Methodological Statement

Progress in improving the natural environment in England 2022/2023

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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Setting the scene

Chapter 1 – Introduction

1.1 Purpose of this document

In line with our commitment to transparency and accessibility we have developed this Methodological Statement to accompany our report 'Progress in improving the natural environment in England 2022/2023'.

This Methodological Statement provides further information on our assessment approach, including the data sources we have used, our analytical methods and the stakeholder engagement we have undertaken. We identify constraints upon our analyses and those areas that will be developed in future. Where the indicators we have used differ in their substance from those in the Outcome Indicator Framework (OIF),[1] we provide meta-data in the form of indicator reference tables (Annex 1).

1.2 Development of our assessment methodology

Our overall approach has evolved to provide an integrated assessment within and across environmental domains. This approach integrates and further develops Chapters 2 and 3 of our 2021/2022 progress report.[2]

In **Progress and prospects**, we provide an integrated assessment of each Environmental Improvement Plan 2023 (EIP23) goal.[3] We respond to government's Annual Progress Report 2023 (APR 2023)[4] by assessing environmental trends, actions taken during the annual reporting period, and the progress made towards individual targets. For each goal, we then assess the overall prospects of meeting ambitions, targets and commitments, consider how progress could be improved and provide recommendations on how this could be achieved. In addition, we present a baseline for the Environment Act 2021 (EA21) Targets[5] set in statute in January 2023 and some initial analysis of selected EIP23 cross-cutting themes to inform future assessments of progress.

In **A focus on improving nature**, we provide a more in-depth assessment of government's progress towards delivering the apex goal of Thriving plants and wildlife. We consider the main targets, analyse the policy mix relevant to achieving them, and consider both how progress is monitored and evaluated and opportunities for improvement.

We have also developed our summary assessment approach. Summary assessments are used to present our analyses in a consistent, concise and accessible way. There are three elements to our summary assessments – trends, progress towards targets, and an overall table. Further detail on the assessment methodologies is provided in Chapter 2.

We are taking a multi-annual approach to development of our assessment approach and have identified areas to strengthen over the period 2023-2028. These 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.

1.3 Development of our assessment process

The main stages in the assessment process for our 2022/2023 progress report are set out below.

January 2023: Publication of our 2021/2022 progress report.

January – June 2023: Review of our 2021/2022 progress report and identification of opportunities for improvement.

• Assessment of stakeholder reception of our report.

• Workshops to explore our assessment findings with government policy and evidence teams. Discussions aimed to explore the use of delivery plans and evaluation for tracking progress and improving implementation; and the methodologies and analytical frameworks used in the assessment and how they could be further developed.

• Engagement with Defra on our 2021/2022 progress report recommendations and the approach taken by the OEP to select indicators and use of alternatives to the OIF.

• OEP internal review and evaluation sessions.

July – September 2023: Development of methodology and consultation with stakeholders with a focus on targets and indicators.

• OEP internal review of methodologies.

• Review of targets and indicator selection to ensure they were consistent with the revised EIP23. The number of indicators was increased to align with a greater number of targets and commitments. We incorporated EA21 interim targets, international commitments outlined in the EIP23 and other targets and commitments defined in each EIP23 goal.

• Trends and targets workshops with key stakeholders to seek written and verbal feedback on our target and indicator selection and assessment methodologies.

• Analysis of the policy landscape and progress within the reporting year across all goal areas and cross-cutting themes. Included ad-hoc testing of outputs with key stakeholders in particular areas of uncertainty, as well as with our recently formed College of Experts (Annex 4, Table 53).

September – November 2023: Finalisation and application of the methodology. Targeted engagement to peer review draft content including with Environmental Standards Scotland and the Climate Change Committee (Annex 4, Table 53).

1.4 UK Statistics Authority Code of Practice for Statistics

As part of developing our overall assessment approach we have been engaging with the UK Statistics Authority (UKSA) and are in the process of voluntarily adopting the Code of Practice for Statistics (the Code).[6]

The Code sets out the standards that organisations who produce official statistics should commit to but can be applied by any organisation that publishes data, evidence and statistics. While we do not produce official statistics, we use and analyse those produced by others.

The Code provides a framework that can be applied in a proportionate and flexible way to improve public confidence. The Code comprises three pillars, each with a set of defining principles:

Trustworthiness: To build and maintain confidence in the people and organisations that produce and/or publish statistics, data and wider evidence. Trustworthiness is a product of the people, systems and processes within organisations that enable and support the production of statistics and data. Trustworthiness comes from the organisation being well led, well managed and open, and the people who work there being impartial and skilled in what they do.

Quality: To ensure production of assured statistics. Data must be relevant; the methods must be sound and the assurance around the outputs must be clear. Statistics must be the best available estimate of what they aim to measure and should not mislead.

Value: To ensure that statistics provide for the public, ensuring that statistics support society's need for information by answering the right questions.

The primary aim of applying the code was to increase transparency and ensure our assessment continues to be of high quality and provides value to users. Compliance with the Code provides those using our 2022/2023 progress report with the confidence that it has been developed within a framework which ensures our methods are trustworthy, of good quality, and are valuable – that they measure the things that most need to be measured.

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.

1.5 The overall evidence base

In developing our assessment, we consider government's annual progress report, the APR, and data published by the Secretary of State that relate to that reporting period, but also look beyond it. Presently, the emphasis in the content of the APR 2023 is to provide an overview of actions and plans, rather than an assessment of progress. Our scrutiny of progress has been hampered by the lack of detailed information made available by government. Defra's departmental Outcome Delivery Plan[7] was last published in 2021. Detailed programme and policy specific delivery plans and details on their governance arrangements have not been published.

Across many EIP23 goals, the lack of detailed information constrains our capability to assess the current and future effects of policy measures and actions. As a consequence, we have complemented the APR 2023 with wider evidence gathering, to obtain information we consider appropriate to report on progress. This has included issuing a call for evidence to support our in-depth assessment on improving nature. This had the primary aim of assessing whether government's monitoring arrangements, plans and delivery pathways

effectively support the achievement of EA21 targets related to species abundance and extinction (the 2030 species abundance target, the long-term target to reverse the decline of species abundance, and the long-term species extinction risk target). A secondary aim was to establish whether they detail and address the major barriers, enablers, synergies and trade-offs within and across policy domains. Further details on the evidence base used in the analyses is provided in Chapter 3.

Progress and prospects

Chapter 2 – Assessment methodologies

This chapter sets out how we assessed past trends, progress and the overall prospects for meeting EIP23 ambitions, targets and commitments. It sets out our summary assessment methodology and indicates the type of evidence used in the analyses. Further detail on the assessment of individual EIP23 goals is provided in Chapter 3.

2.1 Assessment of past trends

Background

For our 2021/2022 progress report, we identified headline indicators that enabled assessment of progress against the 25 Year Environment Plan (25YEP).[8] We developed selection criteria (Table 1), which broadly reflected government's definition of headline indicators, i.e. they should relate to key aspects of the environment and make intuitive sense to a wide range of readers.

Table 1 Selection criteria for our 2021/2022 progress report headline indicators

Environment
Defines significant environmental outcomes or contributions to targets for individual goals
Measures areas of the environment that matter the most, rather than areas that are easy to measure and improve. This means parts of the environment experiencing states of severe deterioration or major or emerging pressures that negatively impact the environment
Monitoring
Minimal overlap with other headline indicators
Translates complex information and allows the state of the environment to be determined and communicated easily
Uses easily accessible data, produced by government or associated bodies, that are based on a sound methodology, regularly updated, and can provide short-term trends

Our aim was to select indicators with a clear relationship to 25YEP targets and commitments. The indicators we selected included environmental pressures and states, consistent with the structure of the OIF headline indicators. We also included proxy indicators, where metrics that directly measure a trend were unavailable.[2]

Indicator review

Consistent with our commitment to continuous improvement and application of the Code, we undertook a review of the indicators when developing our 2022/2023 progress report. This took a three-stage approach.

First, we reviewed the headline indicator set considering feedback from external stakeholders alongside an internal review of the suitability of existing indicators. This included an assessment of the assumptions that underpin each indicator.

Second, we undertook a gap analysis following publication of the EIP23. We considered the EIP23 ambitions, targets and commitments and sought to identify appropriate metrics. As

part of this review, we restructured our selection of indicators where needed to reflect the EIP23 structure.

Third, we tested our proposed list of indicators with external stakeholders and considered any relevant feedback before confirming the final selection. We hosted workshops with data producers (Table 2) with the aim of inviting critical challenge, both verbally and in writing, on our target and indicator selection and methodologies. The analytical questions we used to frame the sessions can be found in Annex 3, Table 52.

Table 2 Stakeholders consulted on target and indicator selection

Stakeholders – Trends and targets
Centre for Environment, Fisheries and Aquaculture Science (Cefas)
Climate Change Committee (CCC)
Environment Agency (EA)
Historic England
Joint Nature Conservation Committee (JNCC)
Marine Management Organisation
Natural England
The Ramblers
UK Centre for Ecology & Hydrology (UKCEH)
Water Services Regulation Authority (Ofwat)

Any new indicators selected are presented in Chapter 3. In addition, we have developed indicator reference tables to provide metadata for selected indicators (Annex 1).

Trend assessment

To summarise change in environmental trends and whether this constitutes improvement or deterioration, we use a red/amber/green symbol and directed arrows (Table 3). 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 or where data are not available, we use a grey cross.

Where datasets allow, trends are assessed over a five-year period. In some cases, we have calculated changes over a shorter time-period. In others, datapoints represent much longer time periods and therefore short-term assessments of change cannot be made. For all indicators, we have provided the time-period over which the assessment was carried out. Some indicators were not assessed, in one instance because there were only two data points from adjacent years ('Water company security of supply performance', Annex 1, Table 43), which does not allow for a robust assessment of change, in others because appropriate data could not be identified to populate the indicator.

Simple, linear trends are assessed by calculating the percentage difference between the first and last year of the given time-period. Our trend ratings are applied over the short-term in most cases. Exceptions included invasive non-native species which are reported

using a 10-year rolling average. However, we do present longer term time series to provide additional context to our assessment.

After testing the approach with stakeholders, we did not apply any data smoothing approaches. We compared the calculated trend of a smoothed dataset and raw data and the differences were minimal. Furthermore, for smoothing techniques to be applied in the most robust way, the smoothing parameters should ideally be tailored to each individual dataset, which has not been feasible.

Some of the datasets we used, such as abundance of priority species, have already been smoothed. We acknowledge the advantages of data smoothing in cases where outliers need to be removed, or to make trends more visible when there is high interannual variability. However, in some cases, such as air quality, outliers 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. The baseline or final year will affect the trend assessment if there is significant variation, but this may also be capturing an important shift.

When using techniques such as Loess smoothing,[1] the last data point in the modelled dataset is often removed from the trend assessment as they can be associated with higher errors. We did not take this approach so we could provide an assessment of progress that is as close to the relevant reporting year as possible.

In general, the threshold for our assessment of change is based on a 3% threshold widely adopted by Defra[1] and JNCC.[9] This approach is applied to indicators in the OIF, England/ UK Biodiversity Indicators and by the Forestry Commission, across a range of indicator types.[10–12] We used this approach in our 2021/2022 progress report and continue to do so. However, for one indicator, 'Abundance of priority species', we have used a different approach (Chapter 3.2).

