (that are in favourable or unfavourable recovering condition)
		Extent of UK area protected for nature on land and water
		Extent of UK area protected for nature at sea
		Number of wildfire incidents
N2 – Risks to terrestrial species and habitats from pests, pathogens and invasive non-native species	N2 – Reduce the number of new establishments of all invasive non-native species (INNS) in Great Britain by at least 50% by 2030 (compared to 2000 levels) and reduce further impacts of INNS that are already established under a changing climate.	Number of INNS becoming established
N4 – Risk to soils from changing climatic conditions, including seasonal aridity and wetness	N4 – Protect and improve soil health so that soil maintains its multiple functions and is more resilient to impacts from climate change.	Soil health

Table 3.23. Mapping our 2023/2024 progress report indicators to the NAP3 risk reduction goals (cont.)

CCRA3 risk/opportunity	NAP3 risk reduction goal	Relevant 2023/2024 progress report indicator
N5 – Risks to natural carbon stores and sequestration (blue carbon) from changing climatic conditions, including temperature change and water scarcity	N5 – Increase the extent and improve the condition of blue carbon habitats so they are more resilient to climate change and improve our understanding of climatic risks.	Achievement of marine good environmental status
		Condition of Marine Protected Areas
N5 – Forestry – Risks to natural carbon stores and sequestration from changing climatic conditions	N5 – Forestry – Create and maintain healthy, functioning woodlands, which will increase the resilience of these carbon stores.	Percentage of woodland that is sustainably managed
N6 – Risks to and opportunities for forestry productivity from extreme events and changing climatic conditions	N6 – Maintain average forestry productivity (as a minimum) at current levels to 2080, to ensure that England has healthy and productive woodlands which are resilient to extreme events and have high levels of diversity.	Percentage of woodland that is sustainably managed
N8 – Risks to forestry from pests, pathogens, and INNS	N8 – Minimise the risk of increased impacts on forestry from pests, pathogens and INNS in a changing.	Number of INNS becoming established
		Number of additional tree pests and diseases becoming established
N9 – Opportunities for forestry productivity from new/alternative species becoming suitable	N9 – Plant a wider range of species, including emerging forestry species, so that timber productivity is maintained or enhanced, relative to a 2023 baseline.	Percentage of woodland that is sustainably managed
N11 and N13 – Risks and opportunities to freshwater species and habitats from changing climatic conditions and extreme events, including higher water temperatures, flooding, water scarcity and phenological shifts	N11 – Achieve good ecological status at 75% of water bodies by 2027 and restore 75% of protected sites to favourable condition by 2042 in a way that recognises and responds to climate change risks.	Condition of Sites of Special Scientific Interest (that are in favourable or unfavourable recovering condition)
		State of the water environment (WFD Regulations good ecological status)

Table 3.23. Mapping our 2023/2024 progress report indicators to the NAP3 risk reduction goals (cont.)

CCRA3 risk/opportunity	NAP3 risk reduction goal	Relevant 2023/2024 progress report indicator
<p>N14 – Risks to marine species, habitats and fisheries from changing climatic conditions, including ocean acidification and higher water temperatures</p>	<p>N14 – Adaptively manage marine habitats and fisheries, enabling them to support strong, biodiverse communities and increasing their resilience to climate change.</p>	Achievement of marine good environmental status
		Condition of Marine Protected Areas
		Fish stocks that are sustainably harvested (good environmental status descriptor commercial fish)
<p>N15 – Opportunities to marine species, habitats and fisheries from changing climatic conditions</p>	<p>N15 – Where appropriate, maximise opportunities for new species moving into UK waters by achieving good habitat condition and an adaptive fishing and seafood sector.</p>	Achievement of marine good environmental status
		Condition of Marine Protected Areas
		Fish stocks that are sustainably harvested (good environmental status descriptor commercial fish)
<p>N16 – Risks to marine species and habitats from pests, pathogens and INNS</p>	<p>N16 – Reduce the number of new establishments of all INNS in Great Britain by at least 50% by 2030 (compared to 2000).</p>	<p>Number of INNS becoming established</p>
<p>N17 – Risks and opportunities to coastal species and habitats due to coastal flooding, erosion and climate factors</p>	<p>N17 – Improve the condition, extent and connectivity of coastal habitats.</p>	Condition of Sites of Special Scientific Interest
		Extent of UK area protected for nature on land and water
<p>N18 – Risks and opportunities from climate change to landscape character</p>	<p>N18 – Increase understanding of and address the change in landscape character due to climate change.</p>	<p>Changes in landscape and waterscape character</p>
<p>H3 – Risks to people, communities and buildings from flooding</p>	<p>H3 – Improve the nation’s resilience to future flood and coastal erosion risks.</p>	Properties at high risk of flooding
		Percentage of flood or coastal risk management assets in required condition
<p>H4 – Risks to the viability of coastal communities from sea-level rise</p>	<p>H4 – Improve the nation’s resilience to future flood and coastal erosion risks, thereby reducing the risk of harm to people, the environment and the economy.</p>	Properties at high risk of flooding
		Percentage of flood or coastal risk management assets in required condition

Table 3.23. Mapping our 2023/2024 progress report indicators to the NAP3 risk reduction goals (cont.)

CCRA3 risk/opportunity	NAP3 risk reduction goal	Relevant 2023/2024 progress report indicator
H7 – Risks to health and wellbeing from changes in air quality	H7 – Maximise air quality benefits from delivering the Net Zero Strategy and adapting to climate change. Minimise unintended air pollution impacts by meeting air pollution emission and concentration targets, and clearly identifying climate change interventions that impact air quality.	UK emissions of five key air pollutants
		Percentage of monitoring stations above 10µg/m ³ annual mean PM _{2.5} concentration
		Incidents of exceedances against Air Quality Standards Regulations in England
		Population-weighted annual mean concentrations of PM _{2.5}
H11 – Risks to cultural heritage	H11 – Minimise the impact of climate change on cultural heritage and maximise the opportunities that heritage presents to help society mitigate and adapt to a changing climate.	Changes in landscape and waterscape character

Progress towards ambitions, targets and commitments

Table 3.24. Selected targets and commitments – Mitigating and adapting to climate change

Target or commitment	Source
Net Zero emissions by 2050, including Carbon Budgets 4, 5 and 6 from 2023–2037 and the UK’s 2030 NDC.	Climate Change Act 2008 and Paris Agreement
Reducing HFC consumption by 85% between 2019 and 2036 under the Kigali amendment to the Montreal Protocol.	EIP23 commitment (Montreal Protocol on Substances that Deplete the Ozone Layer)

3.9. Reduced risk of harm from environmental hazards (Chapter 9)

Key environmental trends

For our 2023/2024 progress report, we have not provided a trend rating for our ‘Properties at high risk of flooding’ indicator. A change in the methodology used to count properties has resulted in an increase in the number at risk. While this does not reflect an increase in risk, but rather a better understanding of the level of risk, the different datasets are not comparable.

We have also added a new indicator on the percentage of flood or coastal risk management assets in required condition, to track progress towards the government’s commitment to maintain at least 94% of major flood and coastal erosion risk management assets fit for their defined purpose.

Table 3.25. Selected indicators – Reduced risk of harm from environmental hazards

Indicator	Status	Source	Trend assessment
Properties at high risk of flooding	Existing (Annex, Table A.23)	EA ⁸¹	N/A
Number of wildfire incidents	Existing (Annex, Table A.24)	Forestry Commission ^{82,83}	+30.9% (2015/2016– 2020/2021)
Percentage of flood or coastal risk management assets, in high-consequence systems, in required condition in England	New	OIF ⁸⁴	–5.4% (2018/2019– 2023/2024)

Progress towards ambitions, targets and commitments

For our 2023/2024 progress report, we included an additional government EIP23 commitment in the progress assessment, to ‘Double the number of government-funded projects to reduce flooding and coastal erosion through nature-based solutions to 260 projects by 2027’. Inclusion supports the assessment of the commitment to protect 100,000 properties from flooding and coastal erosion, but from the perspective of natural, rather than traditional, infrastructure, for example in the construction of concrete sea walls. It also enables assessment of the contribution to other nature commitments.

Table 3.26. Selected targets and commitments – Reduced risk of harm from environmental hazards

Target or commitment	Source
Better protect 100,000 properties from flooding and coastal erosion by 2024, and 336,000 by 2027.	APR 2021/2022
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%.	EIP23 commitment
Double the number of government-funded projects to reduce flooding and coastal erosion through nature-based solutions to 260 projects by 2027 (new).	EIP23 commitment

3.10. Enhancing biosecurity (Chapter 10)

Key environmental trends

Table 3.27. Selected indicators – Enhancing biosecurity

Indicator	Status	Source	Trend assessment
Number of INNS becoming established	Existing	OIF, EBI ^{85,86}	+205.9% (1969–2022)
Number of additional tree pests and diseases becoming established	Existing	OIF, Forestry Commission ^{16,87}	-40.0% (2009–2018 to 2014–2023)

Progress towards ambitions, targets and commitments

Table 3.28. Selected targets and commitments – Enhancing biosecurity

Target or commitment	Source
Reduce the number of introductions and establishments of INNS by at least 50% in 2030.	EIP23 commitment and Convention on Biological Diversity commitment (UN Nature Summit COP15)

3.11. Enhancing beauty, heritage and engagement with the natural environment (Chapter 11)

Key environmental trends

For our 2022/2023 progress report, we used the ‘Health and wellbeing benefits’ indicator for descriptive purposes but did not provide an assessment. For our 2023/2024 progress report we have removed this indicator, using alternative data for descriptive purposes. We are searching for an appropriate indicator to use for trend assessments in future progress reports.

We removed the ‘Condition of geological and geomorphological heritage features of Sites of Special Scientific Interest in England’ indicator and replaced it with ‘Changes in landscape and waterscape character’, as it provides a more comprehensive measure of landscape character and a more robust assessment of the government’s commitment to conserve and enhance the natural, geological and cultural diversity of our landscapes.

We amended the ‘Environmental attitudes and behaviours’ indicator, dividing it into two indicators to provide further insight to our assessment of enablers of change, such as attitudes and behaviours ‘Pro-environmental behaviours of adults’ and ‘Pro-environmental behaviours of children’.

We have also changed the data source of the ‘Visits to the natural environment indicator’ to OIF G4b from G4a, becoming ‘Visits to green and natural spaces by adults’, and added the indicators on the time children spend outside to further expand our evidence base on environmental attitudes and behaviours and better reflect that demographic, which was not previously represented in our trend analysis.

Table 3.29. Selected indicators – Enhancing beauty, heritage and engagement with the natural environment

Indicator	Status	Source	Trend assessment
Visits to green and natural spaces by adults	Amended (Annex, Table A.25)	OIF ⁸⁸	-1.7% (2020/2021–2023/2024)
Percentage of the total population in England living within 15 minutes’ walk of green space, as of 2023	Existing (Annex, Table A.26)	Defra ⁸⁹	N/A
Pro-environmental behaviours of adults	Amended (Annex, Table A.27)	OIF ⁹⁰	+2.0% (2020/2021–2023/2024)
Pro-environmental behaviours of children	Amended (Annex, Table A.27)	OIF ⁹⁰	-4.1% (2020/2021–2022/2023)
Changes in landscape and waterscape character	New	OIF ⁹¹	+15.1% (2015–2019)
Frequency of time spent outside in the last week by children during school term	New	OIF ⁸⁸	-0.8% (2021–2023)
Frequency of time spent outside in the last week by children during school holiday	New	OIF ⁸⁸	-11.5% (2021–2023)

Geospatial analysis

GIS spatial analysis to support our assessment of the ‘Enhancing beauty, heritage and engagement with the natural environment’ goal was carried out by AtkinsRealis.

The aim of the analysis was to assess the distribution of green space in England to understand variability in access.

The methodology applied and data sources used are described in [Table 3.30](#).

