National Audit Office

Report
by the Comptroller
and Auditor General

Department for Environment, Food & Rural Affairs

Environmental metrics: government's approach to monitoring the state of the natural environment

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National Audit Office

Department for Environment, Food & Rural Affairs

Environmental metrics: government's approach to monitoring the state of the natural environment

Report by the Comptroller and Auditor General

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Sir Amyas Morse KCB
Comptroller and Auditor General
National Audit Office

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In an update to our 2015 briefing, our study evaluates how far the government has an effective system for measuring progress towards its environmental objectives.

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The National Audit Office study team consisted of:
Liam Blanc, James Gjertsen, Jess Hawe, Katy Losse, Munawar Mannan, Shoko Okamura, and Matt Phelps, under the direction of Keith Davis.

This report can be found on the National Audit Office website at www.nao.org.uk

For further information about the National Audit Office please contact:

National Audit Office
Press Office
157–197 Buckingham Palace Road
Victoria
London
SW1W 9SP

Tel: 020 7798 7400

Enquiries: www.nao.org.uk/contact-us

Website: www.nao.org.uk

Twitter: @NAOorguk

Key facts

One-third

proportion of the published data for one key set of environmental metrics that is three or more years old

161

number of current environmental reporting obligations to European bodies that may no longer be reported after EU exit

Four main cross-cutting sets of environmental metrics that government currently reports against or monitors

Two new sets of metrics which government plans to use to assess its progress in improving the state of the natural environment, covering 230 actions, and 65 anticipated outcomes

Summary

1 It is essential for government to have an effective system for measuring its environmental performance, in order to:

- understand whether it is on track to meet its long-term environmental goals, including those for air quality, carbon emissions and the natural environment;
- assess the effectiveness of new and existing policy interventions; and
- fulfil its international obligations on environmental reporting.

Robust data on performance are also essential for Parliament and the public to be able to hold government to account on how it meets its obligations and spends taxpayers' money.[1]

2 A good system of environmental metrics is particularly important now, because government has just published its 25-Year Environment Plan. This sets out its ambition to improve the natural environment in England within a generation. Meeting this ambition will require significant and coordinated action across a range of different sectors of the economy, and in some areas, it will involve reversing long-term trends of environmental decline. Strong environmental monitoring is also important in the context of the UK's exit from the European Union (EU), as it will enable stakeholders, Parliament and government itself to understand the government's performance against its commitment that leaving the EU will not mean environmental protections are diluted.

3 Government currently collects and reports against a wide range of environmental performance metrics. Key cross-cutting indicator sets include reporting against:

- the United Nations (UN) Sustainable Development Goals (the Goals);
- international conventions on climate change and biodiversity;
- the national Environmental Accounts, a set of satellite accounts to the main UK National Accounts, which measure the contribution of the environment to society, and the impact of economic activity on the environment; and
- the Department for Environment, Food & Rural Affairs' (Defra) internal 'Defra group scorecard'.

Separate policy areas will also have more detailed metrics, for internal government use, or for external reporting, including reporting related to EU directives.

1 Comptroller and Auditor General, *Accountability to Parliament for taxpayers' money*, Session 2015-16, HC 849, National Audit Office, February 2016.

4 This report sets out our expectations of good practice for an effective system of performance metrics based on our experience of reviewing government approaches to managing performance (Part One). It also examines the government's current environmental metrics (Part Two) and its plans for developing new metrics (Part Three). We focus on the metrics that relate to England or are UK-wide.

5 We prepared this report in response to a request from the Environmental Audit Committee to update our 2015 briefing on environmental and sustainability metrics. This raised concerns about the timeliness of some of government's environmental data, these data's alignment with the government's objectives, and whether there were enough mechanisms to enable the government to take action if performance was poor.

Key findings

Good practice

6 **Good performance metrics are reliable, relevant and cost-effective.** If metrics are to be useful, they must give a fair, accurate and timely reflection of performance. It is rarely possible to have perfect performance information, and there is a balance to be struck between what is ideal and what is possible, available and affordable. There can be a legitimate trade-off between the reliability of the data and how quickly it can be produced. But organisations need to carefully consider the cost–benefit case for metrics, ensure quality and timeliness is 'good enough' for the circumstances, and be transparent about any caveats and limitations (paragraph 1.4 and Figure 2).

7 **Performance information should be at the heart of government's decision-making.** Performance information is only useful if it actually informs decisions in practice, and we have found that this is too often an area of weakness. Performance information should be central to all policy decisions, including the introduction of new environmental policies, increases or reductions of funding for particular initiatives, and the running of established programmes. It allows policy-makers to track whether projects and programmes are achieving their objectives, and so correct delivery problems early, and prioritise effectively. To do this, metrics need to be part of a good performance system. Goals and objectives need to be clear, with appropriate arrangements for reviewing performance data, and mechanisms for ensuring that action is taken if performance is poor. Such arrangements are essential for achieving value for money from metrics: they mitigate the risk that the development of metrics becomes a distraction or a substitute for tackling underlying policy challenges (paragraph 1.5, Figure 3 and paragraph 2.11).

8 **Designing the right metrics for environmental policy can be particularly challenging, but it is important to invest properly to get this right.** Policy to meet environmental objectives is often complex and cross-cutting. Improving air quality, for example, will require action from a number of government departments (responsible for local government, health and transport as well as the environment) to influence a wide range of people and organisations to make significant and systemic changes. This brings practical challenges for developing a coherent and coordinated approach to tracking progress. However, difficulties are not insurmountable. We would expect policy-makers to develop a clear logic model that shows how they expect their policy initiatives in the short and medium term to influence long-term outcomes, and to measure the progress of these actions, as well as the ultimate outcomes, to help show whether steps are being taken in the right direction. New technology and analysis techniques also bring opportunities to improve coverage and quality alongside timeliness: the use of satellite data can reduce the need for physical inspections, permit near-real-time monitoring and improve the ability to analyse variations across different geographical regions (paragraphs 1.5, 1.6, Figure 4, and 3.10).

9 **It is vital to have good, accessible public reporting on performance information.** This allows stakeholders to test and challenge the conclusions that decision-makers draw from it. It can also help engage citizens with any behaviour changes required. If citizens have a clear understanding of progress on air quality, for example, it may build support for the switch to low emissions vehicles, walking and cycling (paragraph 1.5 and Figure 5).

Current metrics

10 **There are examples of the government's approach that are good, and which compare favourably with approaches taken in other countries.** The UK is one of the countries that has progressed furthest with developing data for a set of globally agreed indicators for the UN Sustainable Development Goals, currently publishing data for 64% of the indicators. The data are published by the Office for National Statistics through an online platform that is transparent and easy to use, and which includes an opportunity for anyone to provide feedback on the indicators, including on new or alternative data sources (albeit by email rather than on the public platform, as in Finland). The Climate Change Act is widely regarded as establishing a robust framework for measuring progress on mitigating and adapting to climate change, and includes statutory responsibilities for an independent organisation (the Committee on Climate Change) to monitor and report on progress, and reporting against metrics on projected as well as current performance on greenhouse gas emissions (paragraphs 2.7, 2.8 and Figure 5).

11 However, the weaknesses we raised in 2015 remain. There remains a patchwork of sets of metrics that do not align clearly with government's overall objectives or with each other. While the UK publishes data for most of the UN Sustainable Development Goal indicators, not all of these data are up to date. Data for one-third of the published metrics of the most environmentally focused Goals relate to 2015 or earlier. And mechanisms for taking action in response to some sets of metrics are not yet well developed, including for the Environmental Accounts, the Greening Government Commitments for the sustainability of the government estate, and the UN Sustainable Development Goals (paragraphs 2.4 to 2.7, and summary paragraph 19).

12 While government collects and reports a wide range of environmental data, there are some important gaps. We have not carried out an exhaustive review of the completeness of environmental metrics, but there are recognised gaps in government's ability to measure soil health and the UK's impact on biodiversity overseas. These issues are difficult to measure, but important to understand, particularly as government develops a new farming policy. Our recent reports have also highlighted some gaps in metrics for individual policy areas. On packaging recycling, we found that the methodology for the main performance metric (packaging recycling rates) was not sufficiently robust, because it did not account for undetected fraud and error. For the Renewable Heat Incentive scheme, the Department for Business, Energy & Industrial Strategy (BEIS) did not have specific goals or clear milestones to monitor progress for one of the scheme's three objectives (helping the supply chain to develop) (paragraphs 2.9, 2.10 and Figures 10 and 13).

13 Our reports have also raised concern about how effectively metrics are used to inform decision-making in practice. On air quality, we found that Defra and the Department for Transport's (DfT) joint air quality unit did not systematically oversee performance data on schemes run by other parts of government that include intended benefits to air quality. This meant that there was no clear single responsibility within government for knowing whether the initiatives form a coherent portfolio that delivers good value for money as a whole for air quality. Defra and DfT told us that they agree that this is an important objective, but believe that the arrangements which they currently have in place should be sufficient. For packaging recycling, Defra had not asked important questions about risks and value for money when reviewing performance against the main metric (paragraph 2.11 and Figures 11 and 12).

The future for environmental metrics

14 Government's plans for a new framework of metrics to measure progress against its 25-Year Environment Plan are promising. On 19 December 2018, Defra published a draft framework of 65 environmental metrics to give an overview of the health of the natural environment, including the quality of air, water and wildlife diversity. Because it takes a whole-systems approach, the framework should help decision-makers understand whether government's actions as a whole are consistent with its ambition to improve the natural environment within a generation, and it should help to highlight potential interactions between different policy areas. There are also positive signs that the framework will support accessible public reporting on the state of the natural environment, as the draft Environment Bill, would require government to report annually to Parliament on the metrics. Defra told us it plans to make the detailed, constituent data public alongside summary analysis, to promote transparency over underlying trends. There is international good practice that Defra can draw on as it develops this public reporting. For example, Germany produces an annual data report on the environment, which sets out clearly the reasoning behind each indicator and whether progress is on track (paragraphs 3.2 to 3.7 and Figure 14).

15 Defra has more to do to make sure that the framework gives an authoritative position on the state of the natural environment. Defra took the positive step of discussing its draft framework with some stakeholder groups before publication, to understand their views on whether the proposed metrics are the right ones. However, some told us that they were not given enough time to engage fully in assessing them, and Defra has not yet made any changes to the indicators in response to this feedback. Defra has now published the framework for wider public consultation. This only gave stakeholders just over five-weeks to respond, with that time period spanning Christmas and New Year. Although it included a commitment to keep the indicator framework under 'regular review'. There are also some significant gaps in the data: Defra expects that 23% of the proposed metrics will not be ready until at least December 2019. A further 9% are likely to still need further development after that point, including on soil and sea health. To maximise their impact, environmental metrics should have a spatial element, to identify variations in different geographical areas, but Defra does not expect to publish indicators at sub-national level (paragraph 3.10 and Figure 16).