We are reviewing the use of alternative thresholds. For some indicators, it is not possible to determine statistical significance[9] and to date it has not been feasible to define bespoke thresholds across the indicators we have selected. We will continue to work with Defra to develop our approach and further consider the merits of developing bespoke thresholds as part of our commitment to continuous improvement.

Table 3 Indicator trend assessment categories

Icon	Assessment of change	Trend Direction	Rating
⬆ (green up)	Improvement	Increasing	Positive developments more prevalent
⬇ (green down)	Improvement	Decreasing	Negative developments less prevalent
➡ (yellow right)	Little or no change	No change	No change for better or worse
⬆ (red up)	Deterioration	Increasing	Negative developments more prevalent
⬇ (red down)	Deterioration	Decreasing	Positive developments less prevalent
⊖ (grey minus)	Not assessed	Single data point, or time series too short to adequately assess progress	Only the current state can be evaluated
⊗ (grey cross)	Not assessed	No appropriate data to assess progress	Represents a major data gap

2.2 Assessment of progress

Our assessment of progress involved assessing progress towards 40 individual environmental targets and commitments and progress with policy and actions. These come together to inform our wider assessment of progress at EIP23 goal level.

2.2.1 Progress towards targets and commitments

Background

For our 2021/2022 progress report, we undertook an exercise to identify government's legally binding and non-legally binding targets and commitments across the 25YEP, to provide benchmarks to assess progress against and to hold government to account on its commitments. We defined targets as measurable statements that commit to achieving a desired level of performance. We considered all the legally binding targets set out in EA21, as well as other key targets within each goal area, such as those under the Water Framework Directive 2017, National Emissions Ceilings Regulations 2018, and Climate Change Act 2008, and tested our list with stakeholders.

Targets review

For our 2022/2023 progress report, we updated the list of targets to ensure they reflected the EIP23. This included stakeholder engagement workshops. The analytical questions used to frame the sessions can be found in Annex 3, Table 52.

In addition to the targets assessed in our 2021/2022 progress report, we identified an additional 20 targets and commitments. The targets we assessed, and their sources are listed in Chapter 3 of this Methodological Statement. All but two targets and commitments listed below ('Reduce damaging deposition of reactive forms of nitrogen by 17% over England's protected priority sensitive habitats by 2030' and 'To better protect 100,000 properties from flooding and coastal erosion by 2024') are described in the EIP23, however we refer to the underpinning legislation where appropriate throughout Chapter 3. For EA21 targets, we refer to the regulations made by the Secretary of State under relevant sections of the Act. Where appropriate, we have simplified the target descriptions to make them more accessible rather than presenting the source legislation wording.

Broadly, the targets we assessed include the legally binding long term and supporting interim targets set out in the Act, those considered within government's Significant Improvement Test, those identified in the targets and commitments sections across the EIP23 goals, or key outputs that are identified in the EIP23 as necessary to achieve overarching goals.

We summarise progress made towards individual targets and adopt a red/amber/green approach, where green is largely on track, amber is partially on track and red is largely off track (Table 4). If no assessment of progress has been possible, for example, because of a lack of available evidence, we have marked the target as grey.

Table 4 Progress towards targets and commitments summary assessment

Component	Assessment approach	Assessment rating	
Progress towards targets and commitments	The assessment of the progress towards meeting selected targets and commitments is based on the government's Annual Progress Report, data published by the Secretary of State that relates to the reporting period, distance to target assessments, target 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

2.2.2 Progress with policy and actions

Our assessment of progress was based on information in the APR 2023 (see Chapter 6.2), as well as data published by Secretary of State relating to the reporting period, and other reports and information we considered appropriate. We undertook analysis to assess whether actions taken were comprehensive, convincing and capable. This framework is described below.

Rationale

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

As we are required to monitor progress in delivering the EIP23, we organise our assessment around the ten goals, their targets and commitments, and its cross-cutting themes. Whilst 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 what policies to consider in our assessment for each goal. This is based on two key assumptions. First, there is no definitive list of relevant policies as set out by government. Second, the policies themselves are often changing (in relevance and in practice) so any definitive list would be quickly out of date.

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

Definitions

To assess the progress regarding government's activities in delivering the ten goals of the EIP23, we developed a working definition of what good would look like:

> 'They are increasingly *comprehensive*, their design is *convincing*, and their implementation evidence shows they are *capable* of achieving targets and commitments.'

This definition is necessarily broad and therefore applicable to any area of the environment or cross-cutting theme and to consider any type of government activity e.g. policy, research, communications.

It allows us to comment on the adequacy of activities in sum for each EIP23 goal and on specifics of the activities themselves, i.e. their design and delivery.

In addition to this fundamental definition of good progress, we required working 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 government in the APR 2023 and elsewhere.

These categories are based on government's own definitions and guidance for policymakers, such as the Green Book and Magenta Book.[13,14] Table 5 shows the working definitions we developed for each activity type, and their position in the stages of the policy process.

Table 5 Activity types and their definitions, grouped into three stages of the policy process (based on the ROAMEF cycle)[13]

Activity	Definition	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	Development: 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 quantify the desired level of performance, based on measurable indicators	
Delivery	Steps taken to implement policies and projects, including money being made available or spent, and projects undertaken or supported	Delivery: 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	Learning: 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. Our assessment was based entirely on publicly available information so we used our own knowledge of the environmental and policy systems involved. To keep our interpretation aligned with 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 6).

Table 6 25 Year Environment Plan evidence annex definitions of performance measures and indicators, with examples from the government's Annual Progress Report 2020-2021[15]

Term	Definition	Example from APR 2020-2021
Performance measure	A metric relating to policy interventions and can be quantitative (e.g. number of trees planted) or more process based (e.g. new scheme introduced, legislation enacted etc.)	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 show a statistical trend over time	D1: Quantity, quality and connectivity of habitats

Evidence sources

Our analysis focused on, but was not limited to, the 12-month reporting period of April 2022–March 2023. This is because we must provide our assessment of progress over the period covered by the APR 2023 but may also draw on additional information to supplement our assessment. This longer timeframe is important for contextualising progress, particularly for long-term actions that have multiple phases of development and delivery, such as the design and roll-out of new nature friendly farming schemes. It also enables us to consider actions that may not have been included in the APR 2023.

Our evidence sources included the APR 2023 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. These additional sources were purposively sampled to address our analytical questions (see below). Additional evidence sources that we identified and considered are referenced throughout. A table detailing the key policies and other government actions considered in our assessment is included in Annex 2.

Analysis

We developed a set of guiding questions to ensure consistency in our approach to analysing progress across EIP23 goal areas and over reporting periods, and to provide transparency about how we reached our conclusions. The guiding questions were:

1. **Comprehensive** – Are the actions addressing the most important challenges and opportunities in this goal area?

   a. Which pressures and drivers, as well as broader enablers, are being addressed?

   b. If there are gaps, is this because they're being addressed by long-standing actions not mentioned in this year's APR or the EIP23, and if so, what is the latest information on them?

   c. Do the actions seem significant / proportionate to the scale of the challenge or opportunity?

2. **Convincing** – What types of actions are being described and how are they intending to achieve their outcomes?

    a. What are the key policies and programmes for this goal area?

    b. Do the actions produce a significant output or step forward?

    c. How do the actions fit in the longer-term story of progress?

3. **Capable** – Do the performance measures and outcomes reported suggest that the policies are delivering at the pace/scale required to meet the goal's targets and commitments?

    a. What do the performance measures and outcomes contribute to the goal's indicators and targets?

    b. If there is insufficient evidence to demonstrate causality, are current monitoring and evaluation programmes going to produce it?

    c. Do previous evaluations and evidence suggest the actions can deliver the scale of impacts required?

Answering these questions required gathering, sorting and interpreting the content of the various evidence sources described above. We used several templates and tools for standardising our analysis. For example, we sorted and categorised actions listed in the APR 2023, linking them to OIF indicators and EIP23 targets, as well as listing pressures and enablers based on expert judgement.

We also extracted key information in the EIP23 to create summaries for each goal. These showed the links between targets and commitments and indicators, actions to improve understanding and actions to affect 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 and summarising information in this way meant we were able to contextualise our conclusions and check the methodology had been applied consistently across all goals.

Following the guiding questions above, we developed a narrative assessment of progress regarding actions in each goal area. These were developed in an iterative way through internal reviews and workshops, and to reflect developments and feedback from experts and stakeholders.

Ratings and conclusions

Having finalised our narrative assessment of progress, we converted our findings into an assessment rating for our summary assessment of overall progress (Table 7). This is a significant simplification of our analysis, but a useful step to ensure transparency and accessibility. The summary assessments were developed in an iterative way to ensure coherence and consistency across goals.

Table 7 Descriptions of assessment ratings of progress with policies and actions

Assessment rating		Descriptions
Good	Green	• Important issues are mostly all being addressed • Development and delivery are progressing adequately • Evidence is showing policies are effective
Mixed	Amber	• Many important issues are being addressed but there are gaps • Development and delivery progress is mixed • Evidence shows mixed or inconclusive efficacy
Limited	Red	• Some of the important issues are not being addressed • Development and delivery are not progressing adequately • Evidence shows insufficient levels of efficacy

2.3 Assessment of prospects of meeting ambitions, targets and commitments

To summarise the overall prospects of meeting targets and commitments, we adopt a red/amber/green approach, where green is largely on track, amber is partially on track and red is largely not on track (Table 8). If no assessment of prospects has been possible, for example, because of a lack of available evidence, we have marked this as grey.

Our assessment was informed by quantitative projections where available, for example for emissions of key air pollutants or greenhouse gases. However, generally our assessment of prospects was based on qualitative evidence interpreted using expert judgement. Consistent with our commitment to continuous improvement, we are developing our approach to outlook assessments and will integrate this into future reports.

Table 8 Key to assessment of the prospects of meeting ambitions, targets and commitments

Component	Assessment approach	Assessment rating	
Overall prospects of meeting ambitions, targets and commitments	The assessment of the prospects of meeting selected targets and commitments is based on the government's Annual Progress Report, data published by the Secretary of State that relates 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

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 tables are based on a combination of available evidence and expert judgement. The assessment approach is adapted from that used by the European Environment Agency when assessing the state and outlook of the European environment (Table 9). They provide a summary of past trends, progress and prospects of meeting targets and commitments for the overall goal area. They also provide an assessment of the robustness of the evidence base, as defined below.

Table 9 Goal level summary assessment (adapted from European Environment Agency)[16]

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	Assessment of progress is based on the government's Annual Progress Report, data published by the Secretary of State that relates to the reporting period, and any other reports, documents or information we consider appropriate. It is informed by progress towards individual targets and our analysis of whether actions are comprehensive (they cover the most important issues), convincing (their development and delivery is high quality) and capable (they are producing the intended impacts)	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 Annual Progress Report, data published by the Secretary of State that relates 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 identifies key gaps and uncertainties and indicates the degree of expert judgement used		

Chapter 3 – Assessment of Environmental Improvement Plan 2023 goals

3.1 Introduction

This chapter presents the detail of our analysis of environmental trends, progress and prospects of meeting targets, commitments and ambitions for each EIP23 goal.

The selection of indicators is presented and where indicators are additional to those used in our 2021/2022 report, we provide a short rationale for their inclusion. Data sources are provided for all indicators. Detailed reference tables are provided where we have developed our own indicators, or where one of the indicators we have used represents a significant deviation from a similar OIF indicator (Annex 1).