Table 3.30. Methodologies applied, and data sources used for the geospatial analysis, commissioned to support our assessment of the ‘Enhancing beauty, heritage and engagement with the natural environment’ goal

EIP goal	Enhancing beauty, heritage and engagement with the natural environment		
Developed	October 2024		
Description and rationale	Visual representation of overall spatial distribution of access to green spaces across England		
Methodology	<p>Access to green space data were downloaded in CSV format, which were imported into QGIS into seven different tables, one for each green space scenario. The Middle layer Super Output Areas (MSOA) layer was downloaded – these are boundaries across England and Wales. The MSOA layer was then clipped to England, removing any boundaries in Wales. The MSOA data layer contains a unique code which relates to each boundary. The access to green space data contains data on access to green space in each scenario, but it additionally contains a unique MSOA code.</p> <p>A spatial join was completed between the two datasets based on the MSOA code, allowing each scenario data to be joined with the boundary layer to present a picture of the access to green space within each boundary across England. The data were then classified based on percentage and assigned a colour. The outputs were presented in a map, displaying the access to green space scenario across England. Scenarios 1, 2 and 5 are presented within the report.</p>		
	Data layer	dataset	Licence
	Access to green space	Access to green space in England – GOV.UK – CSV data table	Open Government Licence
	Middle layer Super Output Areas	Middle layer Super Output Areas (December 2001) Boundaries EW BFC (V2) Open Geography Portal – Polygon shapefile	Open Government Licence

Progress towards ambitions, targets and commitments

Our 2022/2023 progress report included a single commitment. To expand our assessment of landscape effects and complement our assessment of public attitudes and access to green space, we have added an additional EIP23 commitment to this goal area for our 2023/2024 progress report on conserving and enhancing the natural, geological and cultural diversity of our landscapes.

Table 3.31. Selected targets and commitments – Enhancing beauty, heritage and engagement with the natural environment

Target or commitment	Source
Everyone should live within 15 minutes' walk of a green or blue space.	EIP23 commitment
Conserve and enhance the natural, geological and cultural diversity of our landscapes, and protect our historic and natural environment for the benefit and enjoyment of future generations (new).	EIP23 commitment

Chapter 4: EIP23 Cross-cutting themes

4.1. Introduction

The EIP23 identifies cross-cutting themes which are intended to tie together delivery across goal areas. These include new farming schemes, land use and planning, green finance, green jobs and skills, and green choices.

Each of these themes affects the speed and scale of change as well as enabling it in their own right. We presented our initial analysis of nature-friendly farming and green jobs and finance in our 2022/2023 progress report. We have further developed that analysis for our 2023/2024 progress report, presenting our analysis of the green finance and green choices cross-cutting themes in Chapter 12.

4.2. Green finance (Section 12.2)

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.

For our 2022/2023 progress report, we provided a broad overview of government plans and issues related to green jobs and mobilising green finance. We started to define the key issues relevant to the government's ambitions for mobilising private investment for nature. This included comparing the announced green finance target with the estimated financial gap for realising nature goals and exploring the planned financial commitments in the EIP23.

For our 2023/2024 progress report, we carried out a more in-depth analysis of the green finance agenda and issues for mobilising finance at scale. This draws on an externally commissioned foundational evidence review, published alongside our 2023/2024 progress report,⁹² which developed our understanding of the key elements of the green finance landscape, the government's green finance strategy, the emergence of nature markets, and methodologies relevant for the OEP to assess progress.

In order to understand the required upscaling of finance directed towards nature goals, we analysed Joint Nature Conservation Committee (JNCC) data⁹³ for current NGO and public sector spending and compared this with Green Finance Institute data estimates for the UK's finance gap for nature goals over the next 10 years.⁹⁴ The analysis showed that recent public and NGO funding would need to multiply between four and nine times relative to its 2021/2022 level.

We also assessed progress made towards implementing Biodiversity Net Gain (BNG), which was originally expected to establish a biodiversity units' 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.^{95,96} We analysed Environment Agency data for off-site BNG projects recorded on a public register.⁹⁷ At the time of writing, there were 11 sites registered for off-site projects, totalling only 324 hectares.


4.3. Green choices (Section 12.3)

For our 2023/2024 progress report, we developed an analysis of green choices as a cross-cutting theme. This built on observations in our 2022/2023 progress report about the lack of practical examples of implementing green choices principles first introduced publicly in the Net Zero Strategy in 2021.

We highlighted examples where the government's implementation of these principles would impact on the delivery of the EIP23. We then examined them more systematically in the context of the food system, which is a significant driver of environmental, climate, and health impacts, and thus influences outcomes across many of the EIP23 goals, targets and commitments.

The analysis draws on work commissioned from external consultants, with their methodology and findings, are published alongside the OEP progress report. The work included a rapid review to assess the extent to which the government Food Strategy and its actions embody the green choices principles. It also examined a selection of wider evidence sources to identify actions that could strengthen and develop the integration of these principles in the government's approach to the food system. From this, we identified findings relevant to the broader application of the green choices principles and have provided corresponding recommendations.

III. A focus on improving nature

The background of the slide is a solid teal color with a repeating pattern of stylized, light teal leaves or branches. The pattern consists of vertical stems with multiple pairs of leaves branching out, creating a dense, textured effect.

Chapter 5: In-depth assessment of improving nature

5.1. Introduction

In our 2022/2023 progress report, we provided an in-depth assessment of the government's progress towards delivering the apex goal of 'Thriving plants and wildlife'. We considered the main targets, analysed the policy mix relevant to achieving them, and considered how progress is monitored and evaluated and identified opportunities for improvement. Our assessment focused on achievement of the EA21 2030 species abundance target and the 30 by 30 commitments.

Our previous analysis highlighted the high dependency on nature-friendly farming for achievement of EA21 targets and EIP23 commitments. We identified that the most important actions for achieving terrestrial and freshwater nature recovery were those supporting nature-friendly farming.

For our 2023/2024 progress report, we focused the in-depth assessment of progress towards achievement of the 'Thriving plants and wildlife' goal on the critical role of nature-friendly farming. We provided further analysis to identify the greatest risks to delivery of relevant schemes. This has been informed by a qualitative impact assessment of land management interventions on ecosystem services (QEIA) published by Defra.⁹⁸

5.2. Appraisal of the policy system underpinning ELM (Section 13.2)

We commissioned ICF Consulting Ltd to help us develop a framework for reviewing policy systems and develop an assessment that could identify, describe and assess the key components of a given policy system and assess its adequacy for delivering the achievement of long-term targets.

The resulting environmental policy system review (EPSR) tool set out an analytical framework and process for its application that could be applied to policy systems of varying scale, for example an EIP goal, an EA21 target, and a specific programme or project. The framework is made up of six components and involves an eight-step process for undertaking the assessment. A full explanation of how the EPSR was developed and is intended to be applied is contained in the supporting report, which will be published on our website.⁷¹

The EPSR tool was applied to the environmental land management (ELM) policy system, incorporating all three tiers of the scheme (Sustainable Farming Incentive, Countryside Stewardship+, and Landscape Recovery) and considering wider aspects of the Farming and Countryside Programme that support ELM. The assessment drew on the government's published information about ELM as well as wider publications about its development and implementation by the government and other stakeholders.

A workshop was carried out with independent experts to scrutinise the output of the EPSR assessment and discuss areas of concern for ELM delivery and potential areas for further analysis. A summary of the workshop discussion and conclusions is available in the full report, which will be published on our website.⁷¹

5.3. Prospects of meeting targets and commitments on biodiversity and water (Section 13.3)

For our 2023/2024 progress report, we integrated research on the effectiveness of agri-environment schemes (AES) on supporting the achievement of the 2030 species abundance target, the long-term target to reverse the decline of species abundance and the target on agriculture water (all EA21 targets).

Three research commissions supported our analysis. Analysis of the effectiveness of agri-environment schemes on improving farmland bird species abundance, and appraisals of agri-environment scheme actions for achieving both biodiversity and agriculture water pollution targets.

Analysis of the effectiveness of agri-environment schemes on farmland bird species abundance⁹⁹

This research extends previous analysis on monitored farmland bird populations in farms with bird-friendly high-tier type AES or bird-friendly low tier type AES agreements and those where no bird-friendly AES was in place.^{100–103}

The research developed probabilistic outputs that can support risk-based decision making on the adoption levels of AES required to support the recovery of farmland birds.

Specifically it applied stochastic sequencing and sensitivity analysis to provide further understanding of the likelihood of the stabilisation and increase in farmland bird species abundance from varying levels and types of AES.

The research also considered the use of the outputs as a broader proxy for changes in species abundance in England.

Appraisal of agri-environment scheme actions for achieving biodiversity targets¹⁰⁴

This research project assessed the likely efficacy of management actions and options in the Environmental Land Management Schemes (Sustainable Farming Incentive and Countryside Stewardship) in supporting species groupings and individual species listed in schedule 2 the Environmental Targets (Biodiversity) (England) Regulations 2023.¹⁰⁵

The assessment largely drew on evidence collated for a recent Defra qualitative evidence review of 741 potential land management actions (QEIA) in relation to twelve biodiversity indicators, and wider indicators including air and water qualities, carbon storage and greenhouse gas emissions.⁹⁸ [Figure 5.1](#) summarises the QEIA analysis.

It also further considered how the current deployment of ELM supports wider biodiversity targets including the 2050 target for woodland and trees outside woodland (an EA21 target)

and the EA21 long-term target for wildlife-rich habitat restoration or creation. How ELM is currently deployed spatially, and the likely efficacy of management actions was also assessed geographically.

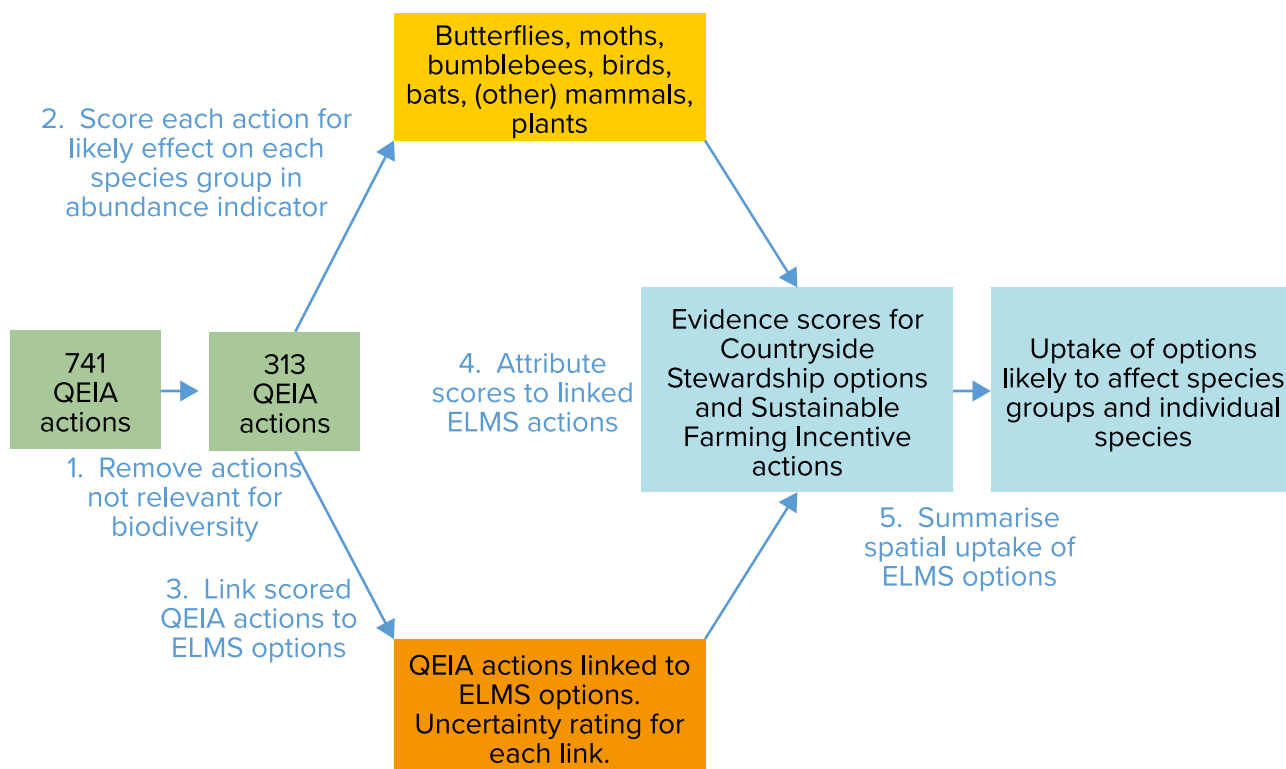


Figure 5.1 Process for relating evidence from QEIA to the potential efficacy of ELM in changing species abundance

Appraisal of agri-environment scheme actions for achieving agriculture water pollution targets¹⁰⁶

This project used Defra’s Farmscoper tool (version 5)¹⁰⁷ at England scale to assess long term annual average agricultural pollutant losses from various land management scenarios. Overall, we assessed 18 separate scenarios encompassing varying levels of compliance with farming regulations, levels of uptake of ELM, reductions in animal stocking densities and changes to less intensive land-uses.