16 Defra has established arrangements that should encourage its policy-makers to use the new system of metrics to inform decisions. The new framework gives an overview of progress against ultimate 'outcomes', but it is also important to track more immediate 'outputs' (such as trees planted, or protected areas created). Defra has already started doing this through a programme office, which is responsible for assessing progress on the 230 commitments for action in the 25-Year Environment Plan. In effect, therefore, these 230 actions act as an additional, complementary set of metrics. The programme office reports on a bi-monthly basis to a dedicated board, which in turn reports to a senior environment committee. Defra told us that it plans to incorporate monitoring of progress on the 65 outcome metrics into this process once they are agreed (paragraph 3.6).

17 However, it has not yet done enough to engage other parts of government with its approach, nor to set clear accountabilities for performance. Defra has not yet engaged the DfT, BEIS and the Ministry of Housing, Communities & Local Government (MHCLG), in its oversight arrangements for progress against the 25-Year Environment Plan. This is despite these departments having a significant impact on the natural environment, both through projects intended to improve the environment, and through the potential unintended consequences of business-as-usual. This means there is no clear, single point of ownership for performance as a whole across government on the 25-Year Environment Plan. Defra has also not yet set out expectations for the scale of improvement it expects as measured by each metric over the short and medium term. Less than one-quarter of the 44 targets in the Environment Plan are entirely specific, measurable and time-bound. Defra will also need to establish clear expectations for the contribution of all parts of government to improving performance as measured by these metrics. Without these expectations, there can be an incentive to delay taking action (paragraph 3.10).

18 Defra will also need to manage the risks and opportunities associated with EU exit. EU exit presents a huge challenge for Defra and has created an unprecedented portfolio of work that it needs to deliver. This brings a risk that less immediate issues such as metrics do not get sufficient resource and senior management focus. Also, at the moment, much of government's environmental monitoring is driven by EU requirements: the UK currently has 161 reporting obligations to European bodies, including the European Commission and the European Environment Agency. Defra will need to ensure that it maintains or improves the quality of this wider environmental monitoring, to supplement the high-level metrics in the new framework. At the same time, EU exit could bring opportunities to review this wider reporting to assess whether it all adds value in relation to UK goals (paragraphs 3.13 to 3.16).

19 It will be important to embed key environmental metrics into government's core planning and performance monitoring. Single Departmental Plans are the main way that government conducts strategic business planning. The plans are expected to function as comprehensive, costed business plans, setting out each department's objectives, and how it will monitor performance against them. They must be refreshed annually and require Cabinet Office and HM Treasury approval. The current plans do cover some well-established environmental policies such as climate change commitments and the Greening Government Commitments. However, coverage of the UN Sustainable Development Goals is thin: the plans highlight links between the Goals and existing policies, but do not set out in full each department's responsibilities for achieving the Goals. The goals relating to the 25-Year Environment Plan were announced in January 2018 but not reflected in the most recent round of Single Departmental Plans across government, although Defra's internal plan sets out a clear timetable for when it expects to produce key items such as performance metrics to support the plan's ambitions. HM Treasury and Cabinet Office have issued draft guidance directing Departments to indicate in their 2019-20 Single Departmental Plans where their objectives or work areas support the 25-Year Environment Plan (paragraphs 2.12 to 2.14).

20 The proposed new environmental watchdog needs 'teeth' to provide effective scrutiny over environmental metrics. Government is establishing a new environmental watchdog to fill a potential 'governance gap' after EU exit, given the role that the European Commission has played in holding government to account for environmental legislation, including on air quality. The draft Environment Bill would establish the watchdog as the Office of Environmental Protection, with an obligation to publish an independent annual progress report on implementation of the 25-Year Environment Plan, and to investigate the compliance of public authorities with environmental law. It would be able to set its own strategy, and would have the power to issue formal compliance notices to public authorities and to apply for judicial review. The watchdog will be funded through Defra, with a chair appointed by the Secretary of State for Defra. While in principle this is not incompatible with it being functionally independent, it could bring risks for its independence in practice or for its perceived independence. To be effective in holding people to account the new organisation will need to have access to good-quality environmental data, and to set clear expectations over how it will use these data to determine whether and how to intervene if performance is not on track. It will also need appropriate resources and strong leadership (paragraphs 3.11 and 3.12).

Conclusion

21 Successive governments have done a lot to raise the profile of environmental issues, and the publication of a 25-year plan for improving the natural environment within a generation could mark a step-change in approach. Government's draft framework for tracking progress against these environmental ambitions is promising. While significant challenges still need to be overcome, it is encouraging that the initial work is taking a broad, 'whole system' view. A critical test will be whether there is strong 'whole of government' ownership of the new framework of metrics, with all parts of government actually using this information to monitor progress and take action if performance is not improving as quickly as expected. To enable continuous improvement, it will be important that public reporting on progress is transparent and accessible, to engage the wider community in challenge and public debate. And the new environmental watchdog needs to be demonstrably independent to provide strong external scrutiny.

Recommendations

22 In preparing this report we have mainly sought to raise issues for the government and the Environmental Audit Committee to consider how to address. We do, however, have five direct recommendations, that government should:

a **strengthen governance arrangements over environmental metrics, so that there is a single point of responsibility for each set within government.** This single point should be responsible for regularly reviewing what the metrics show about performance against government's objectives, and should have the authority to require action if performance is poor. Given the cross-cutting nature of environmental issues, it should have strong engagement with all government departments. A particular priority is to establish this for the Sustainable Development Goal indicators, and for the outcome metrics for the 25-Year Environment Plan;

b **improve accountability for the 25-year plan metrics,** by setting clear public expectations for the scale of improvement it expects for each of the ten goals over the short and medium term, supported by a robust internal analysis of how performance reported through the 65 indicators will need to improve to meet these expectations;

c **ensure that the breadth of environmental data does not decline without good reason after EU exit.** Annual progress reports to Parliament on the 25-Year Environment Plan should include an annex with links to performance data for all the environmental metrics previously reported to the EU (as at exit day), or an explanation of why the UK no longer reports against a particular metric;

d **fill data gaps, particularly through greater use of geospatial data,** including satellite imagery; and

e **strengthen safeguards for the new environmental watchdog's independence,** by setting out how it intends to involve Parliament in choosing its chair and in determining its funding, and by setting out a clear framework document for the terms of the relationship.

Part One

Essential elements of an effective system of environmental performance metrics

1.1 This part of the report covers:

- good practice in developing a performance framework and performance metrics, drawing on our previous work;
- challenges in measuring government's environmental performance; and
- international examples showing how other countries have overcome some of these challenges.

An effective performance framework

1.2 An effective environmental performance framework is essential for government to understand how it is performing against its objectives and to allow it to make informed decisions. Performance metrics form the basis of any effective performance framework because they allow government to:

- understand whether it is on track to meet its long-term environmental goals and identify areas where it needs to take further action;
- assess how effective particular policies have been and drive improvements; and
- demonstrate that it is meeting its international environmental obligations.

Metrics also enable departmental boards and executive committees to understand the key risks and challenges facing government in meeting its environmental goals. They enable Parliament and civil society to better understand environmental issues and hold government to account for its environmental performance.

1.3 The government faces an important challenge in developing a robust environmental performance framework. It published its 25-Year Environment Plan in January 2018 with the stated ambition of improving the natural environment in England within a generation and ensuring that leaving the EU will not dilute current environmental protections.[2] The government is also beginning to plan how it will achieve testing international commitments, having signed up to the UN's Sustainable Development Goals (the Goals) in September 2015. The Goals cover the full range of sustainability issues (including economic and social sustainability) and include a number of environmental targets to achieve by 2030. Given the testing nature of these long-term goals, (**Figure 1**), it is essential that government quickly puts in place an effective performance framework to monitor and manage its environmental performance.

1.4 In our past reports we have looked at measuring performance over a wide range of policy areas. As a result, we have identified a number of good practice criteria that apply to developing performance metrics in any area. To be genuinely useful in managing performance, metrics need to provide timely and reliable information on an organisation's main objectives (**Figure 2** on page 16). A key challenge in developing performance metrics and performance data is striking the right balance between what would be ideal and what is possible, available and affordable. Metrics need to be 'good enough' to highlight key issues and trends, but the limitations of the reported information need to be clearly understood.

1.5 Performance metrics should be at the heart of government decision-making including the introduction of new environmental policies, increases or reductions of funding for particular initiatives and the running of established programmes. On their own metrics have little value: to get real benefits from performance metrics, they must be part of a wider performance framework. A good performance framework should clearly link performance metrics to the goals and targets they support, and lay out how the metrics will be monitored and how action will be taken if they highlight problems (**Figure 3** on page 17). Transparent and accessible reporting is an important part of a good framework, as it allows stakeholders and the wider public to monitor government's progress and press for change if needed. This is particularly important when it comes to environmental issues, as improvements often require changes in public behaviour. If citizens have a clear understanding of progress on air quality, for example, it may build support for the switch to low emissions vehicles, walking and cycling. Accessible performance reporting therefore has a role in engaging people outside government and helping to drive change.

2 HM Government, *A Green Future: Our 25-Year Plan to Improve the Environment*, January 2018

Figure 1

The high-level objectives of the United Nations Sustainable Development Goals and the UK's 25-Year Environment Plan

The UN's Sustainable Development Goals and the UK government's 25-Year Environment Plan include a range of challenging long-term goals

Sustainable Development Goals	25-Year Environment Plan
Goal 1: No poverty	Clean air
Goal 2: Zero hunger	Clean and plentiful water
Goal 3: Good health and well-being for people	Thriving plants and wildlife
Goal 4: Quality education	Reducing the risks of harm from environmental hazards
Goal 5: Gender equality	Using resources from nature more sustainably and efficiently
Goal 6: Clean water and sanitation	Enhancing beauty, heritage and engagement with the natural environment
Goal 7: Affordable and clean energy	Mitigating and adapting to climate change
Goal 8: Decent work and economic growth	Minimising waste
Goal 9: Industry, Innovation and Infrastructure	Managing exposure to chemicals
Goal 10: Reducing inequalities	Enhancing biosecurity
Goal 11: Sustainable cities and communities	
Goal 12: Responsible consumption and production	
Goal 13: Climate action	
Goal 14: Life below water	
Goal 15: Life on land	
Goal 16: Peace, justice and strong institutions	
Goal 17: Partnerships for the goals	

Source: United Nations Sustainable Development Goals, available at: www.un.org/sustainabledevelopment/sustainable-development-goals/; HM Government, *A Green Future: Our 25-Year Plan to Improve the Environment*, January 2018, available at: www.gov.uk/government/publications/25-year-environment-plan

Figure 2
Good practice for performance metrics

Our previous work has identified several key attributes for performance metrics in any policy area

A performance measure should:

- be relevant to what the organisation is aiming to achieve;
- avoid perverse incentives that encourage unwanted or wasteful behaviour;
- be attributable – the activity measured must be capable of being influenced by actions which can be attributed to the organisation; and it should be clear where accountability lies;
- be well-defined – with a clear, unambiguous definition so that data will be collected consistently, and the measure is easy to understand and use;
- be timely, producing data regularly enough to track progress, and quickly enough for the data to still be useful;
- be reliable – accurate enough for its intended use, and responsive to change;
- be comparable with either past periods or similar programmes elsewhere; and
- be verifiable, with clear documentation behind it, so that the processes which produce the measure can be validated.