In some cases, we have used an OIF indicator, but updated the dataset using the original source, such as UK and England Biodiversity Indicators, to ensure our assessment is as current as possible. Source publications for OIF indicators are often refreshed after the annual OIF update, so in these cases there are two references for the data. We have provided the trend assessment for each indicator where available, but where an assessment has not been possible, we have marked these as 'N/A'.

We also note where we have used UK indicators in the absence of appropriate data for England (Table 10). Justifications for this are described in the goal sections below and indicator reference tables (Annex 1).

Table 10 UK level indicators used in our 2022/2023 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
Mitigating and adapting to climate change	UK emissions of greenhouse gases

We then present the selection of targets and commitments assessed within each EIP23 goal. Most are referred to in the EIP23, however here we outline the origin of the targets and how the selection has developed since our 2021/2022 progress report. Annex 2, Table 51 summarises the policies, strategies and programmes that have been considered in our assessment of progress across all goal areas.

3.2 Thriving plants and wildlife (Chapter 2)

Past Trends

The indicators used to assess the Thriving plants and wildlife goal are outlined below (Table 11). For the abundance of priority species indicator, statistical significance levels have been defined for the source England Biodiversity Indicators (EBI) dataset, which has been reflected in this assessment in place of the 3% threshold applied to all other indicators. Therefore, even though the magnitude of change (+4.2% increase between 2016 and 2021) exceeds our definition of an increasing improvement (Table 3), we have applied an amber trend rating (little or no change). This is because on average the 95% credible interval in 2021 spanned the value in 2016, indicating no statistically significant change had occurred, which is the same as government's assessment of the short term trend.[17] The 3% rule was applied for this indicator in our 2021/2022 progress report, however the rating would not have differed, had we applied the bespoke threshold.

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 1, Table 38). One indicator, 'Threat of extinction to UK species' is assessed at a UK level. At the time of publication, OIF indicator D5 ('Conservation status of our native species') only had 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.[18,19] We will update the source of this indicator when the Red List Index for England dataset allows for a trend assessment.

Table 11 Selected indicators – Thriving plants and wildlife

Indicator	Status	Source	Trend Assessment
Condition of Sites of Special Scientific Interest [which are in favourable or unfavourable recovering condition]	Existing	OIF, EBI[20,21]	-8.9% (2018-2023)
Achievement of marine 'good environmental status' (2018)	Existing	Cefas[22]	N/A
Extent of UK area protected for nature on land and water	New (Annex 1, Table 36)	UK Biodiversity Indicators (UKBI)[23]	Land and water +0.1% (2018-2023)
			At sea +61.5% (2018-2023)
Abundance of priority species	Existing	OIF, EBI[17,24]	+4.2% (2016-2021)
Area under agri-environment schemes	New (Annex 1, Table 37)	Defra[25]	+12.9% (2017-2022)

Table 11 (cont.) Selected indicators – Thriving plants and wildlife

Indicator	Status	Source	Trend Assessment
Threat of extinction to UK species	Existing	UN Sustainable Development Goals (SDG)[19]	+0.0% (2018-2023)
Extent of land cover more likely to support nature friendly habitat	New (Annex 1, Table 38)	UKCEH[26]	+14.9% (2015-2021)
Area of woodland	New To assess the long-term and interim targets for woodland cover.	OIF, Forest Research[27,28]	+1.4% (2018-2023)
Condition of Marine Protected Areas	Existing Updated to include both inshore as well as offshore MPAs.	JNCC, Natural England[29,30]	N/A

Progress

Table 12 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 31st 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 protected features in relevant Marine Protected Areas are in favourable condition by 2042, with the remainder in recovering condition	Environmental Targets (Marine Protected Areas) Regulations 2023

Table 12 (cont.) Selected targets and commitments – Thriving plants and wildlife

Target or commitment	Source
Restore 75% of protected sites to favourable condition by 2042 [New]	EIP23 commitment
65 to 80% of landowners and farmers adopting nature friendly farming on at least 10-15% of their land by 2030 [New]	
Take the necessary measures to achieve or maintain good environmental status of marine waters within the marine strategy area by 31st December 2020	The Marine Strategy Regulations 2010
Ensure that by 2030 at least 30 per cent of areas of degraded terrestrial, inland water, and marine and coastal ecosystems are under effective restoration (Target 2) [New]	Convention on Biological Diversity commitment (UN Nature Summit COP15)
Ensure and enable that by 2030 at least 30 per cent of terrestrial and inland water areas, and of marine and coastal areas, are effectively conserved and managed through ecologically representative, well-connected and equitably governed systems of protected areas and other effective area-based conservation measures (Target 3) [New]	

3.3 Clean air (Chapter 3)

Past Trends

Table 13 Selected indicators – Clean air

For the incidents of exceedances indicator, where there have been no exceedances over the trend period, the assessment has been marked 'N/A' as standards are being met. NOx- nitrogen oxides; NO_2- nitrogen dioxide; SO_2- sulphur dioxide; NMVOC- non-methane volatile organic compounds; $PM_{2.5}$- fine particulate matter (<2.5 µm in diameter); PM_{10}- coarse particular matter (>10 µm in diameter); NH_3- ammonia; B[a]P- Benzo(a)pyrene

Indicator	Status	Source	Trend Assessment
UK emissions of 5 key air pollutants	Existing (Annex 1, Table 39)	Defra[31]	NOx -26.8% (2016-2021)
			SO_2 -36.3% (2016-2021)
			NMVOCs -5.2% (2016-2021)
			$PM_{2.5}$ +0.9% (2016-2021)
			NH_3 -2.9% (2016-2021)

Table 13 (cont.) Selected indicators – Clean air

Indicator	Status	Source	Trend Assessment
Percentage of Monitoring Stations above 10 µg/m^3 annual mean PM$_{2.5}$ concentrations	Existing (Annex 1, Table 40)	Defra[32]	-80.0% (2017-2022)
Incidents of exceedances against Air Quality Standards Regulations in England	Existing (Annex 1, Table 41)	Defra[33]	Overall -8.6% (2017-2022)
			NO$_2$ -69.0%
			PM$_{10}$ (N/A)
			PM$_{2.5}$ (N/A)
			Ozone +50.0%
			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)
Population-weighted annual mean concentrations of PM$_{2.5}$ in the air	New To assess PM$_{2.5}$ population exposure as well as average concentration	OIF[34]	-17.3% (2017-2022)
Exceedance of damaging levels of nutrient nitrogen deposition in England	New To assess environmental impacts of air pollution	OIF[35]	-0.1% (2013-2015 to 2018-2020)

Progress

Table 14 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 10 µg/m³	Environmental Targets (Fine Particulate Matter) (England) Regulations 2023
At least a 35% reduction in population exposure to $PM_{2.5}$ by the end of 31st December 2040 compared to the 2016-2018 baseline period	
National Ceiling Emissions Regulations Emission Reduction Commitments	National Emissions 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 [New]	Clean Air Strategy 2019

3.4 Clean and plentiful water (Chapter 4)

Past Trends

Table 15 Selected indicators – Clean and plentiful water

Indicator	Status	Source	Trend Assessment
Pollution incidents to water [Environment Agency as Category 1 to 3]	Existing Amended methodology (Annex 1, Table 42)	EA[36]	+5.1% (2016-2021)
State of the water environment [Water Framework Directive Ecological Status]	Existing	OIF, RBMPs[37,38]	-2.7% (2015-2019)
Condition of bathing waters	Existing	OIF[39]	-1.3% (2017-2022)
Loads discharged to rivers from water company sewage treatment works [of three key pollutants]	New To assess the Act's treated wastewater targets	OIF[40]	Biochemical Oxygen Demand -13.5% (2015-2020)
			Phosphorous -21.5%
			Ammonia -9.7%

Table 15 (cont.) Selected indicators – Clean and plentiful water

Indicator	Status	Source	Trend Assessment
Per capita drinking water consumption in England	Existing	OIF[41]	+4.1% (2016/2017-2021/2022)
Water company security of supply performance	Existing (Annex 1, Table 43)	EA[36]	N/A
Water leakage in England [from water company drinking water networks]	Existing	OIF[41]	-3.9% (2016/2017-2021/2022)

Progress

Table 16 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 1,500 km	
Reduce potable water demand in England per head of population by 20% from the 2019 to 2020 baseline reporting figures, by 31 March 2038	
Each body of surface water to achieve or maintain good ecological status or potential by 2021	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 [New]	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'	The Bathing Water Regulations 2013

3.5 Managing exposure to chemicals and pesticides (Chapter 5)

Past Trends

Table 17 Selected indicators – Managing exposure to chemicals and pesticides

Indicator	Status	Source	Trend Assessment
Hazardous Waste Disposal	Existing (Annex 1, Table 44)	EA[42]	+19.0% (2016-2021)
Emissions of persistent organic pollutants	Existing	OIF[43]	Dioxin-like Polychlorinated Biphenyls -43.5% (2014-2019)
			Dioxins and Furans -4.5%
			Hexachlorobenzene +64.8%
			Polychlorinated Biphenyls -27.3%
			Polychlorinated Napthalenes +8.0%
			Pentachlorophenol -29.4%
			Pentachlorobenzene -23.4%
Emissions of mercury to air, land and water	New To assess EIP23 commitment to reduce land-based emissions	OIF[43]	Total emissions -18.7% (2016-2020)
Chemical Status of Surface and Groundwater [Water Framework Directive]	New To assess chemical contamination across the water environment	EA[44,45]	N/A

Progress

Table 18 Selected targets and commitments – Managing exposure to chemicals and pesticides

Target or commitment	Source
Substantially increase the amount of persistent organic pollutants (POPs) material being destroyed or irreversibly transformed by 2030 [New]	EIP23 commitment (Stockholm Convention)
Seek to eliminate the use of polychlorinated biphenyls (PCBs) by 2025 [New]	
Reduce land-based emissions of mercury to air and water by 50% by 2030 [New]	EIP23 commitment
Each body of surface water (other than an artificial or heavily modified water body) to achieve or maintain good surface water chemical status by 2021 [New]	Water Environment (Water Framework Directive) (England and Wales) Regulations 2017

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

Past Trends

Table 19 Selected indicators – Maximise our resources, minimise our waste

Indicator	Status	Source	Trend Assessment
Residual Waste	Existing	OIF[46]	Total +13.9% (2015-2020)
Number of Fly-Tipping Incidents	Existing	OIF[47]	+14.0% (2019-2022)
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]	New To assess the commitment to reduce marine plastic pollution.	OIF, WUR[48,49]	-22.4% (2012-2016 to 2017-2021)
Resource Productivity	Existing	OIF[50]	+18.1% (2014-2019)
Number of illegal waste sites	New To assess commitment to seek to eliminate waste crime	OIF[47]	Total -30.3% (2016/2017– 2021/2022)
Amount of raw material consumed	Existing (Annex 1, Table 45)	OIF, Defra, ONS[50–52]	Total -21.0% (2015-2020)

Progress

Table 20 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 287 kilograms per head of population in England	Environmental Targets (Residual Waste) (England) Regulations 2023
Eliminate avoidable waste by 2050 and double resource productivity by 2050 [New]	EIP23 commitment
Seek to eliminate waste crime and illegal waste sites by 2042, prioritising those of highest risk [New]	EIP23 commitment

3.7 Using resources from nature sustainably (Chapter 7)

Past Trends

Table 21 Selected indicators – Using resources from nature sustainably

Indicator	Status	Source	Trend Assessment
Fish stocks that are sustainably harvested [Good Environmental Status Descriptor Commercial Fish]	Existing	OIF, EBI[53,54]	<=FMSY + in FMSY range +18.5% (2015-2020)
Soil Health	Existing	OIF[55]	N/A
Percentage of woodland that is sustainably managed	Existing (Annex 1, Table 46)	Forestry Commission[12]	0.0% (2017-2022)