The results consider changes in nitrate, total phosphorus and sediment within each scenario and compare it to reductions required to achieve the target on agricultural water (an EA21 target). Actions under ELM were linked to Farmscoper’s library of over 100 mitigation measures, to assess the likely efficacy of ELM action on reducing pollution levels.

5.4. The role of advice in improving outcomes (Section 13.4)

To inform Section 13.4 of our 2023/2024 progress report, we undertook a synthesis of existing evidence reviews about agri-environment scheme (AES) advice and guidance and carried out a series of workshops with AES delivery partners.

We further considered evidence reviews from the government, professional bodies, and academia,^{108–112} and considered unpublished information, including evidence reviews, undertaken by the government.

Six of the key delivery partners for ELM were involved in developing and providing advice and guidance to farmers and land managers directly and to other public bodies, including policy makers in Defra we engaged. We discussed the past, present and future of public bodies' roles in providing AES advice and guidance, including barriers and opportunities they face, as well as how ELM advice and guidance can help the scheme maximise its contributions to nature improvement targets.

IV. Taking stock



Chapter 6: Taking stock

6.1. The overall picture (Section 14.1)

Progress and prospects

We have introduced an additional summary assessment which assesses the government's progress towards addressing recommendations made in our 2022/2023 progress report. We applied the same red-amber-green (RAG) assessment ratings used in the assessment of progress towards individual targets and commitments and EIP23 goal areas.

Progress towards each recommendation was rated as good, mixed or limited. Good progress indicated that most aspects of the recommendation have been addressed or are on track to being addressed. Limited progress reflects very little action or no action. Ratings were assigned based on expert judgement in an iterative process.

6.2. EIP23 actions analysis

Background

In previous EIP progress reports we have identified shortcomings of the 25YEP, and offered recommendations for how the revised version, the EIP23, could be improved.^{11,113} Drawing on these observations and recommendations, we developed a list of eight attributes of an effective EIP and in our 2022/2023 progress report, we assessed the EIP23 against these attributes to understand to what extent the government had addressed our recommendations.

We built on this analysis for our 2023/2024 progress report, by conducting a comprehensive analysis of EIP23 actions to determine if the EIP23 adequately sets out how the government intends to improve the natural environment and meet the targets and commitments set out in the EIP23. We have not included the results of this analysis explicitly in our 2023/2024 assessment, but it has informed our understanding of the relative importance of actions and interlinkages within the EIP23 and assessments of progress and prospects.

Methodology

Our analysis was carried out using NVivo,⁴⁰ a qualitative and mixed-methods analysis software, which enabled the consolidation and review of all text related to each action across the EIP23. A structured coding framework was developed to assign actions to goals, targets and level of contribution to targets where defined.

A list of 299 distinct actions were identified, which excluded duplications across goal areas, as well as targets and past actions. In addition, to limit double counting, logical actions were grouped, for example if an action was listed alongside its component parts, such as the individual grant schemes provided under the Nature for Climate Fund.

After extracting the comprehensive list of EIP23 actions, we reviewed the verbatim text to assess whether, through the perspective of an intelligent non-expert reader, the given action articulated how it will contribute to environmental improvement and target

achievement. Links were assigned between actions and targets, both EA21 and other commitments and statutory targets key to the EIP23 delivery, using a set of coding definitions to limit subjectivity.

An explicit (or direct) link between an action and target was assigned where the verbatim text clearly linked an action to a target and/or the wording of the action directly corresponded to the wording of the target, making the link obvious to a non-expert reader. The contribution of nine actions to targets was quantified. Examples of actions with direct links include:

- 'New farming schemes will achieve approximately 90% of the Environment Act target to increase tree cover to 16.5% of England's land area by 2050'.
- 'Reduce ammonia emissions by using incentives in our new farming schemes, while considering expanding environmental permitting conditions to dairy and intensive beef farms'.

An inferred (or implicit) link was assigned where the wording of the action did not correspond directly with the wording of the target but where an intelligent, non-expert reader could reasonably be assumed to be able to link the action to an improvement towards a target (not many steps away). For example:

- 'Continue to develop a targeted communications campaign to promote best practice in use of wood stoves and fireplaces in using cleaner and more efficient fuels, and techniques to reduce exposure to pollutants'.

We analysed the coded assessment by running queries in NVivo to determine which and how many targets do and do not specify how they will contribute to environmental improvement and EIP23 targets.

Quality assurance

Action coding was carried out individually and then iteratively with the project lead to remove duplication and ensure consistency in the interpretation and application of code definitions across goals. To validate the findings, a peer review was carried out in 25% of the extracted EIP23 actions, selected at random for reassessment by three peer viewers independently.

Chapter 7: Continuous improvement

In line with our commitment to continuous improvement, we identify potential improvements to our approach while developing our EIP progress assessments. Where possible, these are implemented immediately. However some take longer or require greater resources than available so are for future consideration. The improvements made to our assessment process this year are described in Chapter 1 and they address some of the areas for future development identified in our 2022/2023 progress report.

We will continue to develop our assessments and evidence-gathering as part of our multi-annual approach over the period 2023–2028. Areas previously identified for further development include: (1) improved understanding of drivers and pressures; (2) greater use of forward-looking information and analyses; (3) improved understanding of interlinkages, synergies and trade-offs; and (4) more response/solutions knowledge.

Development is also informed by an evaluation and learning process, discussions with external stakeholders, and engagement on our multi-annual approach to our EIP progress reports with the OEP Board.

We have commissioned an independent review of our methodology used to assess past trends. This is being undertaken by Biomathematics and Statistics Scotland. The overarching aim of the review is to enable the OEP to more effectively assess the government's progress by improving the statistical robustness with which we calculate and report on trends in environmental indicators. The project will review methodologies applied by other similar organisations, domestically and internationally. It will develop a methodology to more robustly analyse and interpret change for a subset of indicators and strengthen how results are communicated through use of a threshold system. We intend to apply the outputs in our 2024/2025 progress assessment.

We will also continue to develop our Methodological Statements to ensure our assessments are fully transparent, and to continue to annually review our voluntary statement of compliance with the UKSA's Code of Practice for Statistics. We will also continue to be active members of the community of practice to ensure we learn from examples of best practice across other organisations.



Annex: Indicator reference tables

Annex: Indicator reference tables

Here we present indicator reference tables for the indicators selected for our 2023/2024 progress report. The reference tables include key metadata, such as the relevant EIP goal, data source(s), categorisation of the source data (official statistics, national statistics, experimental or other), a description of the indicator and rationale for why it was selected, the most recent data points used to assess trends, and finally, a brief description of the methodologies.

Reference sheets are provided for indicators where we have developed our own indicators, use different indicators from the Outcome Indicator Framework¹³² (OIF), or where we use an indicator similar to an equivalent in the OIF, with a deviation in methodology or data source. This also includes OIF indicators where we have been able to provide more recent data to that presented in the OIF, such as UK and England Biodiversity Indicators. Source publications for OIF indicators are often refreshed after the annual OIF update, so in these cases there are two references for the data.

Indicators listed in Chapter 3 that do not have a reference sheet are those which do not deviate from the OIF. Readers should refer to the OIF indicator pages for detail on the given indicators' metadata, rationale and methodology.

Thriving plants and wildlife

Table A.1. Indicator reference table – Condition of Sites of Special Scientific Interest (that are in favourable or unfavourable recovering condition)

EIP goal	Thriving plants and wildlife
Data source	<p>Outcome Indicator Framework D2(b): 'Extent and condition of protected sites – land, water and sea'²⁹</p> <p>England Biodiversity Indicators: Extent and condition of protected areas³⁰</p> <p>Department for Environment, Food and Rural Affairs</p>
Category	England Biodiversity Indicator, accredited official statistics
Description and rationale	<p>This OIF indicator assesses the extent of protected sites and is a cumulative area which is assessed in March of each year shown.</p> <p>It is based on the following designations: Sites of Special Scientific Interest (SSSI), Special Areas of Conservation (SAC), Special Protection Areas (SPA), National Nature Reserves (NNR), Ramsar sites and Marine Conservation Zones (MCZ). For sites that span English borders, only the area within England is included. The extent of protected sites located between mean low water and the 12-nautical-mile limit are included in the 'marine' measure; extent of protected sites located beyond 12 nautical miles, in UK waters, are excluded.</p> <p>In our 2023/2024 progress report, we used information from the UK Biodiversity Indicators Indicator 1b to supplement the data within Outcome Indicator Framework D2(b).</p>

Table A.1. Indicator reference table – Condition of Sites of Special Scientific Interest (that are in favourable or unfavourable recovering condition) (cont.)

EIP goal	Thriving plants and wildlife						
Methodology	No adjustments were made to the data. For a full description of the methodology, refer to the supporting documents for the OIF and EBI indicators. Data reported below are the sum of the percentage of site area that is in unfavourable recovering condition, with that in favourable condition.						
Data	Year	2018	2019	2020	2021	2022	2023
	Favourable and Unfavourable Recovering	94.25	93.50	92.80	91.20	89.00	85.90
	Unit: percentage of site area						
	Trend: –8.9% (2018–2023)						
	Accessed: 20 September 2024						

Table A.2. Indicator reference table – Achievement of marine ‘good environmental status’

EIP goal	Thriving plants and wildlife						
Data source	Summary of progress towards good environmental status (GES) ³¹ Centre for Environment, Fisheries and Aquaculture (Cefas)						
Category	UK government research and analysis						
Description and rationale	<p>The UK Marine Strategy covers 11 elements (termed ‘descriptors’). These are disaggregated into biodiversity ecosystem components and human pressures, for a total of 15 ecosystem components and descriptors. Assessments towards GES are made for each individual descriptor or ecosystem component every six years through the UK Marine Strategy (UKMS) Part One and are not aggregated.</p> <p>Cefas summarised progress towards GES using 15 descriptors in 2018, along with the last iteration of UKMS Part One published in 2019. An assessment of change is provided for each descriptor between 2012 and 2018. Each descriptor is allocated a green-amber-red status if GES has been achieved, partially achieved or not achieved, respectively. Arrows are assigned to illustrate the situation since the last assessment in 2012.</p>						

Table A.2. Indicator reference table – Achievement of marine good environmental status (cont.)