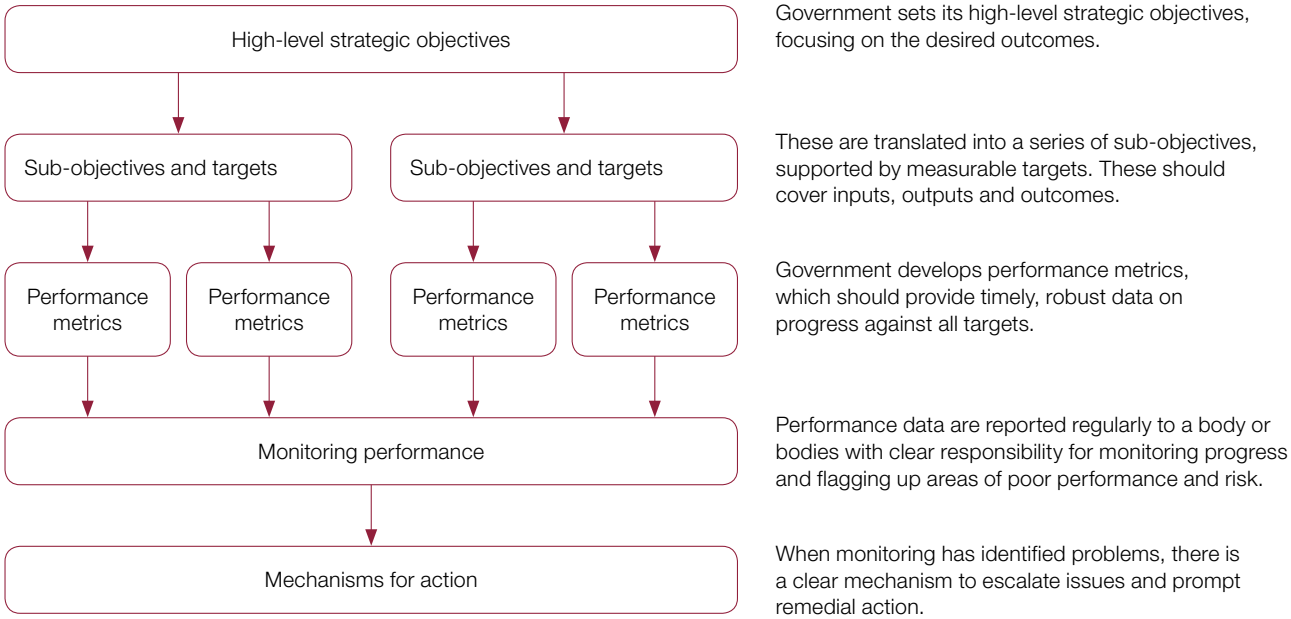
Source: National Audit Office and HM Treasury, *Choosing the right FABRIC, A Framework for Performance Information*, February 2001

The challenges to producing effective environmental metrics

1.6 Developing effective environmental metrics is challenging because environmental policies often seek to address long-term and complex issues. The complexity and variety of these issues often mean that a number of government organisations are involved in implementing policy. Improving air quality, for example, will require action from a number of government departments (responsible for local government, health and transport as well as the environment). Moreover, the influence that government has over environmental outcomes is often indirect and difficult to quantify, especially where the issues are international and the UK cannot address them in isolation. However, these complicating factors are not unique to environmental issues. Government has faced similar challenges in developing useful performance metrics in other policy areas (**Figure 4** on pages 18 and 19) and there is international good practice that the UK can draw on (**Figure 5** on page 20).

Figure 3
Performance framework good practice

In order to make a real difference, performance metrics need to be part of a wider performance framework



A good performance framework is:

- focused on the organisation's aims and objectives;
- appropriate to, and useful for, the stakeholders who are likely to use it;
- balanced, giving a picture of what the organisation is doing, covering all significant areas of work;
- robust in order to withstand organisational changes or individuals leaving;
- integrated into the organisation, being part of the business planning and management processes; and
- cost-effective, balancing the benefits of the information against the costs.

Source: National Audit Office analysis of good practice criteria from previous reports

Figure 4

Key challenges and potential solutions in measuring environmental impact

Developing good environmental metrics poses challenges for government, some of which have been encountered and addressed in other areas

Issue	Challenge	Potential solutions
Underlying trends masked by 'background noise' (ie natural short-term fluctuations that have no long-term significance)	Difficult to identify genuine progress or genuine regression. For example, annual weather patterns have a major impact on the abundance of species.	Publish performance data along with an independent assessment of the long-term trends.
Isolating the impact of government actions	The environment is affected by many factors and distinguishing the contribution of specific government measures is challenging.	Develop a 'clear line of sight' linking inputs (the resources used) through outputs (goods and services delivered) to outcomes (the impact on society). For example, the Care Quality Commission drew together an analysis of its inputs, outputs, outcomes and costs to develop a framework to assess whether it was achieving value for money.
Complexity of interconnections and influences	Environmental issues are interconnected in complex ways and influenced by many factors. This creates significant challenges to reporting reliable and easy to interpret information. Government's influence over environmental outcomes varies considerably, from very direct impacts to indirect influence based on encouraging behaviour change.	Reporting should include an explanation of context, data caveats and interpretation of long-terms trends alongside the metrics. For example, the Pensions Regulator sought to measure how effective it was at influencing key outcomes. In its reporting it clearly linked its output metrics to its strategic goals and also looked at longer-term trends.
Capturing a wide enough range of data	Government's environmental policies cover broad outcomes. Devising metrics to address that cover all the main issues can be challenging. For example, government currently collects data on the number of pollinating insects in order to assess the health of the natural environment. However, a properly functioning eco-system is complex and requires the presence of more than just pollinators.	A clear logic model linking performance metrics to goals and targets makes it easier to assess whether performance data are being captured for all important outcomes. Transparent, detailed reporting allows experts and stakeholders to assess whether performance data are sufficiently broad. Our review of data systems behind Public Service Agreements showed that, over time, government was able to improve performance measurement by developing new metrics and improving data quality.

Figure 4 *continued*
Key challenges and potential solutions in measuring environmental impact

Issue	Challenge	Potential solutions
International nature of environmental issues	Some environmental issues are global in nature, which makes measuring the UK's overall environmental impact challenging. As an example, measuring the UK's carbon footprint requires assessing the carbon footprint of all the goods and services imported into the country. This is one of the major challenges in developing metrics for those of the Sustainable Development Indicators which look to assess a country's impact overseas.	Several groups are investigating ways to measure global environmental impacts. For example, in the Well-being of Wales report, the Welsh government publishes an assessment of the ecological footprint of Wales based on calculations by the Stockholm Environment Institute and University of York.

Notes

1 Care Quality Commission example is from National Audit Office, *Performance measurement by regulators*, November 2016, Figure 9.

2 Pensions Regulator example is from National Audit Office, *Performance measurement by regulators*, November 2016, paragraph 1.10.

3 Welsh Government. *Well-being of Wales*, September 2018, National Well-being Indicator 14. available at: https://gov.wales/statistics-and-research/well-being-wales/?tab=data&lang=en

Source: Review of previous National Audit Office publications, including National Audit Office, *Measuring Up: How good are the government's data systems for monitoring performance against Public Service Agreements?*, October 2009 and *Performance Measurement by Regulators*, November 2016

Figure 5

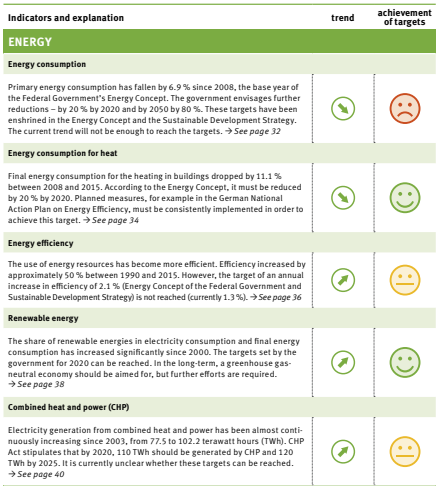
International examples of good environmental performance metrics

Some other countries have developed interesting new ways to address and report performance on environmental issues

Germany

The German government provides several good examples of transparent and easily accessible reporting. For example, *Data on the Environment 2017* reports on 50 indicators using a happy/sad face rating system to show how likely it is the indicator target will be met by its target date. The indicator results seek to engage readers by explaining the importance of the thing being measured, for example, its impact on human health.

The reporting against UN Sustainable Development Goal indicators is also illustrated in an easy to grasp manner. A weather symbol rating system is used to show if the target is on track (for example, sunshine is good, stormy cloud is bad).



Indicators and explanation	trend	achievement of targets
ENERGY		
Energy consumption		
Primary energy consumption has fallen by 6.9 % since 2008, the base year of the Federal Government's Energy Concept. The government envisages further reductions – by 20 % by 2020 and by 2050 by 80 %. These targets have been enshrined in the Energy Concept and the Sustainable Development Strategy. The current trend will not be enough to reach the targets. → *See page 32*		
Energy consumption for heat		
Final energy consumption for the heating in buildings dropped by 11.1 % between 2008 and 2015. According to the Energy Concept, it must be reduced by 20 % by 2020. Planned measures, for example in the German National Action Plan on Energy Efficiency, must be consistently implemented in order to achieve this target. → *See page 34*		
Energy efficiency		
The use of energy resources has become more efficient. Efficiency increased by approximately 50 % between 1990 and 2015. However, the target of an annual increase in efficiency of 2.1 % (Energy Concept of the Federal Government and Sustainable Development Strategy) is not reached (currently 1.3 %). → *See page 36*		
Renewable energy		
The share of renewable energies in electricity consumption and final energy consumption has increased significantly since 2000. The targets set by the government for 2020 can be reached. In the long-term, a greenhouse gas-neutral economy should be aimed for, but further efforts are required. → *See page 38*		
Combined heat and power (CHP)		
Electricity generation from combined heat and power has been almost continuously increasing since 2003, from 77.5 to 102.2 terawatt hours (TWh). CHP Act stipulates that by 2020, 110 TWh should be generated by CHP and 120 TWh by 2025. It is currently unclear whether these targets can be reached. → *See page 40*		

Finland

Finland's strategy for sustainable development is guided by its Society's Commitment to Sustainable Development, 'The Finland we want by 2050'. Initially drawn up in 2013, the Commitment was revised in 2016 to act as the vehicle for the implementation of the UN Sustainable Development Goals. Progress towards the goals is monitored through a selection of indicators, updated on an annual basis. Anyone (from academics, the private sector and the general public) is encouraged to comment on the indicators and present other indicators or recent studies that supplement or challenge the position given by current indicators. Commentators are also encouraged to put forward policy options or solutions. Partially as a result of the comments received, Finland is currently revising its indicator collection and has determined to change some of the indicators.