Prospects

Table 22 Selected targets and commitments – Using resources from nature sustainably

Target or commitment	Source
Halt and reverse forest loss and land degradation globally by 2030 [New]	
All fish stocks are recovered to and maintained at levels that can produce their maximum sustainable yield [New]	EIP23 commitment
At least 40% of England's agricultural soil into sustainable management by 2028 and increase this to 60% by 2030 [New]	

Table 22 (cont.) Selected targets and commitments – Using resources from nature sustainably

Target or commitment	Source
Take the necessary measures to achieve or maintain good environmental status of marine waters within the marine strategy area by 31 December 2020 – specifically the descriptor of good environmental status that all commercially exploited fish and shellfish are within safe biological limits	The Marine Strategy Regulations 2010 and Marine Strategy

3.8 Mitigating and adapting to climate change (Chapter 8)

Past Trends

Table 23 Selected indicators – Mitigating and adapting to climate change

Indicator	Status	Source	Trend Assessment
UK emissions of greenhouse gases	New (Annex 1, Table 47)	Department for Energy Security and Net Zero[56]	-13.1% (2017-2022)
Consumption-based greenhouse gas emissions	New (Annex 1, Table 48)	OIF, Defra[57,58]	-24.8% (2015-2020)
Emissions of fluorinated gases	New For insight on the Montreal Protocol commitment	OIF[59]	-14.1% (2015-2020)

Trends – Climate Adaptation

Compared to 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. Governments third National Adaptation Programme (NAP3),[60] 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.[61] The indicators we selected across all goal areas were mapped to the risk reduction goals to identify areas where we could use existing analysis to indicate whether climate risks most relevant to EIP23 goals are being managed (Table 24).

Because our assessment of adaptation focuses on aspects most relevant to EIP23, primarily the natural environment, it does not represent a comprehensive assessment of adaptation across all sectors.

Table 24 Mapping of 2022/2023 progress report indicators to the NAP3 Risk Reduction Goals

NAP3 Risk Reduction Goal	Indicator Assessed
I7- Water companies will address leakage and drought to reduce the risk that subsidence poses to their operations	Water Leakage in England
I8- Water companies will use supply and demand management measures to mitigate risks from reduced water availability	Water company security of supply performance
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	Extent of area protected for nature
	Abundance of priority species
N2- Reduce the number of new establishments of all invasive non-native species in Great Britain by at least 50% by 2030 (compared to 2000 levels)	Number of invasive non-native species becoming established
N5 Forestry- Create and maintain healthy, functioning woodlands, which will increase the resilience of these carbon stores	Percentage of woodland that is sustainably managed
N8- Minimise the risk of increased impacts on forestry from pests, pathogens and INNS in a changing climate	Number of additional tree pests and diseases becoming established
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 (favourable)
	State of the water environment
N16- Reduce the number of new establishments of all INNS in Great Britain by at least 50% by 2030 (compared to 2000)	Number of invasive non-native species becoming established
N17- Improve the condition, extent and connectivity of coastal habitats	Condition of Sites of Special Scientific Interest
	Extent of area protected for nature
H3- Improve the nation's resilience to future flood and coastal erosion risks	Properties at high risk of flooding
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 5 key air pollutants
	Percentage of monitoring stations above 10 µg/m^3 annual mean $PM_{2.5}$ concentration
	Incidents of Air Quality Standards Regulations exceedances
	Population-weighted annual mean concentrations of $PM_{2.5}$

Table 24 (cont.) Mapping of 2022/2023 progress report indicators to the NAP3 Risk Reduction Goals

NAP3 Risk Reduction Goal	Indicator Assessed
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	Condition of geological and geomorphological heritage features of Sites of Special Scientific Interest in England

Progress

Table 25 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 Nationally Determined Contribution	Climate Change Act 2008 and Paris Agreement
Reducing HFC consumption by 85% between 2019 and 2036 under the Kigali amendment to the Montreal Protocol [New]	EIP23 commitment (Montreal Protocol on Substances that Deplete the Ozone Layer)

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

Past Trends

Table 26 Selected indicators – Reduced risk of harm from environmental hazards

Indicator	Status	Source	Trend Assessment
Properties at high risk of flooding	Existing (Annex 1, Table 49)	EA[62]	Overall -13.4% (2015/2016-2021/2022)
			Rivers and seas -30.3%
			Surface water +0.6%
Number of wildfire incidents	Existing (Annex 1, Table 50)	Forestry Commission[63,64]	+30.9% (2015/2016-2020/2021)

Progress

Table 27 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 [New]	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% [New]	EIP23 commitment

3.10 Enhancing biosecurity (Chapter 10)

Past Trends

Table 28 Selected indicators – Enhancing biosecurity

Indicator	Status	Source	Trend Assessment
Number of invasive non-native species becoming established	Existing	OIF, EBI[65,66]	Total +116.7% (1970-1979 to 2020-2022)
Number of additional tree pests and diseases becoming established	Existing	OIF, Forestry Commission[12,67]	-25.0% (2008-2017 to 2013-2022)

Progress

Table 29 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 (Target 6) [New]	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)

Past Trends

Table 30 Selected indicators – Enhancing beauty, heritage and engagement with the natural environment

Indicator	Status	Source	Trend Assessment
Visits to the natural environment	Existing	OIF[68]	At least once a week +10.9% (2017/2018-2022/2023)
Percentage of the total population in England living in close proximity of greenspace, as of October 2021	New To assess the commitment that everyone should live within 15 minutes' walk of a green or blue space	OIF[69]	N/A
Condition of geological and geomorphological heritage features of Sites of Special Scientific Interest in England	New To assess the commitment to conserve and enhance the natural, geological and cultural diversity of our landscapes, and protect our historic and natural environment	OIF[70]	Sites in favourable condition +19.2% (2019-2021)
Environmental attitudes and behaviours	New To assess enablers of change, such as attitudes and behaviours	OIF[71]	N/A
Health and well-being benefits	New To assess the importance of the environment to health and wellbeing	OIF[72]	N/A

Progress

Table 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 [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. New farming schemes to encourage nature friendly farming (NFF) and green finance are considered key mechanisms for delivering EIP23 goals, particularly improving nature.

4.2 Nature friendly farming (Chapter 12.2)

The NFF analysis seeks to understand the role that agriculture can play in delivering the EIP23. NFF is a key delivery mechanism for delivering the apex goal of Thriving plants and wildlife and supporting multiple EIP23 goals.

Learning from past schemes

To understand the potential contributions of farming to improving the environment, we used Natural England's publications on farming and land management,[73] as well as Defra's farming and environment evidence packs and farming blog.[74,75] Policy evaluations were assessed alongside our Quick Scoping Review of all of Defra's environmental policy evaluations.[76]

How nature friendly farming supports EIP23 delivery

We identified the ambitions, targets and commitments in the EIP23 which will be delivered by NFF. There are additional ambitions, targets and commitments where NFF is likely to contribute, however this contribution is not fully detailed or quantified so we will further develop this analysis.

Prospects for delivering nature friendly farming

To evaluate the prospect of NFF delivering environmental improvement, we considered the barriers and risks, incorporating the outputs from engagement with stakeholders. We also we considered the opportunities resulting from the Agricultural Transition,[77] such as those offered by the changes within the Rural Payments Agency detailed in their five year strategy.[78]

We will continue to scrutinise agricultural transition; how NFF is delivering environmental improvement and will continue to learn from stakeholders.

4.3 Green finance (Chapter 12.3)

The green finance analysis seeks to understand how government's ambitions for mobilising private investment for nature compared to the estimated financial gap for realising nature goals. To do this we developed aggregate figures for the EIP23 green finance target, and for the spending that is committed across each EIP23 goal.

In this section we set out the steps taken, and assumptions made. We then follow this with recognition of the limitations of this work and any additional information required to address gaps in our understanding. Finally, to aid transparency, we have included the full table of financial commitments considered in our analysis.

Estimating the green finance target aggregate figure

To ensure comparability across EIP23 actions and commitments, we estimated the aggregate figure the target could mobilise over a 10-year time horizon from 2023.

We based our aggregate figure on the minimum threshold of the target itself, which is £0.5 bn of private finance per year by 2027, rising to £1 bn per year by 2030 (Table 32).

Whilst we acknowledge that the minimum threshold for meeting the target was a conservative assumption, we felt it was more appropriate to base our assessment on the minimum value the target aimed to deliver, rather than make assumptions on the potential scale of investment.

Table 32 Annual breakdown of the minimum threshold for complying with the green finance target over a 10-year time horizon

Year	£ billion
2023	0
2024	0
2025	0
2026	0
2027	0.5
2028	0.5
2029	0.5
2030	1.0
2031	1.0
2032	1.0
Total	**4.5**

Estimating the aggregate spending figures for EIP23 goals

We considered all the EIP23 commitments regarding current or future spending, focusing on significant investments of over £50m. We have not distinguished by the source of funding. Funding commitments in the EIP23 are from a variety of sources, including public, private, and non-governmental bodies.

We aggregated these for each EIP23 goal area, estimating the figure over a 10-year time horizon from 2023, following the method outlined below.

Step 1 – Remove legacy and double counted EIP23 spending commitments

We found there was significant repetition and overlap in funding commitments.
To mitigate double counting, we identified overlaps and removed any subsidiary budgets already captured.

We found 67 significant separate financial commitments included throughout the EIP23. 39 of these were duplicative and so were removed from our analysis.

We also removed one financial commitment that was largely historical, where it was unclear what the current or future committed spend was ('The National Lottery Heritage Fund which has awarded over £1.8 billion to more than 4,200 land, nature and biodiversity projects across the UK since 1994').

Whilst we have thoroughly reviewed the EIP23 commitments to identify areas of overlap, the lack of information on how commitments relate to one another makes this analysis challenging and so we consider this analysis to be illustrative.

Step 2 – Distribute shortlisted EIP23 financial commitments by EIP23 goal

We defined which EIP23 goals the significant financial commitments contributed towards based on where they were stated within the EIP23 and applying our own judgement.

Due to a lack of information on the breakdown of individual financial commitments, and their relative contribution towards delivering multiple EIP23 goals, we assumed that the spend committed was divided evenly across all EIP23 goals it related to.

Step 3 – Estimate the total domestic spend over a 10-year time horizon

Most financial commitments included in the EIP23 appeared to be total budgets available to spend on specific policy issues. These required no processing to develop estimates for a 10-year time horizon. Except for the legacy commitment identified in step 1, we assumed that all financial commitments were relevant for inclusion for the 10-year period (2023-2032), even though many had commenced earlier. This provided the most generous picture of committed spend.

There were three significant financial commitments which required processing to enable comparability over a 10-year time horizon (see Table 33 for our approach).

Table 33 Approach taken on three significant financial commitments that required further processing to enable comparability over a 10-year time horizon

EIP23 significant spending commitment	Analytical requirement	Assumptions
£56 billion of capital investment over 25 years to tackle storm sewage discharges	Downscaling from 25 years to 2023-2032	Linear annual spending rate (£2.24 bn)
Extended Producer Responsibility shift of cost from local authorities to producers of £1.2 billion per year	Annual investment aggregated over 2023-2032	Linear annual spending rate of £1.2 bn from 2024 with funding continuing beyond commitment to 2030
Reinvest £2.4 billion per year to deliver the agricultural transition.	Annual investment aggregated over 2023-2032	Linear annual spending rate of £2.4 bn with funding continuing beyond commitments to 28 January 2025

Following these revisions, we then aggregated all shortlisted financial commitments by EIP23 goal area. We only included commitments that were directed towards domestic improvement. The full breakdown of financial commitments, and their allocation by goal area (step 2) are outlined in Table 34.