EIP goal	Thriving plants and wildlife																																																						
Description and rationale	<p>The arrows provide Cefas’s best judgement of whether there has been progress towards achieving GES for the descriptor or ecosystem component concerned. In some cases, they reflect a situation where several indicator results reveal a mixed picture, with some showing an improving situation, some being stable and some showing a decline. In these cases, the arrow indicates our estimate of the combined position.</p> <p>Full details of each assessment can be found in the individual Cefas indicator assessments.</p>																																																						
Methodology	No adjustments were made to the data. For a full description of the methodology for each descriptor, refer to the UKMS Part One and OSPAR Quality Status Report 2023.																																																						
Data	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #003366; color: white;">Descriptor</th> <th style="background-color: #003366; color: white;">Cetaceans</th> <th style="background-color: #003366; color: white;">Seals</th> <th style="background-color: #003366; color: white;">Birds</th> <th style="background-color: #003366; color: white;">Fish</th> <th style="background-color: #003366; color: white;">Pelagic habitats</th> <th style="background-color: #003366; color: white;">Benthic habitats</th> </tr> </thead> <tbody> <tr> <td style="background-color: #003366; color: white;">RAG (2018 assessment)</td> <td>Partially achieved</td> <td>Partially achieved</td> <td>Not achieved</td> <td>Not achieved</td> <td>Partially achieved</td> <td>Not achieved</td> </tr> <tr> <td style="background-color: #003366; color: white;">Status since 2012</td> <td>Stable</td> <td>Improving</td> <td>Declining</td> <td>Improving</td> <td>Stable</td> <td>Stable</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #003366; color: white;">Descriptor</th> <th style="background-color: #003366; color: white;">Non-indigenous species</th> <th style="background-color: #003366; color: white;">Commercial fish</th> <th style="background-color: #003366; color: white;">Food webs</th> <th style="background-color: #003366; color: white;">Eutrophication</th> <th style="background-color: #003366; color: white;">Changes in hydrographical conditions</th> <th style="background-color: #003366; color: white;">Contaminants</th> </tr> </thead> <tbody> <tr> <td style="background-color: #003366; color: white;">RAG (2018 assessment)</td> <td>Not achieved</td> <td>Partially achieved</td> <td>Achieved</td> <td>Achieved</td> <td>Achieved</td> <td>Achieved</td> </tr> <tr> <td style="background-color: #003366; color: white;">Status since 2012</td> <td>Stable</td> <td>Improving</td> <td>Improving</td> <td>Stable</td> <td>Stable</td> <td>Improving</td> </tr> </tbody> </table> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #003366; color: white;">Descriptor</th> <th style="background-color: #003366; color: white;">Contaminants in seafood</th> <th style="background-color: #003366; color: white;">Litter</th> <th style="background-color: #003366; color: white;">Input of anthropogenic sound</th> </tr> </thead> <tbody> <tr> <td style="background-color: #003366; color: white;">RAG (2018 assessment)</td> <td>Achieved</td> <td>Not achieved</td> <td>Partially achieved</td> </tr> <tr> <td style="background-color: #003366; color: white;">Status since 2012</td> <td>Improving</td> <td>Stable</td> <td>Stable</td> </tr> </tbody> </table> <p>Unit: status and assessment of progress since 2012</p> <p>Trend: not assessed</p> <p>Accessed: 20 September 2024</p>	Descriptor	Cetaceans	Seals	Birds	Fish	Pelagic habitats	Benthic habitats	RAG (2018 assessment)	Partially achieved	Partially achieved	Not achieved	Not achieved	Partially achieved	Not achieved	Status since 2012	Stable	Improving	Declining	Improving	Stable	Stable	Descriptor	Non-indigenous species	Commercial fish	Food webs	Eutrophication	Changes in hydrographical conditions	Contaminants	RAG (2018 assessment)	Not achieved	Partially achieved	Achieved	Achieved	Achieved	Achieved	Status since 2012	Stable	Improving	Improving	Stable	Stable	Improving	Descriptor	Contaminants in seafood	Litter	Input of anthropogenic sound	RAG (2018 assessment)	Achieved	Not achieved	Partially achieved	Status since 2012	Improving	Stable	Stable
Descriptor	Cetaceans	Seals	Birds	Fish	Pelagic habitats	Benthic habitats																																																	
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RAG (2018 assessment)	Achieved	Not achieved	Partially achieved																																																				
Status since 2012	Improving	Stable	Stable																																																				

Table A.3. Indicator reference table – Extent of UK area protected for nature on land and water, and extent of UK area protected for nature at sea

EIP goal	Thriving plants and wildlife																											
Data source	UK Biodiversity Indicators C1: ‘Protected areas’ ³² Department for Environment, Food and Rural Affairs; Joint Nature Conservation Committee																											
Category	UK Biodiversity Indicator, national statistics																											
Description and rationale	<p>Data show the extent of nationally and internationally important protected areas across the UK. In our 2023/2024 progress report, we disaggregated the indicator to its component parts and provided two trend assessments, one for marine and another for land (terrestrial, freshwater and coastal area above mean high water), due to the differing challenges and contexts.</p> <p>This indicator is not currently included in the OIF at an aggregated level, although the OIF does present some indicators that contribute to assessment of good environmental status under the ‘seas and estuaries’ theme.</p> <p>We have used UK data rather than the disaggregated England metric from the England Biodiversity Indicators³⁰ dataset because, at the UN Nature Summit COP15 in 2020, the government committed to protecting 30% of land and sea by 2030 at a UK level.</p> <p>We will consider the use of England Biodiversity Indicator 2a (‘Extent of condition of priority habitats’)¹⁴ in our future reports.</p>																											
Methodology	No adjustments were made to the data. For a full description of the methodology, refer to the supporting documents for the JNCC indicator.																											
Data	<table border="1"> <thead> <tr> <th>Year</th> <th>2018</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td>Marine area</td> <td>20.94</td> <td>21.83</td> <td>33.82</td> <td>33.82</td> <td>33.82</td> <td>33.82</td> </tr> <tr> <td>Land area</td> <td>6.79</td> <td>6.79</td> <td>6.79</td> <td>6.79</td> <td>6.79</td> <td>6.79</td> </tr> </tbody> </table>	Year	2018	2019	2020	2021	2022	2023	Marine area	20.94	21.83	33.82	33.82	33.82	33.82	Land area	6.79	6.79	6.79	6.79	6.79	6.79						
Year	2018	2019	2020	2021	2022	2023																						
Marine area	20.94	21.83	33.82	33.82	33.82	33.82																						
Land area	6.79	6.79	6.79	6.79	6.79	6.79																						
	<p>Unit: million hectares</p> <p>Trend (marine): +61.5% (2018–2023)</p> <p>Trend (land): +0.1% (2018–2023)</p> <p>Accessed: 20 September 2024</p>																											

Table A.4. Indicator reference table – Area under agri-environment schemes

EIP goal	Thriving plants and wildlife						
Data source	Agriculture in the United Kingdom (AUK) 2022, Chapter 10: Public Payments ³⁴ Department for Environment, Food and Rural Affairs						
Category	UK Biodiversity Indicator, national statistics						
Description and rationale	<p>The AUK data show the area under agri-environment schemes (AES), disaggregated by UK nation. This indicator was developed to track uptake of AES, which is not currently included in the OIF. It gives an indication of progress against the government’s EIP23 commitment to support 65–80% of farmers to adopt nature-friendly farming on 10–15% of their land by 2030.</p> <p>We use the data for England, which accounts for the following schemes: Organic Farming, Countryside Stewardship (1991–2014), Environmentally Sensitive Areas, Environmental Stewardship (Entry Level and Higher Level), Countryside Stewardship (2014 to present), Sustainable Farming Incentive.</p> <p>There are other indicators that present AES data, notably JNCC indicator B1ai (‘Area of land in agri-environment schemes’).¹⁴ While there is correlation between JNCC B1ai and those of the indicator we have selected, there are differences due to the schemes considered. We used the Defra indicator subject to a more detailed review of the differences. Our initial analysis shows a short-term improvement in both trends and so our overall assessment would not have changed.</p>						
Methodology	No adjustments were made to the data or processing. We summed the area of land in England under each scheme to calculate a total area and converted the units to million hectares.						
Data	Year	2018	2019	2020	2021	2022	2023
	Area of land	2.78	2.84	2.79	3.04	3.57	4.49
	Unit: million hectares						
	Trend: +61.3% (2018–2023)						
	Accessed: 20 September 2024						

Table A.5. Indicator reference table – Threat of extinction to UK species

EIP goal	Thriving plants and wildlife																				
Data source	UK data for the Sustainable Development Goals (SDG), Indicator 15.5.1 Red List Index ²⁸ Office for National Statistics																				
Category	Office for National Statistics reporting																				
Description and rationale	<p>The OIF Indicator D5 ('Conservation status of our native species')¹⁵ is now in its final format; however, there is insufficient data to undertake an assessment of change. We therefore use the UK Red List Index data as a proxy until additional OIF data is available.</p> <p>The Red List Index is based on global estimates of the extinction risk (IUCN Red List categories) of all mammals, birds, amphibians, corals and cycads, derived from local and national data, disaggregated to the national scale and weighted by the proportion of each species' distribution in the country or region (in this case the UK).</p> <p>This index does not indicate risk of extinction within the UK, but rather, risk of global extinction of species found within the UK.</p>																				
Methodology	No adjustments were made to the data. For a full description of the methodology, refer to the supporting documents for SDG reporting.																				
Data	<table border="1"> <thead> <tr> <th>Year</th> <th>2018</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> </tr> </thead> <tbody> <tr> <td>Favourable and unfavourable recovering</td> <td>0.9619</td> <td>0.9619</td> <td>0.9620</td> <td>0.9620</td> <td>0.9621</td> <td>0.9621</td> </tr> </tbody> </table>	Year	2018	2019	2020	2021	2022	2023	Favourable and unfavourable recovering	0.9619	0.9619	0.9620	0.9620	0.9621	0.9621						
Year	2018	2019	2020	2021	2022	2023															
Favourable and unfavourable recovering	0.9619	0.9619	0.9620	0.9620	0.9621	0.9621															
	<p>Unit: index (1.0 = all species categorised as 'least concern', 0.0 = all species 'extinct')</p> <p>Trend: 0.0% (2018–2023)</p> <p>Accessed: 20 September 2024</p>																				

Table A.6. Indicator reference table – Extent of land cover more likely to support nature-friendly habitat

EIP goal	Thriving plants and wildlife
Data source	<p>UK Centre for Ecology and Hydrology Land Cover Map</p> <p>UK Centre for Ecology and Hydrology (UKCEH); Office for Environmental Protection</p> <p>This research has been published on the OEP website.¹³ New data from UKCEH has been included in this indicator for our 2023/2024 progress report. For further information on UKCEH Land Cover Maps, please see their website.³⁸</p>
Category	<p>OEP indicator, based on UKCEH Land Cover Maps</p>
Description and rationale	<p>This indicator was developed by UKCEH, commissioned by the OEP, for our 2022/2023 progress report. It replaced an indicator based on land use in England statistics used in our 2021/2022 progress report. Our new approach provides greater granularity of land-use types which are focused on biodiversity.</p> <p>The indicator tracks the changes in England’s land cover over the period 1990–2022 across Land Cover Map (LCM) datasets. The indicator was developed to track land cover likely to support nature-friendly habitats to assess the target to restore or create in excess of 500,000 hectares of wildlife-rich habitats by 2042.</p> <p>LCM categories defined as ‘more likely’ to support wildlife-rich habitat is based on an assessed correlation between the 46 habitats of principal importance for England¹¹⁷ and the broader LCM land-use categories. UKCEH determined that all LCM land-use habitats, except conifer, arable, improved grassland, water or urban classes, such as semi-natural grasslands and broadleaved woodlands, can be defined as ‘more likely’ to support wildlife-rich habitat.</p>
Methodology	<p>Summary land cover statistics were calculated for England using an R-script,¹¹⁸ across 10 classes and each of the LCM datasets (1990–2023). Low-tide mark was chosen to include the greatest extent of coastal habitats.</p> <p>Neutral and calcareous grassland are underestimated in LCM2015, with an associated overestimation of improved grassland. This underestimation also affects LCMs 2017–2023, but to a lesser extent.</p> <p>The report and full methodology are published on the OEP website.</p>

Table A.6. Indicator reference table – Extent of land cover more likely to support nature-friendly habitat (cont.)

EIP goal		Thriving plants and wildlife													
Data		1990	1994	1998	2002	2006	2010	2015	2017	2018	2019	2020	2021	2022	2023
	Broadleaved woodland	8779	8635	9077	9184	9313	9766	9771	10828	10492	10750	10795	10457	9704	9381
	Coniferous woodland	2625	2742	2789	2879	2952	2963	2979	2853	2804	2803	2635	2722	2673	2637
	Arable	47794	49663	49557	49106	48070	47346	47763	46641	46383	46072	45585	44603	43066	41539
	Improved grassland	44808	41513	40580	40574	41688	41423	42919	41604	42627	42527	41874	41512	48065	50811
	Semi-natural grassland	8142	8958	9301	9442	8995	9213	6258	6823	6556	6625	7216	8337	6310	5819
	Mountain, heath, bog	5297	5085	5001	5112	5107	5067	4897	4856	4858	4826	4953	5280	4979	5058
	Saltwater	1231	890	952	1027	887	1010	703	724	752	727	686	709	908	906
	Freshwater	697	770	797	826	815	838	972	1014	1019	1026	945	976	956	896
	Coastal	1649	1853	1802	1725	1876	1746	2126	2365	2351	2345	2533	2100	1800	1802
	Built-up areas and gardens	11608	12521	12775	12756	12930	13260	14243	14901	14768	14908	15409	15936	14170	13782
	Total	130459	130459	130459	130459	130459	130459	130459	130443	130443	130443	130459	130459	132631	132631
	NFH	21696	22360	23009	23291	23117	23619	20880	22706	22090	22380	23325	24001	22793	22060

*NFH: Land cover more likely to support nature-friendly habitats.