Wales

The Well-being of Future Generations (Wales) Act was passed in 2015 and requires most Welsh public sector bodies to maximise their contribution to seven well-being goals. These well-being goals are defined in legislation and address a wide range of sustainability issues, including economic, social, environmental and cultural well-being. Reporting progress against the well-being goals is done at two levels:

1 The Welsh government publishes an annual *Well-being in Wales* report, which summarises progress at a national level against all seven well-being goals. It includes several features that make it easy for members of the public to use as well as pointing stakeholders to more detailed information. The report includes data from 46 national indicators, which are clearly mapped against the seven well-being goals. There is commentary on the high-level trends suggested by the data, notes on the methodology behind each indicator, and links to the underlying data sets.

2 All public bodies in Wales are required to produce a plan that seeks to maximise their contribution to all seven well-being goals and to report progress against these annually. Each body is encouraged to develop its own set of performance metrics so that it can measure progress in the way best suited to its activities. The Office of the Future Generations Commissioner monitors reported progress and can act if bodies are not making sufficient progress on sustainable development as defined in the Act.

Source: National Audit Office analysis of international environmental reporting. Screenshot is from German Environment Agency, *Data on the Environment 2017*, available at: www.umweltbundesamt.de/sites/default/files/medien/376/publikationen/2017_dzu-bericht_wf_en.pdf; Welsh Government, *Well-being of Wales*, September 2018, available at: https://gov.wales/statistics-and-research/well-being-wales/?tab=data&lang=en

Part Two

Current environmental performance metrics

2.1 This part of the report covers:

- an overview of the existing metrics collected by government;
- an update on progress on environmental metrics since our last briefing; and
- other progress on improving environmental metrics.

Existing environmental metrics

2.2 Government collects and reports against a wide range of environmental performance metrics (**Figure 6** on pages 22 and 23). These are a mixture of metrics used to assess progress against domestic policy and metrics used to report against international commitments. There are four main cross-cutting metric sets, covering reporting against:

- the United Nations Sustainable Development Goals (the Goals);
- international conventions on climate change and biodiversity;
- the national Environmental Accounts, a set of satellite accounts to the main UK National Accounts that measure the contribution of the environment to society, and the impact of economic activity on the environment; and
- the Department for Environment, Food & Rural Affairs' (Defra's) internal 'Defra group scorecard'.

2.3 Government does not publish an accessible summary of performance against many of these metric sets. Figure 6 provides an overview of the main sets of environmental metrics used by government, **Figure 7** on pages 24 to 27 summarises assessments of performance for a selection of the sets and **Figure 8** on page 28 summarises stakeholder analysis of progress in implementing the United Nations Sustainable Development Goals.

Figure 6

Government's main set of environmental metrics and sources of environmental information

Government has four main cross-cutting environmental metric sets, with a range of smaller sets covering specific policy areas

Government's main cross-cutting environmental metrics

United Nations Sustainable Development Goals

A set of 244 metrics, around one-third of which are still being developed. These are used to report progress against the UN's 17 Sustainable Development Goals. The goals cover sustainability over a range of areas; a number have an environmental focus.

Environmental Accounts

A set of satellite accounts to the main UK National Accounts. The accounts measure the interaction between the environment and economy and cover areas such as emissions, waste and environmental taxation. The accounts are created in accordance with the System of Environmental Economic Accounting as set by the UN.

25-Year Environment Plan indicators

A set of 65 indicators that are being developed to measure progress against the ambitions of the 25-Year Environment Plan, published in 2018. These indicators cover a broad range of environmental areas, from air quality to the UK's environmental impacts overseas. Defra plans to report progress against these indicators in the annual report associated with the 25-Year Environment Plan. The 230 actions within the plan, effectively output metrics, will also be reported alongside the indicators.

Other information and reporting Government collects for environmental monitoring

UK Biodiversity Indicators

A set of 50 metrics created to assess progress against 'the Aichi targets'. These targets cover biodiversity and are set by the Convention on Biological Diversity, an international environmental agreement to which the UK is a signatory.

Defra group scorecard

A selection of the metrics set out in the Department's Single Departmental Plan are reported to the Executive Committee on a quarterly basis via the Defra group scorecard, giving senior oversight of what they show. Manifesto commitments, such as to plant 1 million urban trees, are also monitored in this way.

Biodiversity 2020 Indicators

A set of 51 metrics created for the Biodiversity 2020 white paper, published in 2011. The indicators cover biodiversity across a range of key species groups in England to measure progress against government's commitment to halt overall loss of biodiversity by 2020.

Internal performance metrics

The Environment Agency and other bodies within the Defra Group collects environmental metrics to inform their activities. Some but not all of these are published externally.

Natural Environment Indicators

A set of 29 metrics covering biodiversity and other areas of the environment. The metrics were developed to track progress on the ambitions of the Natural Environment white paper, published in 2011, which is a strategy aimed at valuing nature and ensuring it is available for use by future generations.

Greenhouse gas emission statistics

Official emission statistics for each of the main sectors are released each year. The Climate Change Act 2008 also requires that government reports annual emissions to Parliament; this is done through the Annual Statement of Emissions. Future emissions projections, used to monitor progress against the UK's carbon budgets, are reported annually as well.

Other

Government reports, data and indicators covering specialised topics such as air quality, water quality and recycling.

Source: National Audit Office analysis of government metrics

Government's main cross-cutting environmental metrics

Natural Capital accounts

ONS are currently developing another set of accounts to sit along side the Environmental Accounts in response to a commitment from the 2011 Natural Environment white paper. These will hold the valuation of 'Natural Capital' in the UK which includes all ecosystem services provided by natural assets such as soil, air, water and living things.

- Department for Environment, Food & Rural Affairs and arm's-length bodies
- Department for Business, Energy & Industrial Strategy
- Advisory bodies
- Office for National Statistics
- Cross-government
- Under development
- Reported internationally

Other information and reporting Government collects for environmental monitoring

Environmental reporting in Single Departmental Plans and annual reports

Departments with environmental goals can include these within their Single Departmental Plans and then in turn report on these within their Annual reports and Accounts. This gives a high-level, cross-government view of how environmental objectives are being met.

Greening Government Commitments

A set of targets for reducing the environmental impact of government estate and operations. Includes greenhouse gas emissions, waste production and water and paper consumption for each government department.

Advisory body annual reports

Parliament receives reports from advisory bodies, such as the Committee on Climate Change's annual progress report or the Natural Capital Committee's State of Natural Capital report, which informs it of progress in specific environmental areas, for example climate change and Natural Capital respectively.

Notes

1 The Biodiversity 2020, Natural Environment and most of the 25-Year Plan indicators cover England only.

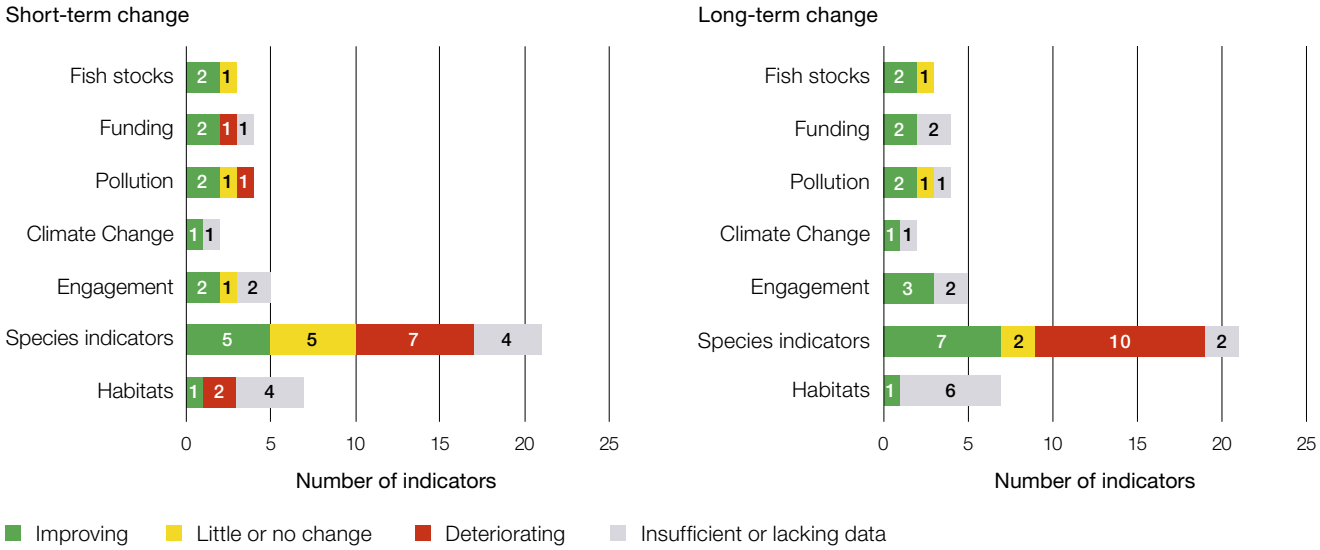
2 Assessments of the Biodiversity 2020 indicators, advisory body annual reports on climate change and the Greening Government Commitments are summarised in Figure 7. A stakeholder assessment of the United Nations Sustainable Development Goals is summarised in Figure 8.

Figure 7

Summary of progress from a selection of environmental areas

1 Biodiversity 2020 indicators – Government's assessment of change for biodiversity in England

Sixteen measures showed improvement in the long and short term while four have deteriorated in all time periods assessed



Short-term change (51)	Long-term change (51)
Improving (17)	**Improving (21)**
Fish stocks – Percentage of fish stocks harvested sustainably	**Conservation** – Extent of protected areas at sea
Habitats – Condition of priority habitats	**Habitats** – Percentage of woodland certified as sustainably managed
Fish stocks – Marine ecosystem integrity (size of fish in North Sea)	**Engagement** – Conservation volunteering
Little or no change (10)	**Little or no change (4)**
Species indicators – Bat populations	**Species indicators** – Breeding wetland birds
Conservation – Sites of special scientific interest (SSIs) in favourable or unfavourable recovering condition	**Pollution** – Area affected by nitrogen deposition
Species indicators – Status of pollinating insects	**Fish stocks** – Marine ecosystem integrity (size of fish in North Sea)
Deteriorating (11)	**Deteriorating (10)**
Species indicators – Breeding farmland birds	**Species indicators** – Breeding farmland birds
Funding – Public sector expenditure on biodiversity in England	**Species indicators** – Status of pollinating insects
Habitats – Percentage of woodland certified as sustainably managed	**Species indicators** – Change in relative abundance of priority species
Insufficient or no data (13)	**Insufficient or no data (16)**
Engagement – Proportion of people highly engaged with the issue of biodiversity loss	**Habitats** – Extent of priority habitats
Habitats – Extent of priority habitats	**Conservation** – Local sites under positive management
Engagement – Proportion of households undertaking wildlife gardening	**Engagement** – Proportion of people highly engaged with the issue of biodiversity loss

Notes

1 Period of measurement for long- and short-term change differs for each indicator but is typically since 2010 for short-term and from 2000 or earlier for long-term.