Table 34 Estimated aggregate commitments and allocation to EIP goal area

Significant financial commitment(s) relevant to domestic improvement	Aggregate estimate (£bn, 2022-2023)	Relevant EIP 23 goals (aggregated commitment allocated equally)
Nature for Climate Fund – more than £750 million by 2025 on peat restoration, woodland creation and management	0.75	1 – Thriving plants and wildlife; 8 – Reduced risk of harm from environmental hazards; 6 – Using resources from nature sustainably; 7 – Mitigating and adapting to climate change
£1bn Net Zero Innovation Fund	1.00	7 – Mitigating and adapting to climate change
£80 million Green Recovery Challenge Fund	0.08	1 – Thriving plants and wildlife
£883 million to help local authorities develop and implement local NO2 reduction plans and to support those impacted by these plans	0.88	2 – Clean air
Transport Decarbonisation Plan – £2.8 billion investment for zero emission vehicle technology which will also improve air quality.	2.80	

Table 34 (cont.) Estimated aggregate commitments and allocation to EIP goal area

Significant financial commitment(s) relevant to domestic improvement	Aggregate estimate (£bn, 2022-2023)	Relevant EIP 23 goals (aggregated commitment allocated equally)
£56 billion of capital investment over 25 years to tackle storm sewage discharges	22.40	3 – Clean and plentiful water
Water companies investment of £469 million between 2020 and 2025 to investigate strategic water resources options	0.47	
£2.5 billion invested in measures to tackle nutrient pollution from 2020 to 2025	2.50	
Ofwat investment of up to £100 million between 2025 and 2030 to encourage and support the development of a range of new approaches to water efficiency	0.10	
Extended Producer Responsibility shift of cost from local authorities to producers – £1.2 billion per year	10.80	5 – Maximise our resources, minimise our waste
Agricultural transition – reinvestment of £2.4 billion per year over the course of this Parliament	24.00	Cross-cutting (Environmental land management schemes)
£100 million UK Seafood Fund	0.10	6 – Using resources from nature sustainably
£270 million Farming Innovation Programme and the Farming Investment Fund.	0.27	7 – Mitigating and adapting to climate change
£5.2bn capital programme	5.20	8 – Reduced risk of harm from environmental hazards
£200 million investment in the Science Capability in Animal Health programme at Weybridge	0.20	9 – Enhancing biosecurity

Table 34 (cont.) Estimated aggregate commitments and allocation to EIP goal area

Significant financial commitment(s) relevant to domestic improvement	Aggregate estimate (£bn, 2022-2023)	Relevant EIP 23 goals (aggregated commitment allocated equally)
£250 million investment across the Urban Trees Challenge Fund, Local Authority Treescapes Fund and via England's Community Forests and our Woodland Creation partners.	0.25	10 – Enhancing beauty, heritage and engagement with the natural environment
Farming in Protected Landscapes programme – £50 million of funding until March 2024.	0.05	
The £95 million Cultural Development Fund	0.10	
£50 million investment in tackling loneliness.	0.05	

A focus on improving nature

Chapter 5 – In-depth assessment of improving nature

5.1 Introduction

We provide a more in-depth assessment of government's progress towards delivering the apex goal of Thriving plants and wildlife. We consider the main targets, analyse the policy mix relevant to achieving them, and consider both how progress is monitored and evaluated and opportunities for improvement.

5.2 Assessment of achievability (Chapter 13.2)

We considered achievability of the Thriving plants and wildlife goal from three perspectives. First, are the targets under the goal achievable? Second, what are the risks to achieving them? Third, is it possible to measure progress effectively using government's species abundance index?

This primarily drew on the synthesis of three work packages comprising two calls for evidence and a review of the species abundance monitoring regimes.

Review of the species abundance monitoring regimes

The overarching objective of this commissioned work was to provide a critical appraisal of the concept of species abundance and species extinction risk, and of the practical implications for achieving and assessing improvement in the natural environment. The appraisal covered both England and Northern Ireland, utilising evidence drawn from publicly available information, stakeholder workshops and the nature recovery call for evidence.

> *Key areas considered in the review:*
>
> 1. Approaches to monitoring species abundance and extinction risk in England, specifically in relation to achieving, and monitoring progress towards key targets arising from the Environment Act 2021.
>
> 2. Approaches to assessing and monitoring the status (abundance, extinction risk and wider conservation status) of species and priority species in Northern Ireland.
>
> 3. Evidence and analysis used by government and its agencies to develop, and then make and assess progress towards, the species abundance and related targets for England.
>
> 4. Appraisal of ecological and statistical strengths and weaknesses in government's science and evidence in relation to developing, and then making and assessing progress towards, targets for species abundance and extinction risk, and identification of areas requiring further development.

Calls for evidence

Our call for evidence on nature recovery in England aimed to establish whether government's plans and delivery methods will achieve both EA21 species abundance targets, and whether they detail and address the major barriers, enablers, synergies, and trade-offs within and across policy areas. We received 28 responses.

The call for evidence considered five questions. The responses to these questions were analysed through an analytical framework categorising the evidence provided. This is detailed in the broader project work which aims to review the species abundance monitoring regime. A summary of the nature recovery call for evidence analysis will be published in a report on the OEP website.[26]

The five questions posed to stakeholders through the call for evidence on nature recovery:

1. Considering the government's species abundance targets, to what degree do you consider these achievable in England's terrestrial, freshwater, and marine environments? What assumptions affect your consideration of feasibility?

2. Considering the 8 areas of action set out in EIP23 and other actions, what are the main interventions, or types of interventions, required to achieve the species abundance targets in England's terrestrial, freshwater and marine environments. Regarding these interventions, what scale and pace of deployment is required to achieve success?

3. What are the enablers and barriers to improving species abundance in the terrestrial, freshwater, and marine environment, and achieving the species abundance targets?

4. What are the synergies and trade-offs in improving species abundance in the terrestrial, freshwater, and marine environments, and achieving the species abundance targets?

5. What are the key uncertainties and knowledge gaps in assessing the achievability of the targets?

Our call for evidence on protected sites in England and Northern Ireland is supporting our review of environmental law governing protected sites. It aims to further understand how environmental law is being implemented, its effectiveness and, if appropriate, to recommend improvements. We aim to establish the extent to which these relevant laws are working well and achieving their objectives, and the areas where improvements are needed. We received 58 responses in total, with 39 focused on England, 11 in Northern Ireland and eight across both jurisdictions.

The protected sites call for evidence will be reported further as part of work scrutinising laws relating to protected sites and their implementation on land. We will be publishing reports with our findings and recommendations in 2024.[26]

5.3 Assessment of actions (Chapter 13.3)

To inform our analysis of government's actions intended to deliver the Thriving plants and wildlife goal, we commissioned an external research project.

Mapping government's actions to deliver Thriving plants and wildlife, research objectives:

1. Catalogue the actions from the EIP23, and other relevant strategies to capture and organise information on actions that deliver Thriving plants and wildlife.

2. Detail and map key actions to explain their role and importance in achieving Thriving plants and wildlife targets and commitments.

3. Develop visualisations to convey the information and key messages from the research.

Much of the work relied on a systematic process of collecting information from the EIP23 and the various strategies and policies it referenced. The scope of this work was deliberately broader than the EIP23 itself, so we were able to gather and consider more detailed information about the actions it contains.

A degree of interpretation and simplification was needed to summarise the findings. For instance, for the graphics in Chapter 13.3 of our 2022/2023 progress report, we linked delivery themes to specific targets, only included a selection of delivery partners and developed a typology of actions. These judgements were necessary to reflect the main messages in an accessible way.

Where greater analytical interpretation was needed for assessing policy maturity and identifying actions of interest, we developed and tested an approach with internal and external reviewers.

For the assessment of action maturity, we defined three stages: under consideration, in development, being delivered. These are defined and caveated in Chapter 13.3 of our 2022/2023 progress report. They were informed by reviewing how the concept of policy maturity had been applied by other organisations such as the Organisation for Economic Co-operation and Development (OECD) and What Works Centres.[81,82] The categories are intentionally similar to government's own conceptualisation of the policy process[13] and to those applied in our APR analysis (Chapter 2.2).

To allocate each of the actions in the EIP23 Thriving plants and wildlife chapter to one of the three stages, we defined what each maturity stage would look like for each of the different action types.

To identify a shortlist of actions of interest (Figure 13.3 of our 2022/2023 progress report) we drew on the information we had collated in the catalogue of actions as well as expert judgement. To structure the process, we used multiple criteria and iterative rounds of deliberation.

Criteria for deliberating and identifying actions of interest:

1. Level of resourcing and funding

2. Scale of the action and its impacts

3. Perceived importance for enabling significant change

4. Evidence of past or predicted contribution to achieving long-term targets

All the graphics, and their supporting narrative, went through internal quality assurance checks involving experts in each of the six delivery themes. We also shared them with government for comment. The full report from this supporting research will be available on the OEP website.[26]

In our future EIP progress reports, we will look to build on this analysis, to further understand how policies will work together to deliver the EIP.

Taking stock

Chapter 6 – Taking stock

6.1 Assessment of an effective EIP23 (Chapter 14.3)

In previous EIP progress reports we identified shortcomings in the 25YEP, and offered recommendations for how the revised version, the EIP23, could be improved.[2,83] Drawing on these observations and recommendations, we developed a list of eight attributes of an effective long-term environmental improvement plan (Table 35).[2]

We assessed the EIP23 against these attributes to understand to what extent government had addressed our recommendations. We developed analytical questions to turn each attribute into a qualitative assessment that could be consistently applied by multiple reviewers (Table 35).

Table 35 The eight attributes of an effective EIP and the associated analytical questions used to assess the EIP23

OEP's eight attributes of an effective EIP	Analytical questions
1) An effective new EIP would clearly translate vision into policies, commitments and actions for the whole of government	1a) Is there clear relationship to government's overarching 25YEP vision in the EIP23?
	1b) Has government defined a list of policies and activities across departments to achieve the vision?
2) An effective new EIP would establish clear governance arrangements that drive delivery on the ground	2a) Are there clear governance structures in place overseeing EIP23 delivery across levels of government and sectors of society?
	2b) Does the EIP23 clearly outline how the environmental principles will be implemented and how their impact will be monitored and evaluated?
3) An effective new EIP would have a unifying overall delivery plan and one for each goal area	3a) Is there an overarching EIP23 delivery plan?
	3b) Is there a delivery plan for each goal/target in the EIP23?
4) With new long-term targets set, an effective new EIP would set and pursue clear and achievable interim targets that are as ambitious as possible in the areas needing most attention	4a) Are there interim targets in place that define steps required to achieve each long-term target?
	4b) Is there clarity on the relationships between EA21 long-term targets, interim targets and pre-existing targets/commitments?
5) An effective new EIP would make clear use of robust and current data and analyses that are well aligned with all targets	5a) Has government outlined how progress towards each target and EIP goal will be monitored in the EIP23?
	5b) Are the data used to track the EIP robust and current?