Unit: square kilometres (low tide mark)

Trend (NFH): -0.1% (2018–2023)

Developed: 25 September 2024

Table A.7. Indicator reference table – Area of woodland in England

EIP goal	Thriving plants and wildlife																																		
Data source	<p>Outcome Indicator Framework D3: 'Area of woodland in England'³⁶</p> <p>Department of Agriculture, Food and Rural Affairs</p> <p>Woodland Statistics – Woodland area by forest type and ownership, England, 1998 to 2024³⁷</p> <p>Forest Research</p>																																		
Category	Modified OIF indicator, official statistics																																		
Description and rationale	<p>This indicator tracks the change in broadleaved and conifer woodland in England.</p> <p>Woodland, as defined for the National Forest Inventory (NFI), is land under stands of trees with a minimum area of 0.5 hectares, a width of at least 20 metres, and a canopy cover of at least 20% or having the potential to achieve this. The definition relates to land use, rather than land cover, so integral open space and areas of felled trees that are awaiting restocking (replanting) are included as woodland.</p> <p>Woodland is a key natural capital asset that provides many natural capital benefits, such as the provision of timber and other wood products, carbon storage, habitats for wildlife, and opportunities for exercise and recreation.</p> <p>The equivalent OIF indicator is derived from the same Forest Research data as that presented here; however, here we also use the most recent statistical release, which is published after the annual OIF update, to provide the most up-to-date assessment. The most recent year is typically based on Forest Research provisional statistics.</p>																																		
Methodology	No adjustments were made to the data. For a full description of the methodology, refer to the supporting documents for the OIF and Forest Research indicators.																																		
Data	<table border="1"> <thead> <tr> <th>Year</th> <th>2019</th> <th>2020</th> <th>2021</th> <th>2022</th> <th>2023</th> <th>2024</th> </tr> </thead> <tbody> <tr> <td>Conifers</td> <td>0.341</td> <td>0.342</td> <td>0.302</td> <td>0.304</td> <td>0.304</td> <td>0.305</td> </tr> <tr> <td>Broadleaves</td> <td>0.975</td> <td>0.978</td> <td>1.018</td> <td>1.026</td> <td>1.029</td> <td>1.033</td> </tr> <tr> <td>Total</td> <td>1.316</td> <td>1.32</td> <td>1.32</td> <td>1.33</td> <td>1.333</td> <td>1.338</td> </tr> </tbody> </table>	Year	2019	2020	2021	2022	2023	2024	Conifers	0.341	0.342	0.302	0.304	0.304	0.305	Broadleaves	0.975	0.978	1.018	1.026	1.029	1.033	Total	1.316	1.32	1.32	1.33	1.333	1.338	<p>Unit: million hectares</p> <p>Trend: +1.7% (2019–2024)</p> <p>Accessed: 20 September 2024</p>					
Year	2019	2020	2021	2022	2023	2024																													
Conifers	0.341	0.342	0.302	0.304	0.304	0.305																													
Broadleaves	0.975	0.978	1.018	1.026	1.029	1.033																													
Total	1.316	1.32	1.32	1.33	1.333	1.338																													

Table A.8. Indicator reference table – Condition of Marine Protected Areas

EIP goal	Thriving plants and wildlife
Data source	EIP Annual Progress Report 2023 to 2024 indicator: Percentage of designated features in Marine Protected Areas in favourable condition ⁹ Department of Agriculture, Food and Rural Affairs
Category	Defra reporting
Description and rationale	<p>In the most recent APR, Defra provide a baseline assessment of the condition of Marine Protected Area (MPA) designated features that are in favourable condition for the year 2022. As a baseline year, no trend is provided; however, we have amended this indicator to use that data source due to a lack of suitable alternative time series. The data are used to assess the EA21 MPA target of at least 70% of MPA features being in a favourable condition and the remaining features being in a recovering condition by 2042. There will not be an update to this metric until the MPA monitoring and assessment strategy is completed, by 2028.</p> <p>Assessing the condition of features designated within MPAs is undertaken by statutory nature conservation bodies (Natural England and the JNCC) using survey data. In the absence of survey data, a vulnerability assessment is performed, which estimates the sensitivity of protected features to human activity occurring within their vicinity. The results will give the likely condition of the feature at the site.</p> <p>We have supplemented this information with contextual information sent to the OEP by the Wildlife and Countryside Link and RSPB. The data are sourced from the UK-level MPA management status questionnaire, collated by JNCC every two years and submitted to OSPAR’s data call to all governments of contracting parties. The most recent version is correct as of 1 October 2023 and was sent to Wildlife and Countryside Link and RSPB by Defra in response to a Freedom of Information request. It is not currently in the public domain; however, it will be published alongside OSPAR’s 2023 report and assessment of the status of the OSPAR network of Marine Protected Areas in 2023, when completed.</p> <p>The data provided are published by OSPAR as a biennial MPA network status assessment, and supporting information, including the UK’s data submission, is published on the OSPAR website. The questionnaire asks contracting parties four questions:</p> <ul style="list-style-type: none"> • Is the MPA management documented? • Are the measures to achieve the Conservation Objectives being implemented? • Is the monitoring in place to assess if measures are working? • Is the MPA moving towards, or has it reached its Conservation Objectives?

Table A.8. Indicator reference table – Condition of Marine Protected Areas (cont.)

EIP goal	Thriving plants and wildlife	
	The questionnaire asks for ratings of ‘Yes’, ‘No’, or ‘Partial’ for each question, for each MPA in the UK network, as well as a confidence rating for each MPA assessment of ‘High’, ‘Moderate’ or ‘Low’. Definitions are provided for each rating.	
Methodology	No adjustments were made to the data. See the government’s APR 2024 for a more detailed description of the methodology. ⁹	
Data		2022
	Percentage of designated MPA features in favourable condition	44%
	Unit: %	
	Trend: N/A	
	Accessed: 20 September 2024	

Clean air

Table A.9. Indicator reference table – UK emissions of five key air pollutants

EIP goal	Clean air
Data source	<p>Emissions of air pollutants in the UK⁴²</p> <p>Department for Environment, Food and Rural Affairs</p>
Category	National statistics
Description and rationale	<p>This indicator tracks the emissions of the five key air pollutants covered by the National Emission Ceilings Regulations 2018: nitrogen oxides (NO_x), sulphur dioxide (SO₂), non-methane volatile organic compounds (NMVOC), fine particulate matter less than 2.5µm in diameter (PM_{2.5}) and ammonia (NH₃).</p> <p>This indicator uses a similar source of data to OIF Indicator A1 ('Emissions for five key air pollutants in England'),¹¹⁹ however, A1 focuses on England. This indicator tracks UK-wide emissions, because while air quality is a devolved matter, the Secretary of State has responsibility for ensuring (subject to certain derogations) that UK emissions do not exceed the commitments specified in the National Emission Ceilings Regulations.</p> <p>Our assessment would not differ significantly if we used England-only emissions, as they show similar trends to UK data, with a correlation coefficient of 0.98 across the five pollutants between 2005 and 2020. Both sets of data are plotted in the main report to provide context.</p>
Methodology	<p>As outlined in the National Emission Ceilings Regulations, emissions reduction commitments are relative to a 2005 baseline. Therefore, emissions are presented in our 2023/2024 progress report as an index relative to 2005 (where emissions in 2005 = 100). This is also for data presentation purposes.</p> <p>Data were extracted from the government's annual 'emissions of air pollutants in the UK' publication. Data for all previous years is extracted from the most recent publication, as emissions can be retrospectively updated due to changes in inventories. For some pollutant emissions, there are multiple datasets comprising different sources which are reported for compliance purposes and trends. We selected the following datasets:</p> <ul style="list-style-type: none"> • NO_x emissions are non-agricultural, as the emission reduction commitments exclude agricultural sources. • NMVOCs emissions are non-agricultural, as the emission reduction commitments exclude agricultural sources. • NH₃ emissions reflect the 'compliance total', rather than the absolute total emissions, as the emissions inventory no longer includes non-manure digestate spreading.

Table A.9. Indicator reference table – UK emissions of five key air pollutants (cont.)

EIP goal	Clean air								
	England-level data, plotted for context in the main report, is extracted from the National Atmospheric Emissions Inventory’s Air Pollutant Inventories for England, Scotland, Wales, and Northern Ireland report. Data are taken from relevant datasheets published alongside the main report. England-level data lags the UK inventory by one year.								
Data	Year	2005	2017	2018	2019	2020	2021	2022	
	NO_x								
	T×10 ⁶	1.696	0.848	0.809	0.756	0.649	0.640	0.619	
	Index	100	50	48	45	38	38	37	
	SO₂								
	T×10 ⁶	0.782	0.187	0.173	0.153	0.129	0.118	0.120	
	Index	100	24	22	20	16	15	15	
	NMVOC								
	T×10 ⁶	1.201	0.707	0.727	0.710	0.680	0.660	0.624	
	Index	100	63	65	63	61	59	56	
	PM_{2.5}								
	T×10 ³	109.48	73.126	73.65	70.22	63.86	66.03	64.89	
	Index	100	67	67	64	58	60	59	
	NH₃								
	T×10 ³	280.48	262.05	258.22	257.25	248.18	253.58	246.14	
	Index	100	93	92	92	88	90	88	
	Unit: tonnes; index (2005 = 100)								
	Trends (2017–2022):								
	NO _x –27.0%								
	SO ₂ –35.9%								
NMVOC –11.8%									
PM _{2.5} +11.3%									
NH ₃ –6.1%									
Accessed: 23 September 2024									

Table A.10. Indicator reference table – Percentage of monitoring stations above 10µg/m³ annual mean PM_{2.5} concentration

EIP goal	Clean air
Data source	UK Air Information Resource Annual and Exceedance Statistics – Automatic Urban and Rural Network (AURN) ⁴³ Department for Environment, Food and Rural Affairs
Category	National statistics
Description and rationale	<p>This indicator was developed to provide an assessment of progress against the EA21 annual mean concentration target for fine particulate matter (PM_{2.5}) in England.</p> <p>The data show the annual mean concentration of PM_{2.5} across AURN monitoring stations in England. OIF Indicator A3 ('Concentrations of fine particulate matter in England')¹²⁰ is an England-wide average concentration, weighted by where the population lives. A3 is therefore unsuitable for monitoring progress towards the annual mean concentration target, as each individual monitoring station must not exceed an annual average concentration of 10µg/m³, as set out in the targets regulations.</p> <p>This indicator was included in our 2021/2022 progress report and has been updated. The APR 2024 published a similar statistic, using the same underlying data, to assess progress towards the EA21 annual mean PM_{2.5} concentration target.</p>
Methodology	<p>No changes were made to the raw data. To calculate the percentage of monitoring stations in exceedance of the target value, we manually filtered the data to remove stations in Scotland, Wales and Northern Ireland. For our 2023/2024 progress report, AURN stations with a data capture of less than 85% were also removed. We then identified the stations with an annual mean PM_{2.5} concentration of more than 10µg/m³ and calculated their proportion relative to the total number of stations in England.</p> <p>For many air pollution indicators, a three-year moving average is applied to correct for the influence of meteorology. We do not apply that for this indicator as the EA21 target on annual mean PM_{2.5} concentrations is assessed in the relevant statutory instrument by a comparison between two individual years.</p>

Table A.10. Indicator reference table – Percentage of monitoring stations above 10µg/m³ annual mean PM_{2.5} concentration (cont.)