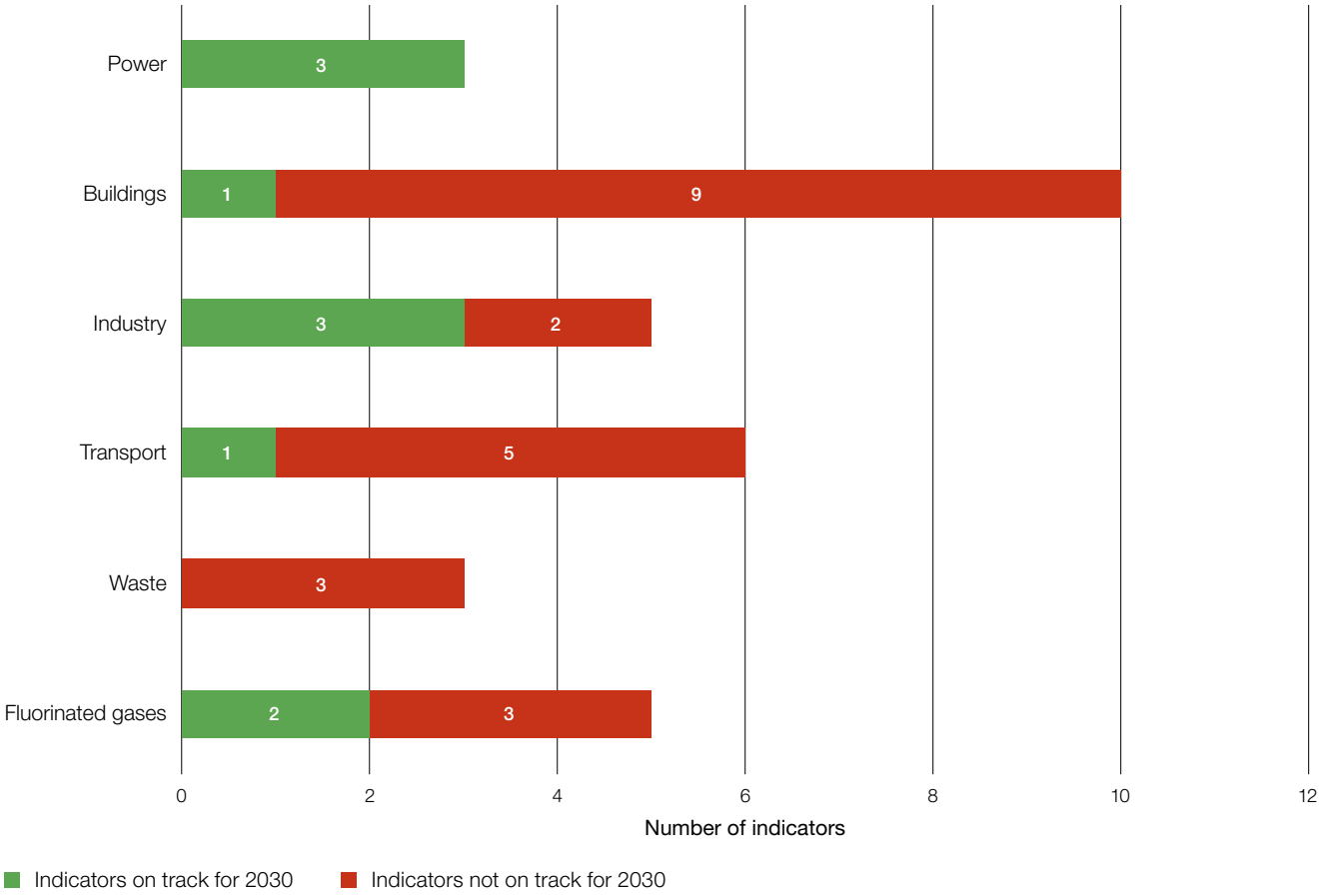
2 The categories used to group the indicators (such as engagement, habitats or pollution) are based on NAO analysis of the metric descriptions.

3 The geographical coverage of the Biodiversity 2020 indicators is England alone.

Source: National Audit Office analysis of Department for Environment, Food & Rural Affairs' *Biodiversity 2020* report, 2018

2 Climate Change mitigation – The Committee on Climate Change's assessment of the UK's progress on key outcomes towards 2030 targets

The Committee concluded that the UK is not on course to meet the legally binding fourth and fifth carbon budgets



Examples of indicators on track	
Industry	Manufacturing and refining direct combustion CO_2 emissions
Power	Onshore wind increased production
Economy-wide progress	At least one-quarter of buildings heat from low-carbon sources by 2030
Examples of indicators not on track	
Waste	Reduce biodegradable waste sent to landfill by 93% by 2030 from 2007 levels
Transport	60% of new cars and vans to be electric vehicles by 2030
Buildings	Reduce direct CO_2 from buildings by 32% by 2030, from 1990 levels

Note

1 The graph shows a summary of the Committee on Climate Change's 2017 interim indicators for key outcomes. Green means that the indicator is on the cost-effective path to meeting the government's 2030 emission targets, and red means that the indicator is not on the cost-effective path.

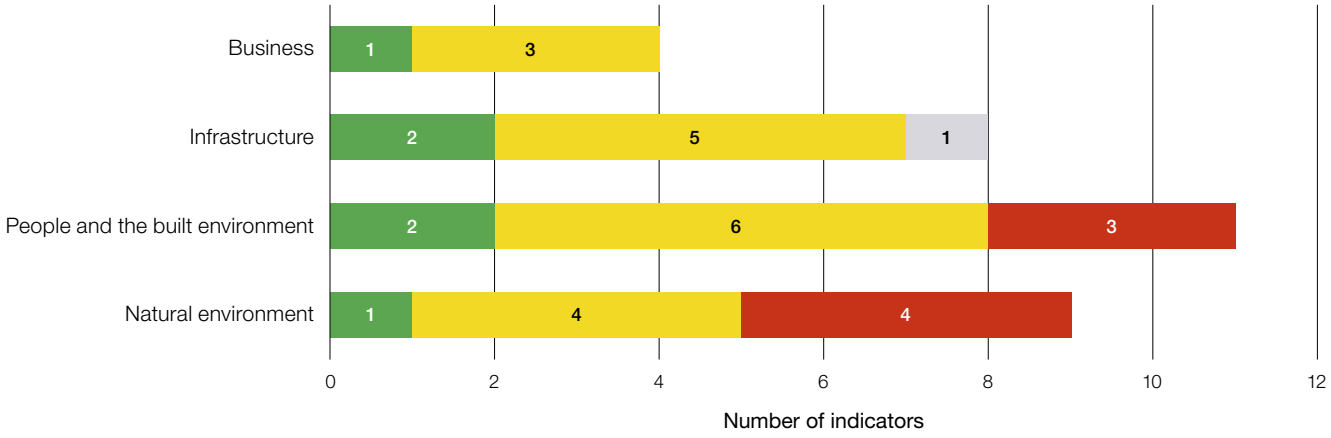
Source: National Audit Office summary of Committee on Climate Change, *Reducing UK Emissions 2018 Progress Report to Parliament*, June 2018

Figure 7 *continued*

Summary of progress from a selection of environmental areas

3 Climate change adaptation – Summary of vulnerability indicators used by the Committee on Climate Change for each adaptation priority

The Committee concluded that despite some areas of progress, the level of risk has increased for a significant number of priorities



Examples of green-rated indicators	
Infrastructure	Public water supply
People and the built environment	River and coastal flood alleviation
Natural environment	Crops and livestock

Examples of red-rated indicators	
People and the built environment	Surface water flood alleviation
Natural environment	Soil health and carbon sequestration
Natural environment	Farmed countryside

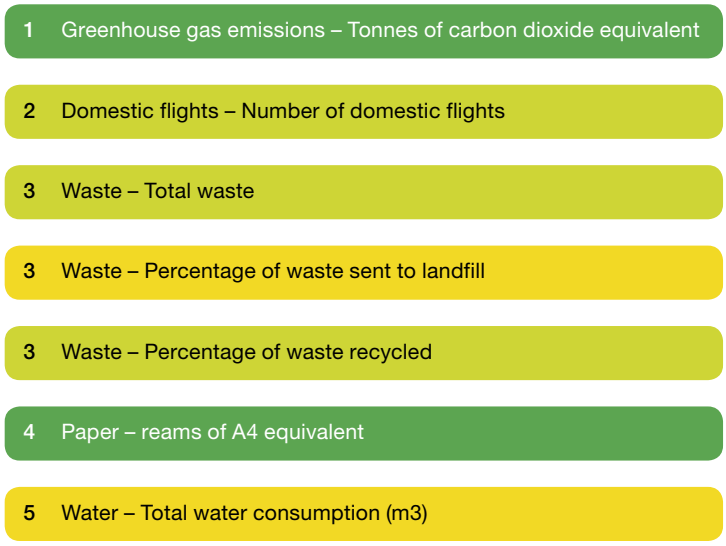
Note

1 Indicators are based on assessments made by the Adaptation Sub-Committee on the progress being made to manage vulnerability to climate change.

Source: National Audit Office summary of Committee on Climate Change, *Progress in preparing for climate change 2017 report to Parliament*, June 2017

4 Greening Government Commitments: cross-government targets for the sustainability of the central estate in 2020

The government estate is on track to meet most of its commitments



Notes

1 Data cover the period April 2016 – March 2017.

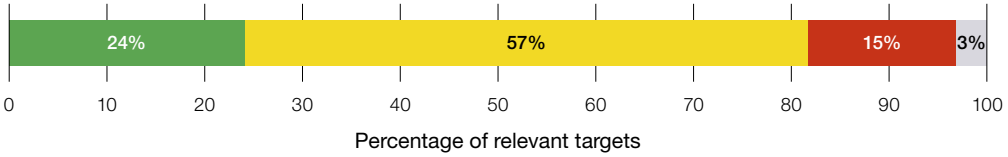
2 Where a specific target was not in place for 2020 (the case for total waste, percentage of waste recycled and water consumption) a comparison was made to the base year and previous year to assess if improvements were made.