Table 35 (cont.) The eight attributes of an effective EIP and the associated analytical questions used to assess the EIP23

OEP's eight attributes of an effective EIP	Analytical questions
6) An effective new EIP would establish an evaluation framework and use it to generate feedback on actions and progress, to learn and to improve delivery	6a) Has government produced an EIP evaluation framework to monitor implementation and provide lessons learnt to improve delivery?
	6b) Does the evaluation framework meet the OEP's description of a monitoring, evaluation and learning framework?
7) An effective new EIP would diagnose the cause of adverse trends, identify the most urgent, harmful or widespread concerns, and develop effective and timely responses	7a) Has government published the up-to-date evidence that underpins the EIP23 (including state, drivers and pressures for each goal and target)?
	7b) Does the EIP23 include specific actions to address underlying drivers of change and pressures on the environment, as well as outline plans to restore and protect the state of the environment?
8) An effective new EIP would develop assessment regimes that look more to the future, anticipate trends and project outcomes	8a) Has government outlined foresight plans/methodologies/assessment approaches and/or are there quantitative projections available for each EIP23 goal and target?
	8b) Are potential future barriers, enablers and risks to delivery adequately considered?

We used multiple reviewers and through an iterative process developed a consensus. Each attribute and its associated questions had equal weighting. Reviewers focused on the information contained in the EIP23 but were able to consider other sources where it was pertinent to a question and was explicitly referenced in the EIP23.

6.2 A new and informative Annual Progress Report (Chapter 14.4)

Considering the information in government's APR is a statutory requirement under our EIP monitoring function and forms the foundation of our assessment. We scrutinise the data and trends that are reported, as well as the summary of government's activities.

The description of government's activities contained in each APR provided a starting point for our assessment of policy progress in each goal area (described in Chapter 2.2 of this Method Statement). To-date, the APRs have not presented this information in a way that enables us to clearly understand what type of activity is being reported or its position in the policymaking process.

To bring some consistency to the way we assess and reflect this information, we developed categories for sorting activities and allocating them into three broad stages of the policy process as described in the HMT Green Book (Table 5).[13]

Using these categories enables us to summarise the type of progress made, where it is in the policy cycle, and how it differs across goal areas. We produced plots to summarise the number of different activities in the APR across the goals. However, the analytical

emphasis of our assessment is not on the absolute count, but the general area and content of activities. The summary plots provide a picture of the amount and variety of activities in each goal area, they do not tell the full story of whether, and how, those activities are improving the environment.

In developing our list of attributes for an informative APR we considered what government said the APRs should do, in the 25YEP evidence annex.[15] We built on this to incorporate consideration of: shortcomings we have highlighted with previous APRs, what we and other stakeholders need the APR to contain in order to fully understand progress with delivering the EIP, what information is available to government and would be reasonably practical to include in APRs.

Chapter 7 – Continuous improvement

7.1 Quality assurance

In line with our Governance Framework,[84] development of our assessment approach has been overseen by our Executive Committee and Board. It has also been tested with external stakeholders (Chapter 2 and Annex 4, Table 53).

In line with the Code of Practice, our quality assurance processes pay particular attention to our use and assessment of others' data. We have quality assured all aspects of our 2022/2023 progress report and this is also incorporated into our continuous improvement process.

7.2 Progress report

As an ongoing process, we record and review potential improvements while undertaking the assessment. Where possible, these are implemented, but some require greater resources or timescales than available and so are retained for future consideration. During this assessment, we identified the following areas for further consideration:

- Using bespoke assessments of change thresholds for individual indicators or using statistical significance to improve our understanding of the magnitude of change above and beyond the 3% applied across all indicators.

- Including more specific indicators in our in-depth assessments.

- Further development of indicator reference tables.

- Further development of the peer review process, including through our newly formed College of Experts.

- More extensive stakeholder engagement.

- Presentation of our assessment process and activity in forms that are accessible and clear.

- Developing a system map for each EIP23 goal area to summarise the key environmental and policy issues, and the things that need to happen to achieve ambitions, targets and commitments. This will be used to provide a consistent reference point for monitoring progress over multiple years.

- Developing a standardised and replicable approach to identifying and selecting government policies and actions to include in our assessment. This will involve categorising and sorting sources, as well as explaining why they were important for addressing our assessment questions and if there were any gaps or unavailable sources.

- Developing forward looking 'outlook assessments'. For each goal, we will assess likely future states and the key factors that influence future environmental trends. This will be based on compiled evidence and expert consideration of the effects of the major drivers of change, policies, and the quality of the evidence.

- Enabling a comparison of the APR analysis across years by using consistent categories for defining government activities including the APR 2023's distinction between actions improving the environment now and actions helping improve it in the future.

7.3 Methodological statement

This Methodological Statement is published for the first time alongside our 2022/2023 progress report. In line with our commitment to the Code of Practice and continuous improvement, we will continue develop it in the coming years to ensure reliability and transparency.

7.4 UKSA Code of Practice

Our voluntary statement of compliance sets out how we will look to continually improve our assessment methods using the pillars and principles of the code.

We will review our statement of compliance on a regular basis and continue to be active members of the UKSA community of practice to ensure we learn from examples of best practice across other organisations.

Annexes

Annex 1 – Indicator reference tables

Here we present indicator reference tables for the indicators selected for our 2022/2023 progress report. These are provided for indicators where we have developed our own indicators, or where there has been a significant deviation from a similar OIF indicator.

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.

Thriving plants and wildlife

Table 36 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'[23] Department for Environment, Food and Rural Affairs (Defra); Joint Nature Conservation Committee (JNCC)
Category	UK Biodiversity Indicator, national statistic
Description and rationale	Data shows the extent of nationally and internationally important protected areas across the UK. In our 2022/2023 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). We used the total of the two indicators for context. This indicator is not currently included in the OIF. We have used UK data rather than the disaggregated England metric from the England Biodiversity Indicators[21] dataset because at the UN Nature Summit COP15 in 2020, government committed to protecting 30% of land and sea by 2030 at a UK level. We will consider the use of England Biodiversity Indicator 2a ('Extent of condition of priority habitats')[10] in our future reports. This is a new indicator for our 2022/2023 progress report.
Methodology	No adjustments were made to the data. For a full description of the methodology, refer to the supporting documents for the JNCC indicator.

Table 36 (cont.) 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	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
	Unit: million hectares Trend (marine): +61.5% (2018-2023) Trend (land): +0.1% Accessed: 14 November 2023						

Table 37 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[25] Department for Environment, Food and Rural Affairs
Category	UK Biodiversity Indicator, national statistic
Description and rationale	The AUK data shows the area of land under agri-environment schemes, disaggregated by UK nation. We use the data for England-only, 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-present), Sustainable Farming Incentive. This indicator was developed to track uptake of agri-environment schemes, which is not currently included in the OIF. It gives an indication of progress against government's EIP23 commitment to support 65-80% of farmers to adopt nature friendly farming on 10-15% of their land by 2030. There are other indicators that present agri-environment scheme data, notably JNCC indicator B1ai ('Area of land in agri-environment schemes').[85] While there is a correlation between JNCC B1ai and 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 assessment would not have changed. This is a new indicator for our 2022/2023 progress report.
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.

Table 37 Indicator reference table – Area under agri-environment schemes

EIP Goal	Thriving plants and wildlife						
Data	Year	2017	2018	2019	2020	2021	2022
	Area of land	3.16	2.78	2.84	2.79	3.04	3.57
	Unit: million hectares Trend: +12.9% (2017-2022) Accessed: 7 November 2023						

Table 38 Indicator reference table – Extent of land cover more likely to support nature friendly habitat

EIP Goal	Thriving plants and wildlife
Data source	UK Centre for Ecology and Hydrology (UKCEH) Land Cover Map (LCM) UK Centre for Ecology and Hydrology; Office for Environmental Protection This research will be published on the OEP website.[26] For further information on UKCEH Land Cover Maps please see their website.[86]
Category	OEP indicator, based on UKCEH Land Cover Maps
Description and rationale	This indicator was developed by UKCEH, commissioned by the OEP, for our 2022/2023 progress report. It replaces 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. The indicator tracks the changes in England's landcover over the period 1990-2022 across 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. 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 England[88] 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.
Methodology	Summary land cover statistics were calculated for England using an R-script,[89] across 10 classes and each of the LCM datasets (1990-2021). Low-tide mark was chosen to include the greatest extent of coastal habitats. The report and full methodology will be published on the OEP website.

Table 38 (cont.) Indicator reference table – Extent of land cover more likely to support nature friendly habitat

EIP Goal	Thriving plants and wildlife											
LCM	1990	1994	1998	2002	2006	2010	2015	2017	2018	2019	2020	2021
Broadleaf woodland	8779	8635	9077	9184	9313	9766	9771	10828	10492	10750	10795	10457
Coniferous woodland	2625	2742	2789	2879	2952	2963	2979	2853	2804	2803	2635	2722
Arable	47794	49663	49557	49106	48070	47346	47763	46641	46383	46072	45585	44603
Improved grassland	44808	41513	40580	40574	41688	41423	42919	41604	42627	42527	41874	41512
Semi-natural grassland	8142	8958	9301	9442	8995	9213	6258	6823	6556	6625	7216	8337
Mountain, heath, bog	5297	5085	5001	5112	5107	5067	4897	4856	4858	4826	4953	5280
Saltwater	1231	890	952	1027	887	1010	703	724	752	727	686	709
Freshwater	697	770	797	826	815	838	972	1014	1019	1026	945	976
Coastal	1649	1853	1802	1725	1876	1746	2126	2365	2351	2345	2533	2100
Built-up areas and gardens	11608	12521	12775	12756	12930	13260	14243	14901	14768	14908	15409	15936
Total	130459	130459	130459	130459	130459	130459	130459	130443	130443	130443	130459	130459
UKCEH NFH	21696	22360	23010	23291	23119	23620	20880	22706	22091	22381	23325	24001

Data

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

Unit: square kilometres (low tide mark)

Trend (NFH): +14.9% (2015-2021)

Neutral and Calcareous grassland are under-estimated in LCM2015, with an associated over-estimation of improved grassland. This under-estimation also affects LCMs 2017-2019, but to a lesser extent.

We assessed the sensitivity of this data uncertainty by observing the trends across shorter time horizons where the impacts of the uncertainty are known to reduce. We still observed an increase above the 3% threshold across each time horizon. A 2.9% increase was also observed across consecutive years of 2020 and 2021.

Trend (NFH): +5.7% (2017-2021)
Trend (NFH): +8.6% (2018-2021)
Trend (NFH): +7.2% (2019-2021)

Developed: September 2023

Clean air

Table 39 Indicator reference table- UK emissions of five key air pollutants

EIP Goal	Clean air
Data source	Emissions of air pollutants in the UK[31] Department for Environment, Food and Rural Affairs
Category	National statistics
Description and rationale	This indicator tracks the emissions of the five key air pollutants covered by the National Emissions Ceilings Regulations 2018: nitrogen oxides (NOx), sulphur dioxide (SO_2), non-methane volatile organic compounds (NMVOC), fine particulate matter less than 2.5 μm in diameter ($PM_{2.5}$) and ammonia (NH_3). This indicator uses a similar source of data to OIF A1 ('Emissions for five key air pollutants in England'),[83] 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 National Emissions Ceilings Regulations. Our assessment would not differ significantly if we used England-only emissions, as they show very similar trends to UK data, with a correlation coefficient of 0.98 across the five pollutants between 2005 and 2020. This indicator was used in our 2021/2022 progress report and has been updated for our 2022/2023 progress report.
Methodology	As outlined in the National Emissions Ceilings Regulations, emissions reduction commitments are relative to a 2005 baseline. Therefore, emissions are presented in our 2022/2023 progress report as an index relative to 2005 (where emissions in 2005 = 100). This is also for data presentation purposes. Data was extracted from the 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: • NOx emissions are non-agricultural, as the Emission Reduction Commitments exclude agricultural sources. • NMVOC emissions are non-agricultural, as the Emission Reduction Commitments exclude agricultural sources. • NH_3 emissions reflect the 'compliance total', rather than the absolute total emissions, as the emissions inventory no longer includes non-manure digestate spreading.