EIP goal	Clean air							
Data	Year	2017	2018	2019	2020	2021	2022	2023
	Stations >10µg/m³	20	19	24	3	5	6	1
	Total stations in England (>85% data capture)	48	50	58	58	52	55	74
	Percentage (%)	42	38	41	5	10	11	1
Unit: number of stations / percentage of stations								
Trend: –96.4% (2017–2022)								
Accessed: 23 September 2024								

Table A.11. Indicator reference table – Incidents of exceedances against Air Quality Standards Regulations in England

EIP goal	Clean air
Data source	Air pollution in the UK reports ⁴⁴ Department for Environment, Food and Rural Affairs
Category	UK government annual compliance reporting informed by national statistics
Description and rationale	<p>This indicator was developed to capture a high-level trend in ambient air quality across a broad range of pollutants and standards across England. The indicator covers the pollutants and standards summarised in the table below, which are outlined in the Air Quality Standards Regulations 2010.</p> <p>This indicator uses Defra’s annual ‘Air pollution in the UK’ reports to track exceedances against the following standards for each pollutant and zone; as a result, the count of exceedances can exceed the number of zones. This metric considers all limit values, which set standards that must not be exceeded, as well as all target values and objectives set for human and environmental health, achievement of which is not legally mandatory, but all necessary measures must be implemented, not entailing disproportionate cost:</p>

Table A.11. Indicator reference table – Incidents of exceedances against Air Quality Standards Regulations in England (cont.)

EIP goal	Clean air
<p>Description and rationale</p>	<ul style="list-style-type: none"> • nitrogen dioxide: one-hour limit value; annual mean limit value; annual mean limit value set for protection of vegetation • PM₁₀: daily mean limit value; annual mean limit value • PM_{2.5}: stage 2 annual mean limit value • ozone: eight-hour mean long-term objective set for the protection of human health; long-term objective set for the protection of vegetation • sulphur dioxide: one-hour mean limit value; 24-hour mean limit value; annual mean and winter mean critical levels set for the protection of ecosystems • target values for arsenic, cadmium, nickel, benzo[a]pyrene • limit value for carbon monoxide, benzene, lead. <p>Because multiple pollutants are considered for each zone, some of which have multiple target values, limit values, or long-term objectives, the count of exceedances can far exceed the total number of zones.</p> <p>This indicator was included in our 2021/2022 progress report and has been updated.</p>
<p>Methodology</p>	<p>Data were extracted from the compliance summaries of the government’s annual ‘Air pollution in the UK’ reports to collate a dataset of exceedances over time. The data from 43 UK zones were filtered to account for the 31 zones in England. The number of exceedances against all standards in the regulations were summed across pollutants and zones, for each reporting year. These standards vary by pollutant, in terms of the time-averaging period, exceedance thresholds and concentration values. By calculating a total value, we make an overall assessment of exceedances of standards; however, this indicator does not allow for the absolute concentrations of individual pollutants to be tracked over time.</p> <p>For our 2023/2024 progress report, the total exceedance count metric is calculated as a three-year moving average to address variability due to the influence of meteorology on pollutants such as ozone and PM_{2.5}. Therefore, despite having another year of data relative to our 2022/2023 progress report, the trend reported remains as 2017–2022. However, we plot all data in a figure in the 2023/2024 progress report, including for individual pollutant exceedance counts that are non-zero in England (ozone, nitrogen dioxide, nickel), for context.</p>

Table A.11. Indicator reference table – Incidents of exceedances against Air Quality Standards Regulations in England (cont.)

EIP goal	Clean air						
Data	Year	2018	2019	2020	2021	2022	2023
	NO ₂	28	25	4	8	9	9
	PM ₁₀	0	0	0	0	0	0
	PM _{2.5}	0	0	0	0	0	0
	O ₃	62	37	45	32	42	57
	As	0	0	0	0	0	0
	Cd	0	0	0	0	0	0
	Ni	2	2	2	2	2	2
	B[a]P	1	1	1	0	0	0
	SO ₂	0	0	0	0	0	0
	CO	0	0	0	0	0	0
	Benzene	0	0	0	0	0	0
	Pb	0	0	0	0	0	0
	Total	93	65	52	42	53	68
Unit: exceedance count							
Trend: -24.5% (2017–2022)							
Accessed: 23 September 2024							

Table A.12. Indicator reference table – PM_{2.5} Population exposure indicator

EIP goal	Clean air
Data source	EIP 2023/2024 Annual Progress Report / UK AIR PM _{2.5} Targets (PERT and AMCT) assessment ⁴⁵ Department for Environment, Food and Rural Affairs
Category	Official statistics
Description and rationale	These data present the annual population-weighted mean concentration of PM _{2.5} in the air and are used as a measure of the impact of PM _{2.5} on the health of the total population. We use this indicator to assess progress towards the EA21 PM _{2.5} population exposure reduction target.
Methodology	For our 2022/2023 progress report, we used OIF Indicator A3 ('Concentrations of fine particulate matter (PM _{2.5}) in the air') as the data source for this indicator. For our 2023/2024 progress report, this has been updated after publication of the 'population exposure indicator', included in APR 2024. No adjustments were made to the source data. This indicator calculates a three-year moving average, as the EA21 population exposure reduction target is based on a three-year average in the statutory instrument. A full description of the methodology is provided on the UK AIR website.

Table A.12. Indicator reference table – PM_{2.5} Population exposure indicator (cont.)

EIP goal	Clean air						
Data	Year	2018	2019	2020	2021	2022	2023
	Population Exposure Indicator	10.09	10.02	9.41	8.68	8.13	7.88
Unit: µg/m ³							
Trend: -21.9% (2018–2023)							
Accessed: 20 September 2024							

Clean and plentiful water

Table A.13. Indicator reference table – Pollution incidents to water (Environment Agency categories 1–3)

EIP goal	Clean and plentiful water
Data source	Outcome Indicator Framework B2: ‘Serious pollution incidents to water’ ¹²¹ and Environment Agency data on regulated businesses in England ⁴⁹ Environment Agency
Category	Modified OIF indicator, based on government research and analysis
Description and rationale	This indicator is based on the OIF Indicator B2 (‘Serious pollution incidents to water’) and is used to track pollution incidents to the water environment from all sectors. Our 2021/2022 progress report iteration of this indicator focused on serious incidents (Category 1 and 2) from water and sewerage companies in England only. ¹²² From our 2022/2023 progress report onwards, we have expanded the scope to account for Category 1 to 3 incidents from all sectors.
Methodology	These data are taken from the annually reported ‘data on regulated business in England’ pollution incidents dataset. The EA data have four categories for pollution incidents: 1: major; 2: significant; 3: minor; 4: no impact. We disregard category 4 incidents and include category 1 to 3 to compile a time series. Inclusion of category 3 is to evaluate minor incidents that can aggregate and apply significant pressure on the environment. They also provide opportunity to understand the background level of incidents as an early warning of possible, more significant incidents. This therefore represents a deviation from OIF Indicator B2, which only accounts for categories 1 and 2.

Table A.13. Indicator reference table – Pollution incidents to water (Environment Agency categories 1–3) (cont.)

EIP goal	Clean and plentiful water						
Data	Year	2018	2019	2020	2021	2022	2023
	Category 1 (major)	69	41	47	47	43	56
	Category 2 (significant)	245	225	270	282	264	323
	Category 3 (minor)	49	38	50	41	39	38
	Total	363	304	367	370	346	417
	Unit: number of incidents						
	Trend: +14.9% (2018–2023)						
	Accessed: 23 September 2024						

Table A.14. Indicator reference table – Water company security of supply performance

EIP goal	Clean and plentiful water
Data source	Water and sewerage companies in England: environmental performance assessment (EPA) reports ⁴⁹ Environment Agency
Category	OIF indicator, based on government research and analysis
Description and rationale	<p>This indicator is based on annual EPA reports for water and sewerage companies and reflects the same data source as that for OIF Indicator F3 ('Disruption or unwanted impacts caused by drought').¹²³</p> <p>For EPA reports prior to 2021, water and sewerage companies reported on the security of water supply using the Security of Supply Index (SoSI) for water availability. This changed to the Supply Demand Balance Index (SDBI) metric for reporting on years 2021 to 2023. The two indices are not comparable, and no backdated assessment has been developed by the data owner.</p> <p>This indicator was included in our 2021/2022 progress report, where we used a SoSI trend for assessments.</p> <p>For our 2022/2023 progress report, we had only two datapoints for the most up-to-date SDBI indicator, which are from consecutive years (2021 and 2022). We did not assess a trend as we deem two consecutive years of data as insufficient to assess a representative change over time. For our 2023/2024 progress report, we have assessed the three available datapoints.</p>
Methodology	The SDBI rating for each reporting year is taken from the environmental performance assessment summary graphic on the linked webpage. This represents a sector-level score, averaged across the SDBI calculated for each of the nine water and sewerage companies operating in England.

Table A.14. Indicator reference table – Water company security of supply performance (cont.)

EIP goal	Clean and plentiful water						
Data	Year	2018	2019	2020	2021	2022	2023
	SoSI	99.6	99.9	99.8	–	–	–
	SDBI	–	–	–	99.6	98.4	100
Unit: indices (/100)							
Trend: +0.4% (2021–2023)							
Accessed: 23 September 2024							

Table A.15. Indicator reference table – Non-household water demand

EIP goal	Clean and plentiful water						
Data source	Environment Agency						
Category	Data provided by the Environment Agency						
Description and rationale	<p>This indicator tracks non-household water usage by businesses, charities and public sector organisations.</p> <p>It complements our indicators ‘Per capita potable water consumption in England’ and ‘Water leakage in England (from water company potable water supply)’ in assessing the utilisation of water in the potable water supply system in England and therefore the potential impacts on water resources.</p>						
Methodology	<p>The data have been provided by the Environment Agency and are currently unpublished. It is based on data submitted by water companies to the Environment Agency through the annual review of the Water Resources Management Plans.</p> <p>The Environment Agency notes there may be discrepancies with other data sources, particularly for historic years. Individual water company non-household consumption figures will be different, as this is a national average considering non-household consumption across water companies in England. No adjustments were made to the data.</p>						
Data	Year	2017–2018	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023
	Non-household water demand	2813.20	2887.04	2793.96	2319.67	2540.57	2738.82
Unit: million litres per day (ML/d)							
Trend: –2.6% (2017/2018–2022/2023)							
Accessed: 23 September 2024							

Table A.16. Indicator reference table – Soil nutrient balance

EIP goal	Clean and plentiful water
Data source	UK and England soil nutrient balances ⁵⁵ Department for Environment, Food and Rural Affairs
Category	UK government research and analysis national statistics
Description and rationale	<p>This indicator is based on Defra monitoring of soil nutrient balances for nitrogen and phosphorus.</p> <p>Soil nutrient balances provide a method for estimating the annual nutrient loadings of nitrogen and phosphorus to agricultural soils. They give an indication of the potential risk associated with losses of nutrients to the environment – losses which can impact on air and water quality and on climate change.</p> <p>The nutrient balances are used as a high-level indicator of the pressure farming exerts on the environment and of how that pressure is changing over time. The balances do not estimate the actual losses of nutrients to the environment, but significant nutrient surpluses are linked with losses to the environment.</p> <p>Nutrient balances are of direct relevance to policies relating to agriculture and the environment, including climate change, air quality, water quality, and habitats and biodiversity.</p>
Methodology	<p>No changes were made to the raw data.</p> <p>The data were taken directly from the soil nutrient balance data and normalised to create an index. Although data are available from 1990, we use a baseline year of 2010, as this represents the first year following a change in methodology, to collecting data for commercial farms only, and so provides a consistent assessment.</p> <p>We normalise the data to 2010 (2010 = 1.0) and, in line with our other indicators, use the median value for both substances in the assessment of change.</p>

Table A.16. Indicator reference table – Soil nutrient balance (cont.)