Source: Greening Government Commitments, Annual Report, 2018

Figure 8

Stakeholder analysis of progress on the United Nations Sustainable Development Goals with a relevant target in the UK

A stakeholder organisation concludes that the UK is performing well for around one-quarter of the Sustainable Development Goal targets; the UK is not performing well enough or has policy gaps for more than half of the targets



- The UK is performing well and has appropriate policy in place to address the target
- There are some gaps in policy coverage, the UK is not performing well enough or performance is deteriorating
- There is little or no policy in place that adequately addresses the target, performance is poor
- There is a data gap

A selection of environmental Sustainable Development Goal targets in each category

'The UK is performing well and has appropriate policy in place to address the target (34 targets)'
By 2020, substantially increase the number of cities and human settlements adopting and implementing integrated policies and plans towards inclusion, resource efficiency, mitigation and adaptation to climate change, resilience to disasters, and develop and implement, in line with the Sendai Framework for Disaster Risk Reduction 2015–2030, holistic disaster risk management at all levels.
By 2020, prohibit certain forms of fisheries subsidies which contribute to overcapacity and overfishing, and eliminate subsidies that contribute to illegal, unreported and unregulated fishing, and refrain from introducing new such subsidies, recognising that appropriate and effective special and differential treatment for developing and least developed countries should be an integral part of the World Trade Organisation fisheries subsidies negotiation.
By 2030, achieve universal and equitable access to safe and affordable drinking water for all.
'There are some gaps in policy coverage, the UK is not performing well enough or performance is deteriorating (82 targets)'
By 2030, substantially increase water-use efficiency across all sectors and ensure sustainable withdrawals and supply of freshwater to address water scarcity and substantially reduce the number of people suffering from water scarcity.
By 2030, increase substantially the share of renewable energy in the global energy mix.
By 2030, achieve the sustainable management and efficient use of natural resources.
'There is little or no policy in place that adequately addresses the target, performance is poor (22 targets)'
By 2020, ensure the conservation, restoration and sustainable use of terrestrial and inland freshwater ecosystems and their services, in particular forests, wetlands, mountains and drylands, in line with obligations under international agreements.
Implement the 10-Year Framework of Programmes on Sustainable Consumption and Production Patterns, all countries taking action, with developed countries taking the lead, taking into account the development and capabilities of developing countries.
By 2025, prevent and significantly reduce marine pollution of all kinds, particularly from land-based activities, including marine debris and nutrient pollution.
'There is a data gap (5 targets)'
Take urgent action to end poaching and trafficking of protected species of flora and fauna and address both demand and supply of illegal wildlife product.
Promote the development, transfer, dissemination and diffusion of environmentally sound technologies to developing countries on favourable terms, including on concessional and preferential terms, as mutually agreed.

Notes

1 The UK Stakeholders for Sustainable Development (UKSSD) is an independent cross-section network of organisations who work together to drive action on the UN Sustainable Development Goals in the UK.

2 The ratings applied to each target are based on stakeholder assessment.

3 A breakdown for each goal is available at: www.ukssd.co.uk/measuringup

Source: *Measuring up – How the UK is performing on the UK Sustainable Development Goals* published by UK Stakeholders for Sustainable Development, 2018

Update on progress since our last briefing

2.4 In 2015 we produced a briefing for the Environmental Audit Committee summarising the state of the government's environmental and sustainability metrics. This highlighted that it was good that the measures in place were a mixture of outcome and output based, and so measured both the actions being taken, such as trees planted, and the environmental outcomes, such as carbon sequestered by trees. It was also positive that the metrics sought to give long-term, as well as short-term, assessments of progress. However, our briefing raised the following concerns:

- the environmental metrics could be more aligned with a hierarchy of environmental objectives and with each other;
- the timeliness of some metrics was mixed, and government could do more to explain whether the time lags were justified; and
- some sets of metrics were not associated with a mechanism for action if performance was poor.

2.5 There remains a patchwork of different environmental indicators, published by multiple departments and bodies, that do not clearly align with a hierarchy of objectives (Figure 6). Each set of indicators relates to a different policy or commitment with no clear links to each other or an overarching environmental strategy. This situation is set to change with the introduction of the 25-Year Environment Plan, published in 2018.[3] The plan sets out government's environmental strategy going forwards and takes a more system-level approach, with a new set of indicators pulling together information from a range of sources into a set of 15 headlines that relate directly to environmental goals in the Plan (Part Three).

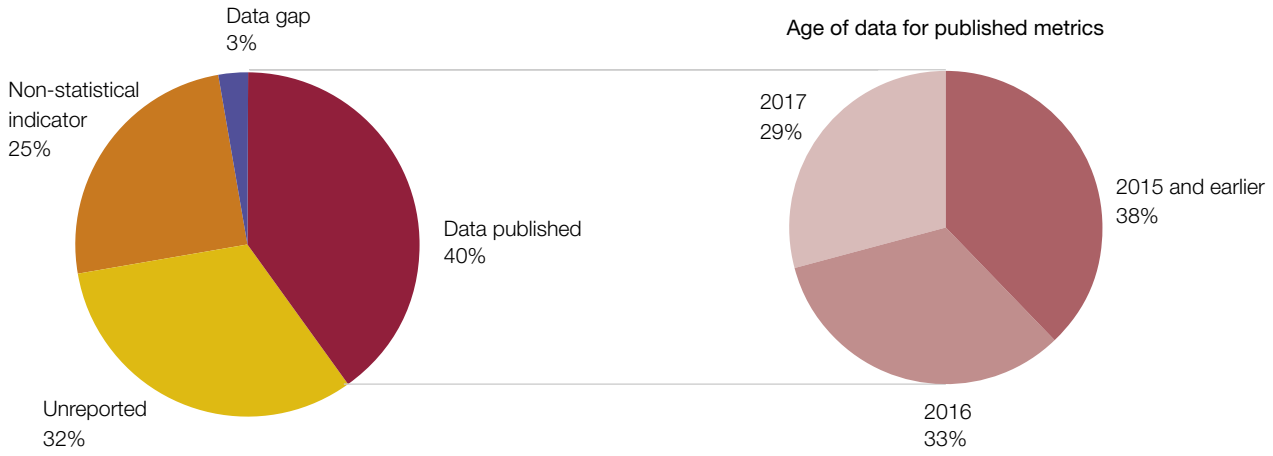
2.6 We have not seen any significant improvement in the timeliness of the data underlying the metrics. For the Goals, over one third of published data for goals with an environmental focus are from 2016 or earlier (**Figure 9** overleaf).[4] For example, the most recent data published for the UK's 'material footprint' (a measure of the primary materials used to provide the goods and services consumed in the UK) and for the proportion of fish stocks within biologically sustainable levels, are five years old, from 2013, although the most recent source data are from 2014 and 2015 respectively. Some of these indicators, such as material flow, do not yet have an internationally established methodology but the majority do. There can be legitimate trade-offs between the timeliness of data and the depth of analysis and quality checks, for example some of the UK indicators differ slightly from the requirements for UN reporting and so additional work is needed to complete them and the source data will generally be available to decision-makers before it is published by the Office for National Statistics (ONS) on its online reporting platform.

3 HM Government, *A Green Future: Our 25 Year Plan to Improve the Environment*, January 2018.
4 Taken as goals 6, 7, 12, 13, 14 and 15, which cover water, energy, resource consumption, climate action and life on land and below water.

Figure 9

Status of global indicators for the Sustainable Development Goals with environmental focus

Data is published for two-fifths of the indicators currently, of these more than one-third use data from 2015 or earlier



Note

1 The goals included in this assessment are 'Goal 6: Clean Water and Sanitation', 'Goal 7: Affordable and Clean Energy', 'Goal 12: Responsible Production and Consumption', 'Goal 13: Climate Action', 'Goal 14: Life Below Water' and 'Goal 15: Life on Land'.

Source: Office for National Statistics, Sustainable Development Goal reporting platform

2.7 Some metric sets are still not linked to effective mechanisms for taking action if performance is poor:

- A wealth of environmental data, including emission statistics, energy consumption and fuel use, are collected and stored within the Environmental Accounts, a subset of the National Accounts. These data are collected in accordance with the System of Environmental Economic Accounting as set by the UN. There is currently no formal mechanism to review and act on the information in the Environmental Accounts as a whole. However, ONS does release a short bulletin that summarises key messages annually and some of the data in the accounts are used in the calculation of the UK's carbon footprint and the Sustainable Development Goal indicators.

- Arrangements for reviewing progress against the Sustainable Development Goals are not yet well-developed. The primary mechanism through which performance will be addressed is annual Single Departmental Plans, but the Goals have not been part of this process for long enough to be able to assess whether they will prove effective (see paragraphs 2.11 and 2.12). The ONS publishes the performance data for the Sustainable Development Goals through an online platform. This has received international interest, it is transparent and easy to use, and it includes the opportunity for anyone to provide feedback on the indicators, including on new or alternative data sources (albeit that this is via an email address rather than comments being visible on the platform itself, as is the case with the Finnish sustainable development indicators, see Figure 5). However, this reporting platform is not formally reviewed by policy-makers. The Department for International Development, with support from Cabinet Office, is leading a voluntary national review of progress against the Goals for the summer of 2019, which should help to raise their profile within government.
- The Greening Government Commitments provide another good example where performance data are reported in a clear, transparent manner, but government's use of the data is inconsistent. For instance, the most recent data show that three departments are missing targets to reduce the proportion of waste sent to landfill by a wide margin (the target is for 10% or less of a department's waste to go to landfill, yet three departments reported that 35% or more of their waste was going to landfill). Defra was unable to demonstrate that these issues were acted upon effectively.

2.8 However, the Climate Change Act is a good example of a formal mechanism for action and is widely regarded as establishing a robust framework for measuring progress on mitigating and adapting to climate change. For this, regular, formal reviews of progress are required at senior levels in government and it is a requirement to respond to recommendations made by the Committee on Climate Change, an independent scrutiny body. Government must also report to Parliament on projected as well as current performance on greenhouse gas emissions.

Other issues with current metrics

2.9 We have not carried out an exhaustive review of coverage but there are some clear data gaps in some policy areas, including:

- soil health, an important metric that provides several societal benefits, is not currently monitored at a national level and will need to be in order to assess progress against a key commitment of the 25-Year Environment Plan (**Figure 10** overleaf); and
- the UK's biodiversity impact abroad, metrics for which are still under development. This is important to consider as improvements measured domestically would otherwise not take into account impacts from the UK's economy in other countries.