Table 39 (cont.) Indicator reference table- UK emissions of five key air pollutants

EIP Goal	Clean air							
	Year	**2005**	**2016**	**2017**	**2018**	**2019**	**2020**	**2021**
	NOx							
	$Tx10^6$	1.710	0.888	0.852	0.810	0.756	0.649	0.650
	Index	100	52	50	47	44	38	38
	SO$_2$							
	$Tx10^6$	0.785	0.197	0.190	0.176	0.155	0.133	0.126
	Index	100	25	24	22	20	17	16
	NMVOC							
	$Tx10^6$	1.225	0.684	0.688	0.709	0.692	0.668	0.648
	Index	100	56	56	58	57	55	53
Data	**PM$_{2.5}$**							
	$Tx10^3$	115.39	82.49	83.79	86.34	82.88	78.44	83.22
	Index	100	71	73	75	72	68	72
	NH$_3$							
	$Tx10^3$	279.37	259.34	261.27	257.54	256.60	247.24	251.85
	Index	100	93	94	92	92	88	90

Unit: Tonnes; Index (2005=100)

Trends (2016-2021):
NOx -26.8%
SO$_2$ -36.3%
NMVOC -5.2%
PM$_{2.5}$ +0.9%
NH$_3$ -2.9%

Accessed: 18 July 2023

Table 40 Indicator reference table – Percentage of monitoring stations above 10 µg/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)[32] Department for Environment, Food and Rural Affairs
Category	National statistics
Description and rationale	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. The data shows the annual mean concentration of PM$_{2.5}$ across AURN monitoring stations in England. OIF Indicator A3 ('Concentrations of fine particulate matter in in England')[34] is an England-wide average concentration, weighted by where the population lives. OIF 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 10 µg/m³, as set out in the targets regulations. This indicator was included in our 2021/2022 progress report and has been updated.
Methodology	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. We then identified the stations with an annual mean PM$_{2.5}$ concentration of more than 10 µg/m³ and calculated their proportion relative to the total number of stations in England.
Data	<table><tr><th>Year</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th><th>2021</th><th>2022</th></tr><tr><td>Stations >10 µg/m³</td><td>30</td><td>27</td><td>27</td><td>4</td><td>8</td><td>6</td></tr><tr><td>Total stations</td><td>61</td><td>61</td><td>62</td><td>64</td><td>64</td><td>82</td></tr><tr><td>%</td><td>49</td><td>44</td><td>44</td><td>6</td><td>13</td><td>7</td></tr></table> Unit: Number of stations Trend: -80% (2017-2022) Accessed: 18 July 2023

Table 41 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[33] Department for Environment, Food and Rural Affairs
Category	UK Government annual compliance reporting informed by national statistics
Description and rationale	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. This indicator was included in our 2021/2022 progress report and has been updated.
Methodology	Data was extracted from the compliance summaries of government's annual air pollution in the UK reports to collate a dataset of exceedances over time. The data from 43 UK zones was 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 the 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. LV- limit value (legally binding); TV- target value and LTO- long-term objectives (attained where possible by taking all necessary measures not entailing disproportionate costs); CL- critical levels set for the protection of vegetation.

Table 41 (cont.) Indicator reference table – Incidents of exceedances against Air Quality Standards Regulations in England

EIP Goal	Clean air						
Data	Year	2017	2018	2019	2020	2021	2022
	NO_2	29	28	25	4	8	9
	PM_{10}	0	0	0	0	0	0
	$PM_{2.5}$	0	0	0	0	0	0
	O3	28	62	37	45	32	42
	As	0	0	0	0	0	0
	Cd	0	0	0	0	0	0
	Ni	0	2	2	2	2	2
	B[a]P	1	1	1	1	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	58	93	65	52	42	53

Unit: Exceedance count

Trend: -8.6% (2017-2022)

Accessed: 19 July 2023

Clean and plentiful water

Table 42 Indicator reference table – Pollution incidents to water

EIP Goal	Clean and plentiful water
Data source	OIF Indicator B2 ('Serious pollution incidents to water')[90] and Environment Agency data on regulated businesses in England[36] Environment Agency
Category	Modified OIF indicator, based on government research and analysis
Description and rationale	This indicator is based on the OIF Indicator B2 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.[91] For our 2022/2023 progress report, we have expanded the scope to account for category 1 to 3 incidents from all sectors.

Table 42 (cont.) Indicator reference table – Pollution incidents to water

EIP Goal	Clean and plentiful water						
Methodology	This data is taken from the annually reported 'data on regulated business in England' pollution incidents dataset. The EA data has 4 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 accounts is to enable evaluation of 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.						
Data	Year	2016	2017	2018	2019	2020	2021
	Category 1 (Major)	51	42	69	41	47	47
	Category 2 (Significant)	266	220	245	225	270	282
	Category 3 (Minor)	35	34	49	38	50	41
	Total	352	296	363	304	367	370
	Unit: Number of incidents Trend: +5.1% (2016-2021) Accessed: 26 October 2023						

Table 43 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[36] Environment Agency
Category	OIF Indicator, based on government research and analysis
Description and rationale	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').[92] 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 and 2022. The two indices are not comparable, and no backdated assessment has been developed by the data owner. This indicator was included in our 2021/2022 progress report where we used a SoSI trend for assessments. However, for our 2022/2023 progress report, as we only have two datapoints for the most up to date SDBI indicator, which are from consecutive years (2021 and 2022) we have not assessed a trend. This is because we consider 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.
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 9 water and sewerage companies operating in England.
Data	<table><tr><th>Year</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th><th>2021</th><th>2022</th></tr><tr><td>**SoSI**</td><td>99.7</td><td>99.6</td><td>99.9</td><td>99.8</td><td>-</td><td>-</td></tr><tr><td>**SDBI**</td><td>-</td><td>-</td><td>-</td><td>-</td><td>99.6</td><td>98.4</td></tr></table> Unit: Indices (/100) Trend: N/A Accessed: 18 October 2023

Managing exposure to chemicals and pesticides

Table 44 Indicator reference table – Hazardous waste disposal

EIP Goal	Managing exposure to chemicals and pesticides
Data source	Waste Data Interrogator[42] Environment Agency
Category	UK Government research and analysis
Description and rationale	The waste interrogator data shows the quantities and types of waste managed in England within the regulatory framework. This data is reported to the Environment Agency for compliance monitoring purposes. This indicator was developed while OIF indicator J5 ('Prevent harmful chemicals from being recycled')[93] is in development. The indicator website acknowledges that data is published in this area from the same source used here. We use this indicator to track trends in the volume of hazardous waste sent for disposal, used as a proxy for hazardous chemicals in the economy. It ensures we consider the latter stages of chemicals' life cycles in our assessment. We also consider it in our assessment of the Maximise our resources, minimise our waste goal area. This indicator was used in our 2021/2022 progress report and has been updated.
Methodology	Data for this indicator is 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	<table><tr><td>Year</td><td>2016</td><td>2017</td><td>2018</td><td>2019</td><td>2020</td><td>2021</td></tr><tr><td>Hazardous waste disposal</td><td>4.925</td><td>5.301</td><td>5.516</td><td>5.989</td><td>5.384</td><td>5.861</td></tr></table> Unit: Million tonnes Trend: +19.0% (2016-2021) Accessed: 16 August 2023

Maximise our resources, minimise our waste

Table 45 Indicator reference table – Amount of raw material consumed

EIP Goal	Maximise our resources, minimise our waste
Data source	OIF Indicator J2 ('Raw material consumption (excluding fossil fuels) per capita in England')[50]; England's Material Footprint dataset[51] Department for Environment, Food and Rural Affairs
Category	Modified OIF Indicator, official statistics
Description and rationale	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. This indicator is identical to OIF J2, however we have updated it in line with the most recent statistical release, which was after the annual OIF update in 2023. The data presented differs slightly to that presented in OIF J2, as consumption values were updated in the most recent release.
Methodology	Data for this indicator is extracted from Figure 1 of the England's material footprint publication, which shows trends in total annual raw material consumption in tonnes. We convert to tonnes per capita following the methodology used for OIF 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.[52] We also follow the OIF J2 methodology in excluding fossil fuel consumption from the dataset.
Data	<table><tr><th>Year</th><th>2015</th><th>2016</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th></tr><tr><td>Metal ores</td><td>1.0952</td><td>0.9047</td><td>0.8990</td><td>0.9825</td><td>0.9771</td><td>0.8134</td></tr><tr><td>Non-metallic minerals</td><td>9.2176</td><td>6.9299</td><td>6.7962</td><td>8.5213</td><td>8.2612</td><td>7.5508</td></tr><tr><td>Biomass</td><td>4.5084</td><td>3.9263</td><td>3.8296</td><td>3.7873</td><td>3.8552</td><td>3.3422</td></tr><tr><td>Total</td><td>14.8212</td><td>11.7609</td><td>11.5248</td><td>13.2911</td><td>13.0936</td><td>11.7065</td></tr></table> Unit: tonnes per capita Trend: -21% (2015-2020) Accessed: 15 August 2023

Using resources from nature sustainably

Table 46 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'[12] 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. It was included in our 2021/2022 progress report and updated for our 2022/2023 progress report. 'Sustainably managed' is defined by the Forestry Commission as woodland managed to the UK Forestry Standard,[94] that has a Woodland Management Plan, or for which the Forestry Commission have provided a grant or felling licence within the last 15 years. It is recognised that other woodland might be considered as managed as well, however, Forestry Commission do not have the data to include this.
Methodology	Data for this indicator is 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 does not fluctuate significantly between measurements within a given year, we use the value as of 31 March of each reporting year.
Data	<table><tr><th>Year</th><th>2017</th><th>2018</th><th>2019</th><th>2020</th><th>2021</th><th>2022</th></tr><tr><td>Percentage</td><td>58</td><td>59</td><td>59</td><td>59</td><td>59</td><td>58</td></tr></table> Unit: Percentage of woodland Trend: 0.0% (2017-2022) Accessed: 18 August 2023

Mitigating and adapting to climate change

Table 47 Indicator reference table – UK emissions of greenhouse gases

EIP Goal	Mitigating and adapting to climate change
Data source	UK greenhouse gas emissions[95] Department for Energy Security and Net Zero, Department for Business, Energy & Industrial Strategy
Category	National statistics
Description and rationale	This indicator was developed to assess progress against government's target of meeting net zero greenhouse gas emissions by 2050 relative to a 1990 baseline. This indicator is new for our 2022/2023 progress report. Data is published annually. The most recent data point is usually based on a provisional statistical release. We use the reported total emissions, which covers seven greenhouse gases: carbon dioxide, methane, nitrous oxide, hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride. Data is reported at a UK level, as the 2050 net zero emissions target is UK-wide, and Secretary of State has ultimate responsibility for ensuring it is met under the Climate Change Act 2008. For our 2021/2022 progress report, we used OIF indicator A2 ('Emissions of greenhouse gases from natural resources'),[59] which focuses on net emissions from England's natural resources. OIF A2 only accounts for emissions coming from within England. The updated indicator includes emissions from all UK sectors, so allows us to assess progress towards the main goal area target.
Methodology	Data is taken from the most recent statistical release, as changes to greenhouse gas inventories can result in retrospective adjustments to emissions levels. We use the total annual territorial greenhouse gas emissions and sum this with the emissions from international aviation and shipping to provide a total. This is consistent with the methodology applied by the Climate Change Committee.