EIP goal		Clean and plentiful water													
Data		Year	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021	2022
	Nitrogen		720	684	698	695	653	627	672	660	675	608	698	703	604
	Phosphorus		34	32	31	33	17	15	27	23	29	15	41	28	4
	Normalised soil nitrogen balance		1.00	0.95	0.97	0.97	0.91	0.87	0.93	0.92	0.94	0.84	0.97	0.98	0.84
	Normalised soil phosphorus balance		1.00	0.94	0.91	0.97	0.50	0.44	0.79	0.68	0.85	0.44	1.21	0.82	0.12
	Median		1.00	0.95	0.94	0.97	0.70	0.66	0.86	0.80	0.90	0.64	1.09	0.90	0.48

Unit: index (2010 = 1.0)

Trend: -40.0% (2017–2022)

Accessed: 23 September 2024

Managing exposure to chemicals and pesticides

Table A.17. Indicator reference table – UK Pesticides Load Indicator

EIP goal	Managing exposure to chemicals and pesticides
Data source	<p>Pesticides Load Indicator for the UK: Phase 4 Report PC0116¹²⁴</p> <p>Department for Environment, Food and Rural Affairs; University of Hertfordshire</p>
Category	UK government research and analysis
Description and rationale	<p>The UK Pesticides Load Indicator (PLI) is a multi-component indicator, which combines data on the usage of different pesticide active substances in UK agriculture with information on their propensity to persist, bioaccumulate, or be lost via surface run-off or leaching, as well as information on their relative toxicity to wildlife.</p> <p>Data are derived from the UK Pesticide Usage Survey and the Pesticide Properties Database. The PLI supplements traditional metrics such as the ‘total mass of pesticides applied’ and the ‘total area treated’ by considering the changing mixture of different substances applied through time and the effect of their varying chemical or biochemical properties.</p> <p>The PLI consists of four environmental fate and 16 ecotoxicity metrics. It does not quantify harm or reflect environmental outcomes, as it does not account for any mitigation practices or calculate exposure of real wildlife populations. Instead, the aim of the PLI is to illustrate relative trends in the potential pressure on the environment arising from the use of pesticides, to help inform UK policy decisions and the assessment of policy intervention.</p>
Methodology	<p>This indicator is taken directly from the PLI dashboard.</p> <p>On the advice of Defra, we do not undertake trend assessments, due to the illustrative nature of the indices.</p> <p>For further information on the methodology, consult the Defra PLI report.¹²⁴</p>
Data	<p>Unit: percentage change</p> <p>Trend: not assessed</p> <p>Accessed: 23 September 2024</p>

Maximise our resources, minimise our waste

Table A.18. Indicator reference table – Amount of raw material consumed

EIP goal	Maximise our resources, minimise our waste						
Data source	<p>Outcome Indicator Framework J2: ‘Raw material consumption’⁶³ and England’s raw material footprint,¹²⁵ Department for Environment, Food and Rural Affairs</p> <p>England population estimates time series data,⁶⁵ Office for National Statistics</p>						
Category	Modified OIF indicator, based on official statistics						
Description and rationale	<p>This indicator provides a measure of England’s material footprint, by tracking primary raw material consumption/extraction that is attributable to final domestic demand for goods and services from residents in England. It is used as a proxy for the scale of environmental impact from resource use.</p> <p>This indicator is identical to OIF Indicator J2 (‘Raw material consumption’); however, we have updated it in line with the most recent statistical release, which was published after the 2024 annual OIF update. As a result, the data presented differ slightly from that presented in J2, as values for previous years were updated in the most recent release.</p>						
Methodology	<p>Data for this indicator are extracted from Figure 1 of the England’s raw material footprint publication, which shows trends in total annual raw material consumption in tonnes.</p> <p>We convert to tonnes per capita following the methodology used for OIF Indicator J2 by dividing the consumption of metal ores, non-metal mineral materials and biomass, for each given year, by the population of England, as calculated by the Office for National Statistics.⁶⁵ We also follow the OIF Indicator J2 methodology in excluding fossil fuel consumption from the dataset. The OIF also utilises smoothed data; we do not, as discussed in Chapter 2.</p>						
Data	Year	2016	2017	2018	2019	2020	2021
	Metal ores	0.9224	0.9349	1.0014	1.0137	0.8877	1.0609
	Non-metallic minerals	6.5293	6.5445	8.5472	8.2874	7.6519	8.8056
	Biomass	4.2685	4.0993	4.1842	4.3215	3.8526	4.4028
	Total	11.7202	11.5787	13.7328	13.6226	12.3921	14.2693
	Unit: tonnes per capita (excluding fossil fuels)						
	Trend: +21.7% (2016–2021)						
	Accessed: 24 September 2024						

Table A.19. Indicator reference table – Hazardous waste disposal

EIP goal	Maximise our resources, minimise our waste						
Data source	Waste Data Interrogator ⁶⁶ Environment Agency						
Category	UK government research and analysis						
Description and rationale	<p>For 2023/2024 we have moved this indicator from ‘Managing exposure to chemicals and pesticides’ goal to ‘Maximise our resources, minimise our waste’ goal.</p> <p>We use this indicator to track trends in the volume of hazardous waste sent for disposal, and is used as a proxy for hazardous chemicals in the economy. It ensures we consider the latter stages of chemicals’ life cycles in our assessment.</p> <p>The waste interrogator data show the quantities and types of waste managed in England within the regulatory framework. These data are reported to the Environment Agency for compliance monitoring purposes.</p>						
Methodology	Data for this indicator are taken from the hazardous waste trends tab of the national-level waste management in England data tables. We use the total tonnage for each year of the hazardous waste deposit trends defined by disposal and recovery options.						
Data	Year	2017	2018	2019	2020	2021	2022
	Value	5.301	5.516	5.989	5.384	5.861	6.019
	Unit: million tonnes						
	Trend: +13.6% (2017–2022)						
	Accessed: 29 September 2024						

Using resources from nature sustainably

Table A.20. Indicator reference table – Percentage of woodland that is sustainably managed

EIP goal	Using resources from nature sustainably
Data source	Forestry Commission key performance indicators: Percentage of woodland that is sustainably managed ¹⁶ Forestry Commission
Category	Official statistics
Description and rationale	This indicator includes all sustainably managed woodland in England, including the nation’s forests managed by Forestry England.

Table A.20. Indicator reference table – Percentage of woodland that is sustainably managed (cont.)

EIP goal	Using resources from nature sustainably														
Description and rationale	<p>‘Sustainably managed’ is defined by the Forestry Commission as woodland managed to the UK Forestry Standard,¹²⁶ that has a Woodland Management Plan, or for which the Forestry Commission have provided a grant or felling licence within the last 15 years.</p> <p>It is recognised that other woodland might be considered as managed as well; however, the Forestry Commission does not have the data to include this.</p>														
Methodology	Data for this indicator are based on the metric ‘percentage of sustainably managed woodland in England’, taken from the Forestry Commission’s annual key performance indicators publication. There are multiple data points recorded throughout each year. For simplicity, and because the data do not fluctuate significantly between measurements within a given year, we use the value as of 31 March of each reporting year.														
Data	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #003366; color: white;">Year</th> <th style="background-color: #003366; color: white;">2019</th> <th style="background-color: #003366; color: white;">2020</th> <th style="background-color: #003366; color: white;">2021</th> <th style="background-color: #003366; color: white;">2022</th> <th style="background-color: #003366; color: white;">2023</th> <th style="background-color: #003366; color: white;">2024</th> </tr> </thead> <tbody> <tr> <td style="background-color: #003366; color: white;">Percentage (%)</td> <td style="text-align: center;">59</td> <td style="text-align: center;">59</td> <td style="text-align: center;">59</td> <td style="text-align: center;">58</td> <td style="text-align: center;">58</td> <td style="text-align: center;">57</td> </tr> </tbody> </table> <p>Unit: percentage of woodland</p> <p>Trend: -3.4% (2019–2024)</p> <p>Accessed: 30 September 2024</p>	Year	2019	2020	2021	2022	2023	2024	Percentage (%)	59	59	59	58	58	57
Year	2019	2020	2021	2022	2023	2024									
Percentage (%)	59	59	59	58	58	57									

Mitigating and adapting to climate change

Table A.21. Indicator reference table – UK GHG emissions

EIP goal	Mitigating and adapting to climate change
Data source	<p>UK greenhouse gas emissions national statistics¹²⁷</p> <p>Department for Energy Security and Net Zero, Department for Business, Energy and Industrial Strategy</p>
Category	National statistics
Description and rationale	<p>This indicator was developed to assess progress against the government’s target of meeting Net Zero greenhouse gas emissions by 2050 relative to a 1990 baseline and broadly follows the Climate Change Committee’s methodology applied in their annual UK mitigation progress reports.</p> <p>Data are published annually. The most recent data point is usually based on a provisional statistical release. We use the reported total emissions, which cover seven greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride.</p>

Table A.21. Indicator reference table – UK GHG emissions (cont.)

EIP goal	Mitigating and adapting to climate change						
Description and rationale	Data are reported at a UK level, as the 2050 Net Zero emissions target is UK-wide, and the Secretary of State has ultimate responsibility for ensuring it is met under the Climate Change Act 2008.						
Methodology	<p>Data are taken from the most recent statistical release, as changes to greenhouse gas inventories can result in retrospective adjustments to emissions levels.</p> <p>We use the total annual territorial greenhouse gas emissions and sum this with the emissions from international aviation and shipping to provide a total.</p>						
Data	Year	2018	2019	2020	2021	2022	2023
	Total UK territorial emissions	462.3	447.9	404.0	421.1	406.2	384.2
	UK international aviation and shipping emissions	44.5	44.1	20.9	20.2	34.8	39.2
	Total emissions	506.8	492.0	424.9	441.3	440.9	423.3
	Unit: million tonnes carbon dioxide equivalent (MtCO ₂ e)						
	Trend: -16.5% (2018–2023)						
	Accessed: 20 September 2024						

Table A.22. Indicator reference table – Consumption-based GHG emissions in England

EIP goal	Mitigating and adapting to climate change						
Data source	<p>Outcome Indicator Framework J1: ‘Consumption based greenhouse gas emissions in England’⁷⁶ and Carbon footprint for the UK and England⁷⁷</p> <p>Department for Environment, Food and Rural Affairs</p>						
Category	Modified OIF indicator, official statistics						
Description and rationale	<p>This indicator tracks annual emissions relating to consumption in England. It is used to show how consumer preferences and behaviour are impacting on the overall national carbon footprint.</p> <p>‘Consumption emissions’ are estimates relating to the emissions ‘produced’ within a country’s territory or economic sphere. The total carbon footprint covers the seven main greenhouse gases: carbon dioxide, methane, nitrous oxide, hydroflourocarbons, perfluorocarbons, nitrogen trifluoride and sulphur hexafluoride.</p> <p>The data differs from OIF Indicator J1 as we have used an updated version of the source data, which was released after the annual OIF update in 2023. All previous years of data were extracted, as each year the estimates relating to previous years are subject to revision, because of revisions to the underlying data or methodological improvements.</p>						

Table A.22. Indicator reference table – Consumption-based GHG emissions in England (cont.)

EIP goal	Mitigating and adapting to climate change						
Methodology	Household heating emissions and household transport emissions are summed to provide the ‘direct household emissions of greenhouse gases’, following the OIF Indicator J1 methodology. This is then summed with greenhouse gas emissions embedded in imported goods and services and those from England-produced goods and services to provide a total.						
Data	Year	2016	2017	2018	2019	2020	2021
	Direct household	118	117	120	116	103	111
	Embedded in imported goods and services	270	271	286	284	263	317
	Produced goods and services	198	178	180	176	149	158
	Total	586	566	586	576	515	586
Unit: million tonnes carbon dioxide equivalent (MtCO ₂ e)							
Trend: 0.0% (2016–2021)							
Accessed: 20 September 2024							

Reduced risk of harm from environmental hazards

Table A.23. Indicator reference table – Properties at high risk of flooding

EIP goal	Reduced risk of harm from environmental hazards
Data source	Flood and coastal erosion risk management annual report ⁸¹ Environment Agency
Category	Statutory reporting
Description and rationale	<p>This indicator tracks the total number of properties at high risk of flooding in England. The data is published in annual reports by the Environment Agency under the Flood and Water Management Act 2010. The reports include an assessment of the number of properties at four degrees of risk (high, medium, low, very low) from multiple types of flooding (rivers and the sea, surface water).</p> <p>A similar data source will be used for the OIF Indicator F1 (‘Disruption or unwanted impacts from flooding or coastal erosion’),¹²⁸ however, it is still in development.</p>

Table A.23. Indicator reference table – Properties at high risk of flooding (cont.)