Figure 10

Case study: Soil health

Soil health is an important metric that underlies key aspects of the environment. National monitoring of soil health is not currently carried out, but development of a new composite metric to measure it is under way

Soil policy	The government committed to the sustainable management of all of England's soils in the 2011 Natural Environment white paper. This commitment was reiterated in the 25-Year Environment Plan. To assess progress against this target the Department for Environment, Food & Rural Affairs (the Department) needs to improve its understanding of soil health nationally.
Importance of soil health	Soil is an important consideration for agriculture, climate change mitigation and adaptation, urban development and flood risk management. • Soil underpins food production and the sustainability of this could be undermined if current trends of degradation continue. • Soils store three times as much carbon as the atmosphere, and degradation of carbon-rich soils can release significant amounts of CO_2. • Rainfall can infiltrate into soils, decreasing run-off and lowering flood risks. The loss of organic matter from soils reduces this ability, increasing the risk of flooding.
Monitoring of soil health	Many indicators of soil health change slowly, and so only need to be measured every few years. However, previous UK-wide national monitoring schemes have not reported since 2007, leaving a gap in government understanding of soil health, although national monitoring does still occur in Wales. Currently, the Department relies on cross-compliance rules for EU common agricultural policy payments to farmers to ensure the protection of soil health, as this requires land owners to keep land in good agricultural and environmental condition.
Development of a new soil metric	The Department is developing a composite metric to assess soil health alongside a new set of environmental metrics (Part Three). This will measure several key aspects of soil health including its structure, chemistry and biology and once in place will enable the Department to better assess progress against its commitment for sustainable soil management.

Source: National Audit Office analysis and Environmental Audit Committee inquiry on soil health

2.10 These issues are difficult to measure, but important to understand, particularly as government develops a new farming policy. For example, policies that change food or timber production in England need to be understood in the context of the total, global impact of the country's requirements for these resources. If policies for environmental improvement locally displace these activities overseas, they may lead to impacts on the environment in other parts of the world.

2.11 Our reports on particular environmental issues since 2015 have also raised concerns about how effectively metrics are used to inform decision-making in practice:

- For air quality, government has been subject to a series of legal challenges over whether it has taken adequate action to address its failure to meet its targets for air quality. We found that Defra's and the Department for Transport's (DfT's) joint air quality unit did not systematically oversee performance data on schemes run by other parts of government that included intended air quality benefits. This meant that there was no clear single responsibility within government for knowing whether the initiatives form a coherent portfolio that delivers good value for money as a whole for air quality. Defra and DfT told us that they agree that this is an important objective, but believe that the arrangements which they currently have in place should be sufficient.[5]

- Our analysis of the metrics for air quality for this report has also highlighted that while the UK has clear performance metrics measuring air quality outcomes (i.e. levels of pollutants in the air), it does not have a comprehensive set of supporting metrics on policy 'outputs', to provide a more immediate and direct assessment of the progress of individual policies designed to achieve these goals. It has stated goals in the domestic, agricultural, industrial and transport sectors to take measures to improve air quality and measures the total impact of these on pollution levels through the annual emissions inventory. However, government only publishes 'output' metrics for some policies in the transport sector (such as take-up of ultra-low emissions vehicles); there are no equivalent published metrics to show how policies in the other sectors are progressing (**Figure 11** on pages 34 and 35 **and Figure 12** on pages 36 and 37).

- On packaging recycling, we found that the methodology for the main performance metric (packaging recycling rates) was not sufficiently robust, because it did not account for undetected fraud and error. In addition, Defra had not asked important questions about risks and value for money when reviewing performance against this metric (**Figure 13** on page 38).

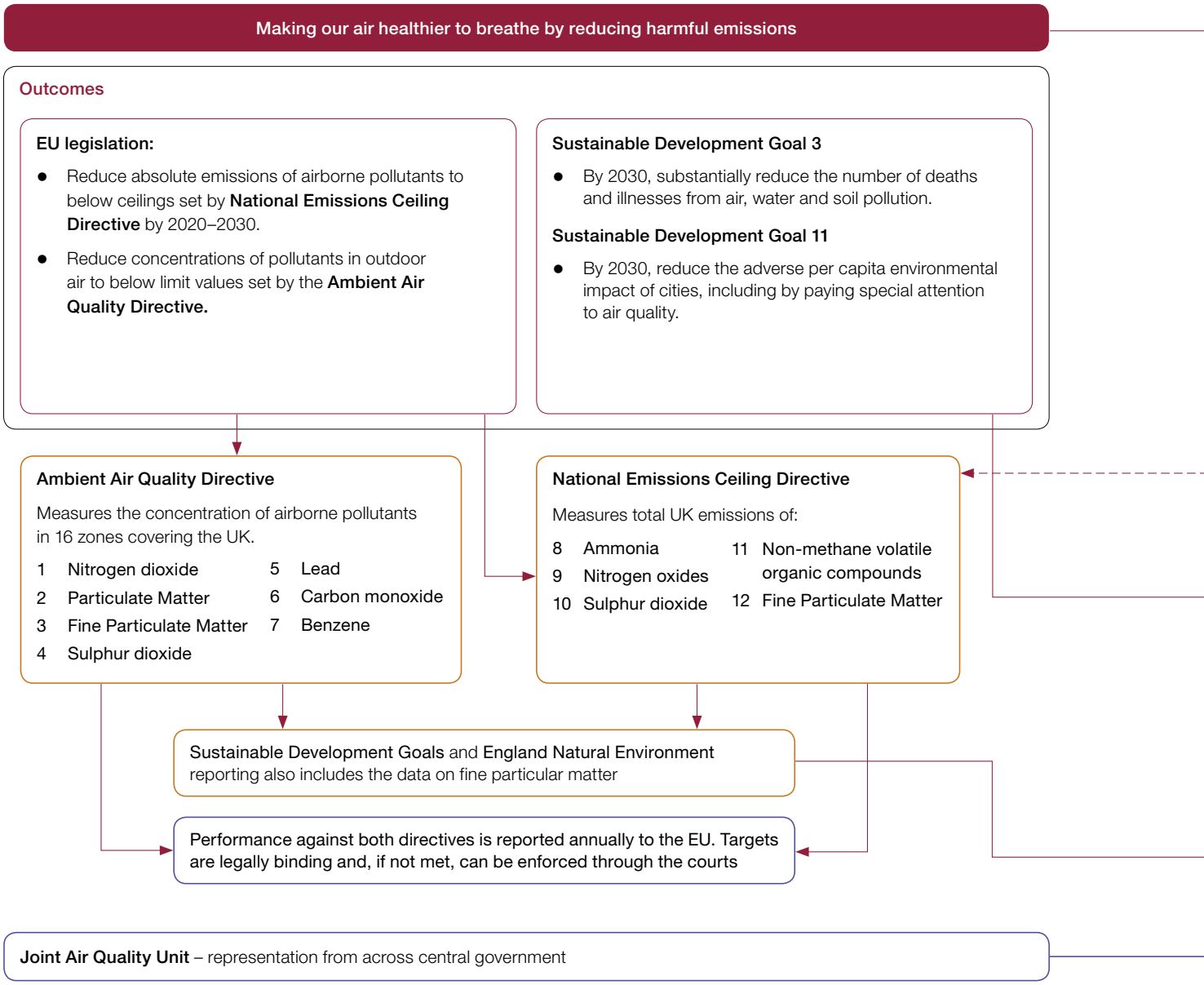
- On the Renewable Heat Incentive, we found gaps in the Department for Business, Energy & Industrial Strategy's (BEIS's) monitoring of progress, as it had not set specific goals or clear milestones to measure progress on one of its three objectives for the scheme. The Renewable Heat Incentive (RHI) is a scheme to encourage a switch from fossil fuel heating systems to renewable and low-carbon alternatives in homes and business premises in Great Britain. One of BEIS's objectives for the scheme has been to grow supply chains which can support a national transition from fossil fuel to low-carbon heating technology from the 2020s. However, BEIS had not established a monitoring plan in support of this objective, and did not include measures on developing the supply chain in its tracking of the scheme's benefits.[6] The Department has committed to publishing clear and specific goals, measures and milestones for developing the low-carbon heating supply chain within the RHI by April 2019.

5 Comptroller and Auditor General, *Air quality*, Session 2017-2019, HC 529, National Audit Office, November 2017.
6 Comptroller & Auditor General, Department for Business, Energy & Industrial Strategy, *Low-carbon heating of homes and businesses and the Renewable Heat Incentive*, Session 2017–2019, HC 779, National Audit Office, February 2018.

Figure 11

Air quality: government objectives, published metrics and monitoring

Government publishes and monitors a range of performance metrics for its air-quality objectives