Table 47 (cont.) Indicator reference table – UK emissions of greenhouse gases

EIP Goal	Mitigating and adapting to climate change						
Data	Year	2017	2018	2019	2020	2021	2022
	Total UK territorial emissions	473.2	464.8	450.4	406.3	426.5	417.1
	UK International aviation and shipping	44.1	44.5	44.1	20.9	19.5	32.5
	Total	517.3	509.3	494.5	427.2	446	449.6

Unit: million tonnes carbon dioxide equivalent ($MtCO_2e$)

Trend: -13.1% (2017-2022)

Accessed: 18 August 2023

Table 48 Indicator reference table – Consumption-based greenhouse gas emissions in England

EIP Goal	Mitigating and adapting to climate change
Data source	OIF Indicator J1 ('Consumption based greenhouse gas emissions in England')[57] and Carbon footprint for the UK and England[58] Department for Environment, Food and Rural Affairs
Category	Modified OIF Indicator, official statistics
Description and rationale	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. '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. This indicator was used in our 2021/2022 progress report (as 'Carbon footprint and consumer buying choices') and has been updated for our 2022/2023 progress report. The data differs to OIF 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.

Table 48 (cont.) Indicator reference table – Consumption-based greenhouse gas emissions in England

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 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	2015	2016	2017	2018	2019	2020
	Direct household	114	117	116	119	115	103
	Embedded in imported goods and services	305	250	249	261	256	230
	Produced goods and services	233	216	200	199	193	157
	Total	652	583	565	579	564	490

Unit: Million tonnes carbon dioxide equivalent ($MtCO_2e$)

Trend: -24.8% (2015-2020)

Accessed: 21 August 2023

Reduced risk of harm from environmental hazards

Table 49 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[62] Environment Agency
Category	Statutory reporting

Table 49 (cont.) Indicator reference table – Properties at high risk of flooding

EIP Goal	Reduced risk of harm from environmental hazards
Description and rationale	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). A similar data source will be used for the OIF indicator F1 ('Disruption or unwanted impacts from flooding or costal erosion'),[96] however it is still in development. This indicator was developed for our 2021/2022 progress report and updated for our 2022/2023 progress report.
Methodology	Data for this indicator was 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. We are aware that data for 2022/2023 is available which we have not assessed. This data shows an increase in the number of properties at risk but notes that this may be due to several issues, including: • new development pressures • changes to the natural environment • the increasing impacts of climate change • investment in building and maintaining flood and sea defences • ageing defences that require maintenance or replacement We were unable to undertake a robust assessment in time for our 2022/2023 progress report. This will be addressed as part of our continuous improvement process.
Data	<table><tr><th>Year</th><th>2015-16</th><th>2016-17</th><th>2017-18</th><th>2018-19</th><th>2019-20</th><th>2020-21</th><th>2021-22</th></tr><tr><td>**Rivers and seas**</td><td>271000</td><td>-</td><td>204000</td><td>200000</td><td>198000</td><td>198000</td><td>189000</td></tr><tr><td>**Surface water**</td><td>324000</td><td>-</td><td>324000</td><td>324000</td><td>326000</td><td>326000</td><td>326000</td></tr><tr><td>**Total**</td><td>595000</td><td>-</td><td>528000</td><td>524000</td><td>524000</td><td>524000</td><td>515000</td></tr></table> Unit: Total number of properties at high risk of flooding Trend: -13.4% (2015-16 to 2021-22) Accessed: 14 August 2023

Table 50 Indicator reference table – Number of wildfire incidents

EIP Goal	Reduced risk of harm from environmental hazards
Data source	Forestry Commission wildfire statistics for England: report to 2020/2021[63] Forestry Commission
Category	UK Government research and analysis
Description and rationale	This data is published by the Forestry Commisssion 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. This indicator was developed to track wildfire frequency which represents a significant increasing threat to nature and commercial forestry and agriculture.[61] Wildfire incidents and area burnt are reported for each financial year. This indicator was used in our 2021/2022 progress report, where we used fire service national statistics ('Fire and rescue incident statistics, England').[97] This showed the number of all fires affecting grassland, woodland and crops. We have updated the source data to the Forestry Commission publication, which disaggregates data by a greater number of land cover classes, consistent with UKCEH land use classes and is specific to wildfires.
Methodology	Data on wildfire incidents is disaggregated by 24 land cover classes. We regrouped the data for clarity and to align with the indicator used by the Climate Change Committee in their biennial assessments of climate adaptation progress. <table><tr><th>CCC/OEP Categories</th><th>Forestry Commission land cover class</th></tr><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, Windblow, 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 & bog</td><td>Mountain, heath & bog</td></tr><tr><td>Other non-woodland</td><td>Woodland (other verified), Non-woodland (as not verified), Other, No classification</td></tr></table>

Table 50 (cont.) Indicator reference table – Number of wildfire incidents

EIP Goal	Reduced risk of harm from environmental hazards						
		2015-16	**2016-17**	**2017-18**	**2018-19**	**2019-20**	**2020-21**
	Broadleaf woodland	2529	2201	2907	4359	3088	3901
	Conifer woodland	524	394	545	904	651	890
	Other woodland	297	238	313	618	287	375
	Arable	1873	1792	1994	3395	2113	2103
Data	**Improved grassland**	3438	3213	3427	6651	3588	4169
	Semi-natural grassland	510	426	475	971	494	606
	Mountain, heath & bog	145	127	150	349	184	275
	Other non-woodland	1510	1210	1589	2748	1511	1857
	Total	10826	9601	11400	19995	11916	14176

Unit: Number of wildfire incidents

Trend: +30.9% (2015-16 to 2020-21)

Accessed: 23 August 2023

Annex 2

Annex 2 – Policies and actions considered

Table 51 Policies and actions considered in the progress sections of the EIP23 goal area assessments.

Agriculture Act 2020
Air Quality Standards Regulations 2010
Air Quality Strategy
Ballast Water Management Convention
Bathing Water Regulations 2013
Biodiversity 2020
Biodiversity Net Gain
Border Target Operating Model
Carbon Budget Delivery Plan
Carbon Budget for Waste
Catchment Sensitive Farming
Clean Air Strategy
Climate Change Risk Assessment
England Red Squirrel Action Plan
England Trees Action Plan
England Woodland Creation Offer
Environment Act (1995 and 2021)
Environmental Land Management Schemes
Environmental Principles Policy Statement
Environmental Protection (Disposal of Polychlorinated Biphenyls and other Dangerous Substances) (England and Wales) Regulations 2020
EU REACH
EU Regulation on Invasive Alien Species (No 1143/2014)
Farming Innovation Programme
Fisheries Act 2020
Fisheries Management Plans
Flood and Coastal Erosion Risk Management
Food Strategy
Great Britain Invasive Non-Native Species Strategy
Green Infrastructure Framework
Grey Squirrel Action Plan
Heather and Grass Burning Regulations 2021
Joint Fisheries Statement
Kunming-Montreal Global Biodiversity Framework (Convention on Biological Diversity)
Land use framework for England
Levelling Up Parks Fund
Litter Strategy for England

Local Nature Recovery Strategies
Marine Natural Capital and Ecosystem Assessment programme
Marine Net Gain
Marine Protected Areas
Marine Strategy Regulations 2010
Montreal Protocol on Substances that Deplete the Ozone Layer
National Adaptation Programmes
National Action Plan for the Sustainable Use of Pesticides
National Air Pollution Control Programme
National Emissions Ceilings Regulations 2018
Nationally Determined Contribution
Natural Capital and Ecosystem Assessment
Natural Flood Management Programmes
Nature for Climate Fund
Nature for Climate Peatland Grant Scheme
Nature Friendly Farming Schemes
Nature Compact
Net Zero Strategy
OSPAR Convention
Other Effective Area Based Conservation Measures
Paris Agreement
Peat Grant Scheme
Plan for Water
Prioritisation and Early Warning System
Resources and Waste Strategy
Retained EU Law (Revocation and Reform) Act 2023
River Basin Management Plans
Smoke Control Areas
Stockholm Convention
Storm Overflows Discharge Reduction Plan
Sustainability and Climate Change Strategy
Sustainable Farming Incentive
UK Marine Strategy
UK REACH
Waste Management Plan for England
Waste Prevention Programme for England
Water and Abandoned Metal Mines Programme
Water Framework Directive 2017

Annex 3

Annex 3 – Trends and targets review engagement

Table 52 Stakeholder questions to frame our trends and targets workshops

General questions
Can you consider and comment on the appropriateness of the selection of draft indicators identified for discussion with your organisation. We also welcome comments on any proposed changes to our indicator selection more broadly, relative to the 2021/2022 assessment.
Can you consider and comment on our draft selection of targets and commitments? We also welcome comments on our overall framework of targets.
Are there any other indicators, commitments or targets you feel would support the OEP's assessment of progress against the EIP?
Can you consider and comment on our proposed methodologies for assessing trends and targets including your thoughts on the thresholds and our choice to not apply smoothing techniques. In particular: • *Can you consider and comment on our proposed approach to assessing trends this year?* • *Can you consider and comment on our proposal this year to provide a wider context on the trends assessed by exploring long term monitoring and a wider set of indicators in our assessment narrative?* • *Can you consider and comment on our proposed approach to assessing targets this year?* • *Can you consider and comment on the factors you believe we should consider in our assessment of targets?*
Methodological questions
What are the top three international commitments you consider important to your organisation's functions?
Are there any other national non-legally binding targets you consider important to consider in monitoring progress with the EIP?
Please consider our approach to composite indicators. Is there a more appropriate approach that could be taken?
Is there any contextual information you consider essential when monitoring progress through assessing trends, targets and appraising policy?
Currently, all indicators we have selected use a simple first and last year difference to calculate trends over time and do not use Loess smoothing, as is applied to many OIF indicators (due to the requirement to remove the most recent year of modelled data due to high errors). We also apply a consistent threshold of 3% to assess trends, consistent with the JNCC's approach to some biodiversity indicators- we do not currently have bespoke thresholds for each indicator. We welcome thoughts on either of these approaches.

Table 52 (cont.) Stakeholder questions to frame our trends and targets workshops

Methodological questions
The OEP does not produce official statistics, however we are developing our next report in parallel with voluntary adoption of the code of practice. We would be grateful to see/ hear about your procedures for managing the production of official statistics and other performance metrics.

Annex 4

Annex 4 – Targeted engagement with stakeholders

Table 53 Stakeholders engaged for targeted content development or peer review of our 2022/2023 progress report, in addition to the indicators and targets review (Table 2)

Chartered Institution of Wastes Management
Climate Change Committee
Coal Authority
Environmental Standards Scotland
GB Non-Native Species Secretariat
Green Alliance
Institution of Environmental Sciences
National Infrastructure Commission
OEP College of Experts
South Downs National Park Authority
Water UK
Waterwise

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