EIP goal	Reduced risk of harm from environmental hazards																					
Methodology	<p>Data for this indicator were extracted from past reports for each individual financial year to create a time series. To calculate the total number of properties at high risk of flooding, we sum the total for rivers and the sea, with the total at high risk from surface water flooding. This indicator is not limited to residential properties.</p> <p>In our 2022/2023 progress report, we reported data for 2015/2016 to 2021/2022. The Environment Agency introduced a new methodology which considers the risk to total properties rather than residential properties only, as previously presented. As a result, there is an approximate 10% increase to the data and so the data available for 2022/2023 and 2023/2024 cannot be compared directly to prior years.</p> <p>We have not therefore assessed a trend. This is because we deem two consecutive years of data as insufficient to assess a representative change over time. However, we do refer to the data in the narrative to provide context.</p>																					
Data	<table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #003366; color: white;">Year</th> <th style="background-color: #003366; color: white;">2018–2019</th> <th style="background-color: #003366; color: white;">2019–2020</th> <th style="background-color: #003366; color: white;">2020–2021</th> <th style="background-color: #003366; color: white;">2021–2022</th> <th style="background-color: #003366; color: white;">2022–2023</th> <th style="background-color: #003366; color: white;">2023–2024</th> </tr> </thead> <tbody> <tr> <td style="background-color: #003366; color: white;">Count (old methodology)</td> <td style="text-align: center;">324000</td> <td style="text-align: center;">326000</td> <td style="text-align: center;">326000</td> <td style="text-align: center;">326000</td> <td style="text-align: center;">–</td> <td style="text-align: center;">–</td> </tr> <tr> <td style="background-color: #003366; color: white;">Count (new methodology)</td> <td style="text-align: center;">–</td> <td style="text-align: center;">–</td> <td style="text-align: center;">–</td> <td style="text-align: center;">–</td> <td style="text-align: center;">368800</td> <td style="text-align: center;">344100</td> </tr> </tbody> </table> <p>Unit: total number of properties at high risk of flooding</p> <p>Trend: not assessed</p> <p>Accessed: 20 September 2024</p>	Year	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	2023–2024	Count (old methodology)	324000	326000	326000	326000	–	–	Count (new methodology)	–	–	–	–	368800	344100
Year	2018–2019	2019–2020	2020–2021	2021–2022	2022–2023	2023–2024																
Count (old methodology)	324000	326000	326000	326000	–	–																
Count (new methodology)	–	–	–	–	368800	344100																

Table A.24. Indicator reference table – Number of wildfire incidents

EIP goal	Reduced risk of harm from environmental hazards
Data source	<p>Forestry Commission wildfire statistics for England: report to 2020/2021⁸²</p> <p>Forestry Commission</p>
Category	UK government research and analysis
Description and rationale	<p>These data are published to show the location and nature of all wildfire incidents in England attended by the fire and rescue services over the period 2009–2010 to 2020–2021. The statistics reported are outside the scope of official statistics but have been developed under the UKSA Code of Practice for Statistics.</p> <p>This indicator was developed to track wildfire frequency, which represents a significant increasing threat to nature and commercial forestry and agriculture.⁸⁰ Wildfire incidents and area burnt are reported for each financial year.</p>

Table A.24. Indicator reference table – Number of wildfire incidents (cont.)

EIP goal	Reduced risk of harm from environmental hazards																																																																												
Description and rationale	<p>This indicator was used in our 2021/2022 progress report, where we used fire service national statistics as the basis for the indicator ‘Fire and rescue incident statistics, England’,¹²⁹ year ending March 2023. This showed the number of all fires affecting grassland, woodland and crops.</p> <p>We updated the source data to the Forestry Commission publication for our 2022/2023 progress report and have used the same source for our 2023/2024 progress report, which disaggregates data by a greater number of land cover classes, consistent with UKCEH land-use classes and is specific to wildfires.</p>																																																																												
Methodology	<p>Data on wildfire incidents are disaggregated by 24 land cover classes. We regrouped the data for clarity and to align with the indicator used by the Climate Change Committee (CCC) in their biennial assessments of climate adaptation progress.</p> <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="background-color: #003366; color: white;">CCC/OEP categories</th> <th style="background-color: #003366; color: white;">Forestry Commission land cover class</th> </tr> </thead> <tbody> <tr> <td>Broadleaf woodland</td> <td>Broadleaf woodland, Mixed – predominantly broadleaf</td> </tr> <tr> <td>Conifer woodland</td> <td>Conifer woodland, Mixed – predominantly conifer</td> </tr> <tr> <td>Other woodland</td> <td>Coppice, Coppice with standards, Young trees, Low density, Assumed woodland, Ground prepared for planting, Shrub land, Felled, Failed, Windblown, Uncertain</td> </tr> <tr> <td>Arable</td> <td>Arable</td> </tr> <tr> <td>Improved grassland</td> <td>Improved grassland</td> </tr> <tr> <td>Semi-natural grassland</td> <td>Semi-natural grassland</td> </tr> <tr> <td>Mountain, heath and bog</td> <td>Mountain, heath and bog</td> </tr> <tr> <td>Other non-woodland</td> <td>Woodland (other verified), Non-woodland (as not verified), Other, No classification</td> </tr> </tbody> </table>							CCC/OEP categories	Forestry Commission land cover class	Broadleaf woodland	Broadleaf woodland, Mixed – predominantly broadleaf	Conifer woodland	Conifer woodland, Mixed – predominantly conifer	Other woodland	Coppice, Coppice with standards, Young trees, Low density, Assumed woodland, Ground prepared for planting, Shrub land, Felled, Failed, Windblown, Uncertain	Arable	Arable	Improved grassland	Improved grassland	Semi-natural grassland	Semi-natural grassland	Mountain, heath and bog	Mountain, heath and bog	Other non-woodland	Woodland (other verified), Non-woodland (as not verified), Other, No classification																																																				
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Enhancing beauty, heritage and engagement with the natural environment

Table A.25. Indicator reference table – Visits to green and natural spaces by adults

EIP goal	Enhancing beauty, heritage and engagement with the natural environment
Data source	<p>Outcome Indicator Framework G4b: ‘Frequency of visits to green and natural spaces in the past 12 months by adults in England, survey years 2020/2021 to 2022/2023’⁸⁸</p> <p>Department for Environment, Food and Rural Affairs</p> <p>People and Nature Survey for England¹³⁰</p> <p>Natural England</p>
Category	Official statistics
Description and rationale	<p>This indicator was developed by the government to assess changes in the attitudes and behaviours of children and adults relating to the environment. Spending time in the natural environment is important for both human health and wellbeing and increasing pro-environmental behaviours to support nature recovery.</p> <p>This indicator complements the other indicators used in our 2022/2023 progress report which utilise the People and Nature Survey for England (PANS) data. PANS is one of the main sources of data and statistics about how people in England experience and think about the environment. It has been collecting data monthly since April 2020.</p> <p>This indicator and ‘Pro-environmental behaviours of adults’ are presented as datasheets, as we utilise more recent data from PANS which are not presented by the OIF. The indicators ‘Frequency of time spent outside in the last week by children during school term’ and ‘Frequency of time spent outside in the last week by children during school holiday’ use data directly from the OIF and so do not have a datasheet.</p> <p>For our 2022/2023 progress report, we utilised data from the OIF, which included PANS and its predecessor, the Monitor of Engagement with the Natural Environment survey.¹³¹ Following feedback from Natural England, we have amended our approach to this indicator to present data from PANS alone. For clarity we have also renamed the indicator to reflect the change and to improve transparency of the source data, which reflects that of the OIF indicator.</p>

Table A.25. Indicator reference table – Visits to green and natural spaces by adults (cont.)

EIP goal	Enhancing beauty, heritage and engagement with the natural environment				
Methodology	<p>Data for the Adults' PANS are published after the annual update of the OIF Indicator G4b, therefore allowing additional data to be added to our indicator.</p> <p>Data for this indicator are extracted from PANS: data tables and publications from the adults' survey year are also presented in PANS alongside a full description of the methodology.¹³⁰</p> <p>No adjustments were made to the data.</p>				
Data	Year	2020/2021	2021/2022	2022/2023	2023/2024
	At least once per week	71.266	69.413	69.161	70.023
	Once or twice a month	11.073	11.439	13.274	13.307
	Less than once a month	13.632	13.971	14.020	13.781
	Never	4.018	5.169	3.518	2.862
	Unit: weighted percentage				
	Trend: adult: -28.8% (2020/2021–2023/2024)				
	Accessed: 2 October 2024				

Table A.26. Indicator reference table – Percentage of the total population in England living within 15 minutes' walk of green space, as of 2023

EIP goal	Enhancing beauty, heritage and engagement with the natural environment
Data source	Access to Green Space in England ⁸⁹ Department for Environment, Food and Rural Affairs
Category	Official statistics in development
Description and rationale	This indicator was developed by the government to assess access to green space in England. It uses three scenarios to describe how many households live within a 15-minute walk of green space. The scenarios vary in the type of green space and rights of way that are included, which has a large impact on the estimation of the number of households with access.
Methodology	Data for this indicator is extracted from Figure 1 of the Access to green space in England publication, which also presents a full description of the methodology. ⁸⁹ No adjustments were made to the data.

Table A.26. Indicator reference table – Percentage of the total population in England living within 15 minutes’ walk of green space, as of 2023 (cont.)

EIP goal	Enhancing beauty, heritage and engagement with the natural environment	
Data	Year	2023
	All green space	78
	All green space with rights of way	91
	Doorstep standard	15
	Local standard	12
	Neighbourhood standard	53
	Combined standard	8
	Partial-combined standard	23
Unit: percentage of households		
Trend: N/A		
Accessed: 20 September 2024		

Table A.27. Indicator reference table – Pro-environmental behaviours of adults/of children

EIP goal	Enhancing beauty, heritage and engagement with the natural environment	
Data source	<p>Outcome Indicator Framework G6b: ‘Adult’s pro-environmental behaviour score as an index from 0 to 100, England’⁹⁰</p> <p>Outcome Indicator Framework G6d: ‘Children’s pro-environmental behaviour score as an index from 0 to 100, England’⁹⁰</p> <p>Department for Environment, Food and Rural Affairs</p> <p>People and Nature Survey for England¹³⁰</p> <p>Natural England</p>	
Category	Official statistics	
Description and rationale	<p>This indicator was developed by the government to assess changes in the attitudes and behaviours of children and adults relating to the environment.</p> <p>This indicator and ‘Visits to green and natural spaces by adults’ are presented as datasheets, as we utilise more recent data from PANS which is not presented by the OIF. The indicators ‘Frequency of time spent outside in the last week by children during school term’ and ‘Frequency of time spent outside in the last week by children during school holiday’ use data directly from the OIF and so do not have a datasheet.</p>	

Table A.27. Indicator reference table – Pro-environmental behaviours of adults/of children (cont.)

EIP goal	Enhancing beauty, heritage and engagement with the natural environment																		
Description and rationale	<p>The Adults' PANS is one of the main sources of data and statistics about how people in England experience and think about the environment. It has been collecting data monthly since April 2020.</p> <p>The Children's People and Nature Survey (C-PANS) provides information on how children and young people experience and think about the natural environment. It is run twice each year, once in term time and once in holiday time.</p>																		
Methodology	<p>Data for the Adults' PANS for England are published after the annual update of the OIF Indicator G6b, therefore allowing additional data to be added to our indicator.</p> <p>Data for the Children's PANS is published on a different frequency from that for the Adults' PANS and were not available prior to publication. They therefore reflect the data shown in the OIF Indicator G6d: 'Children's pro-environmental behaviour score as an index from 0 to 100, England'.</p> <p>Data for this indicator are extracted from the PANS for England: data tables and publications from the adults' survey year are also presented in PANS alongside a full description of the methodology.¹³⁰</p> <p>No adjustments were made to the data.</p>																		
Data	<table border="1"> <thead> <tr> <th>Year</th> <th>2020/2021</th> <th>2021/2022</th> <th>2022/2023</th> <th>2023/2024</th> </tr> </thead> <tbody> <tr> <td>Adults</td> <td>49.72</td> <td>49.23</td> <td>50.09</td> <td>50.73</td> </tr> <tr> <td>Children</td> <td>42.82</td> <td>45.28</td> <td>41.05</td> <td>–</td> </tr> </tbody> </table>	Year	2020/2021	2021/2022	2022/2023	2023/2024	Adults	49.72	49.23	50.09	50.73	Children	42.82	45.28	41.05	–			
Year	2020/2021	2021/2022	2022/2023	2023/2024															
Adults	49.72	49.23	50.09	50.73															
Children	42.82	45.28	41.05	–															
	<p>Unit: index (0 to 100)</p> <p>Trend: adult: +2.0% (2020/2021–2023/2024) children: -4.1% (2020/2021–2022/2023)</p> <p>Accessed: 2 October 2024</p>																		

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