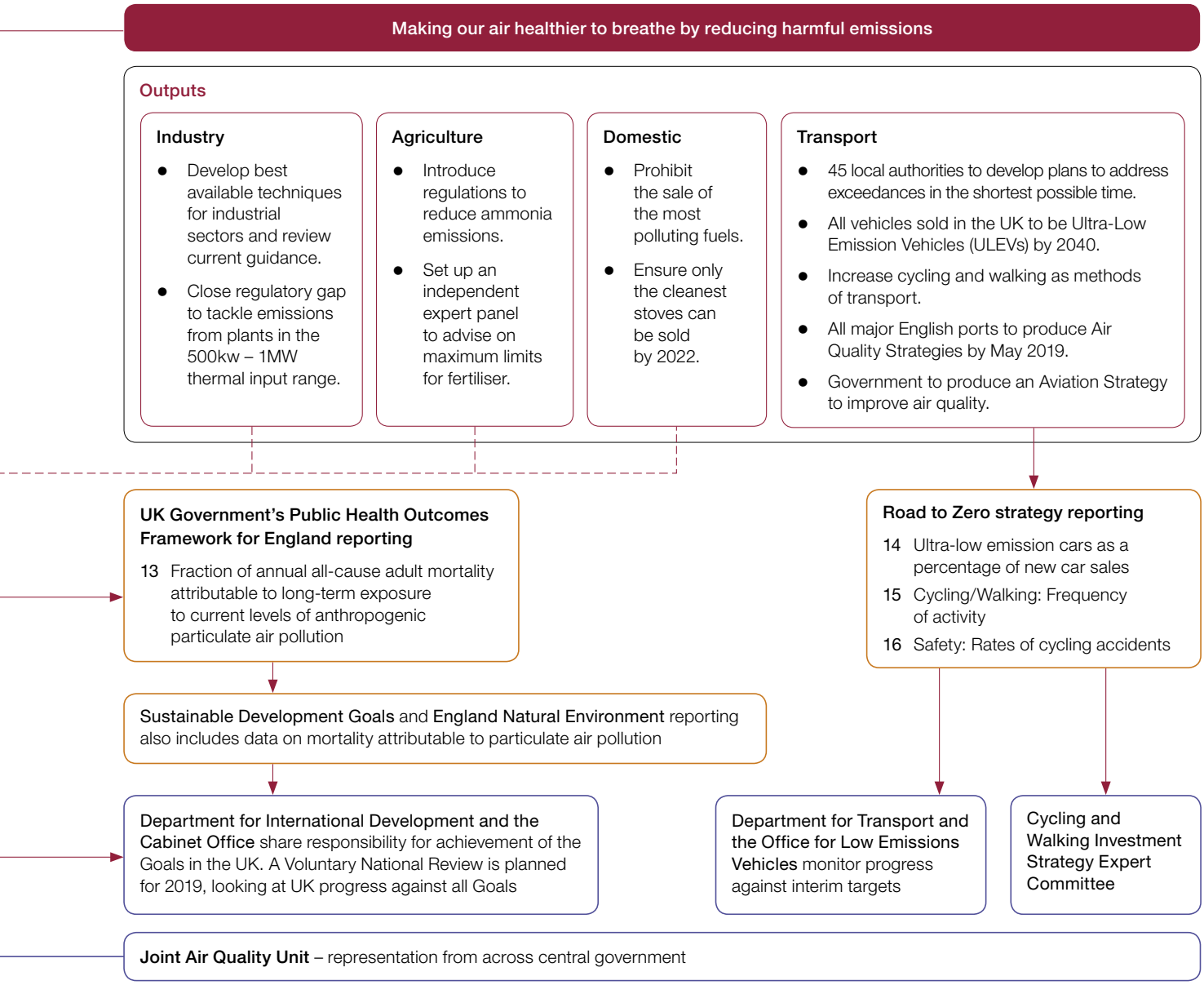


Notes

1 Air quality targets derived from EU directives include legally binding targets that can (and have been) enforced by the courts. These targets will be transposed into UK law after EU exit.

2 Government objectives relating to industry, agriculture, domestic and non-road transport are drawn from the draft Clean Air Strategy 2018, July 2018. Available at: https://consult.defra.gov.uk/environmental-quality/clean-air-strategy-consultation/. As this is a draft document, government's final objectives may differ. Government objectives relating to road transport are drawn from the UK plan for tackling roadside nitrogen dioxide concentrations, July 2017. Available at: https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/633269/air-quality-plan-overview.pdf.

Source: National Audit Office analysis of government policies and processes to improve air quality



3 While there are no separately published metrics for the output goals for the domestic, industrial and agricultural sectors, a degree of disaggregation is possible for the figures on airborne pollutants In the National Airborne Emissions Inventory (which covers, among other things, total UK emissions against the limits set in the National Emissions Ceiling Directive as shown in the chart). The disaggregation tool enables readers to break the data down by emissions source and could therefore be used to monitor progress against some of the stated output goals in these sectors. For example, reviewing the figures on domestic outputs of fine particulate matter would provide an indication of progress against the prohibition on sales of the most polluting domestic fuels.

Figure 12

Air quality: published performance against metrics

UK government is meeting all of its air quality targets, except for nitrogen dioxide concentrations, which has been missed since 2010

Source	Metric	Reported performance	Target
Ambient Air Quality Directive	1 Nitrogen dioxide	Target missed. Two zones (Greater London and South Wales) exceeded the hourly limit on more than 18 occasions. Target missed. Annual limit exceeded in 37 out of 43 zones. Range of annual mean by zone: 28-91 µg/m³ (2017).	200 µg/m³, not to be exceeded more than 18 times a calendar year (hourly mean) 40 µg/m³ (annual mean)
	2 Particulate matter (PM10)	Target met. No zone had more than 35 exceedances in the year Target met. Range of annual mean by zone: 10-27 µg/m³ (2017).	50 µg/m³ not to be exceeded more than 35 times a calendar year (24-hour mean) 40 µg/m³ (annual mean)
	3 Fine particulate matter (PM2.5)	Target met. Average annual mean: 12 µg/m³, Range of annual mean by zone: 7–18 µg/m³ (2017).	25 µg/m³ (annual mean)
	4 Sulphur dioxide	Target met. No zone had more than 24 exceedances in the year Target met. No zone had more than three exceedances in the year (2017).	350 µg/m³, not to be exceeded more than 24 times a calendar year (hourly mean) 125 µg/m³, not to be exceeded more than three times a calendar year (24-hour mean)
	5 Lead	Target met. Average annual mean: 0.015 µg/m³, Range of annual mean by zone: 0.004–0.045 µg/m³ (2017).	0.5 µg/m³ (annual mean)
	6 Carbon monoxide	Target met. No zone exceeded the 8-hour daily mean limit in the year (2017).	10 mg/m³ (maximum 8-hour daily mean)
	7 Benzene	Target met. Average annual mean: 0.88 µg/m³, Range of annual mean by zone: 0.23–3.4 µg/m³ (2017).	5 µg/m³ (annual mean)

Figure 12 *continued*
Air quality: published performance against metrics

Source	Metric		Reported performance	Target
National Emissions Ceiling Directive	8	Ammonia	289 Kt (2016)	283 Kt (2020 target)
	9	Nitrogen oxides	893 Kt (2016)	724 Kt (2020 target)
	10	Sulphur dioxide	179 Kt (2016)	292 Kt (2020 target)
	11	Non-methane volatile organic compounds	819 Kt (2016)	729 Kt (2020 target)
	12	Fine particulate matter	108 Kt (2016)	79 Kt (2020 target)
Public Health Outcomes Framework	13	Adult mortality attributable to long-term exposure to anthropogenic particulate air pollution	5.3% (England, 2016)	
Road to Zero Strategy	14	Take-up of ultra-low emission vehicles (ULEVs)	2.1% of new cars registered were ULEVs (Q2 2018)	50% of new car registration to be ULEVs by 2030
	15	Cycling walking: frequency of activity	Walking: 343 walking stages per person (pa) Cycling: 17 cycling trips per person (pa) (England 2017)	
	16	Cycling accidents	101 fatalities in 2017, a 9% reduction from 2010–2014	

Source: National Audit Office analysis of performance data published by government

Figure 13
Packaging recycling metrics

We found that the methodology for the main performance metrics for packaging recycling were not sufficiently robust

Our review of the packaging recycling obligations found that the Department for Environment, Food & Rural Affairs' (Defras') approach to a key performance metric (estimates of packaging recycling rates) was not sufficiently robust, because:

- Defra did not adjust its figures to account for undetected fraud and error. In order to determine the amount of packaging that is recycled each year, Defra uses the data that reprocessors and exporters report when claiming recovery notes. While the Environment Agency did correct these data when it found problems, we did not consider it was realistic to assume that undetected fraud and error is negligible: there is a financial incentive for companies to over-claim and a particular risk that some of the material exported overseas is not fully recycled.
- In addition, its approach to determining the amount of packaging used in the UK involves complex methodology and a number of assumptions. Yet it has not established a regular, planned and comprehensive programme for reviewing the analysis.

We concluded that the system appeared to have evolved into a comfortable way for government to meet targets without facing up to the underlying recycling issues. While Defra had tracked progress against its performance metric of packaging recycling rates, it had not asked important questions about risks and value for money. Despite it being 20 years since the system was established Defra did not know what value the system added nor whether the Environment Agency's approach to tackling the risks of fraud and error was proportionate. The system relied on exporting materials to other parts of the world without adequate checks to ensure this material is actually recycled, and without consideration of whether other countries would continue to accept it in the long term.

Source: Comptroller and Auditor General, Department for Environment, Food & Rural Affairs and Environment Agency, *The packaging recycling obligations*, Session 2017–2019, HC 1386, National Audit Office, July 2018

The link to Single Departmental Plans

2.12 Single Departmental Plans are the primary means by which government conducts strategic business planning. We would therefore expect government's key environmental objectives to be addressed in the plans and for subsequent performance reporting to link back to these. Departments are required to update their plans annually, setting out their key objectives, and must receive approval from the centre of government (Cabinet Office and HM Treasury). We recently published a report assessing the effectiveness of government's business planning, which concluded that, despite recent improvements, government business planning does not effectively encourage long-term planning or break down government silos.[7]

2.13 We have reviewed the published Single Departmental Plans (departments also produce more detailed plans for internal use) and annual reports and note that they do include some coverage of the government's environmental goals, such as the commitments to reduce greenhouse gas emissions and Greening Government Commitments. However, the plans do not provide convincing evidence that environmental commitments are being used to drive business planning decisions across government. In particular, the Cabinet Office told us that the plans are government's main mechanism for monitoring the UK's progress against the UN Sustainable Development Goals, and for prompting action if performance is poor (paragraph 2.7). Yet coverage of the Goals in the latest plans is thin. While the Goals are referenced in several of the plans, these references are to the high-level objectives rather than specific targets and indicators. This means the plans do not give a complete articulation of each department's responsibilities for achievement of the Goals. Moreover, it is not clear whether departments effectively prioritised policies to address the Goals. Some policies intended to address a particular Goals have only an indirect or limited link to them.

7 Comptroller and Auditor General, HM Treasury and Cabinet Office, *Improving government's spending and planning framework*, Session 2017-2019, HC 1679, National Audit Office, November 2018.

2.14 The mechanisms for overseeing and taking action on the government's environmental goals through Single Departmental Plans are not yet fully developed. 2018-19 is the first full planning round that the UN Sustainable Development Goals have been included in the process, even though the government signed up to them in 2015 and issued guidance to departments in March 2017. The goals relating to the 25-Year Environment Plan were announced in January 2018 but not reflected in the most recent round of Single Departmental Plans across government, although Defra's internal plan sets out a clear timetable for when it expects to produce key items such as performance metrics to support the plan's ambitions. HM Treasury and Cabinet Office have issued draft guidance directing Departments to indicate in their 2019-20 Single Departmental Plans where their objectives or work areas support the 25-Year Environment Plan. Defra and the centre of government have yet to decide how to incorporate the performance metrics into the planning process. These goals will require effective cross-government working, so it is concerning that our recent review of government planning concluded that: "government remains weak at planning and managing delivery when it cuts across organisations". It is important that Defra and HM Treasury work together to ensure that they are adequately reflected in departments' plans and that there are robust mechanisms to monitor performance and address issues as they arise.

Part Three

The future for environmental performance metrics

3.1 This part of the report covers:

- the government's plans for new environmental metrics;
- risks and opportunities associated with the planned changes; and
- the implications of the UK's exit from the European Union (EU).

Government plans for environmental metrics

25-Year Environment Plan metrics

3.2 As part of the 25-Year Environment Plan the Department for Environment, Food & Rural Affairs (Defra) has developed a draft framework of metrics that it intends to provide a minimum set of measures to cover all key aspects of the environment. It expects to use this framework to monitor progress against the 25-Year Environment Plan, and fulfil the requirements in the draft Environment Bill that place a duty on the Secretary of State to obtain data to monitor improvement in the environment, and to report annually to Parliament on actions taken and changes in the environment.

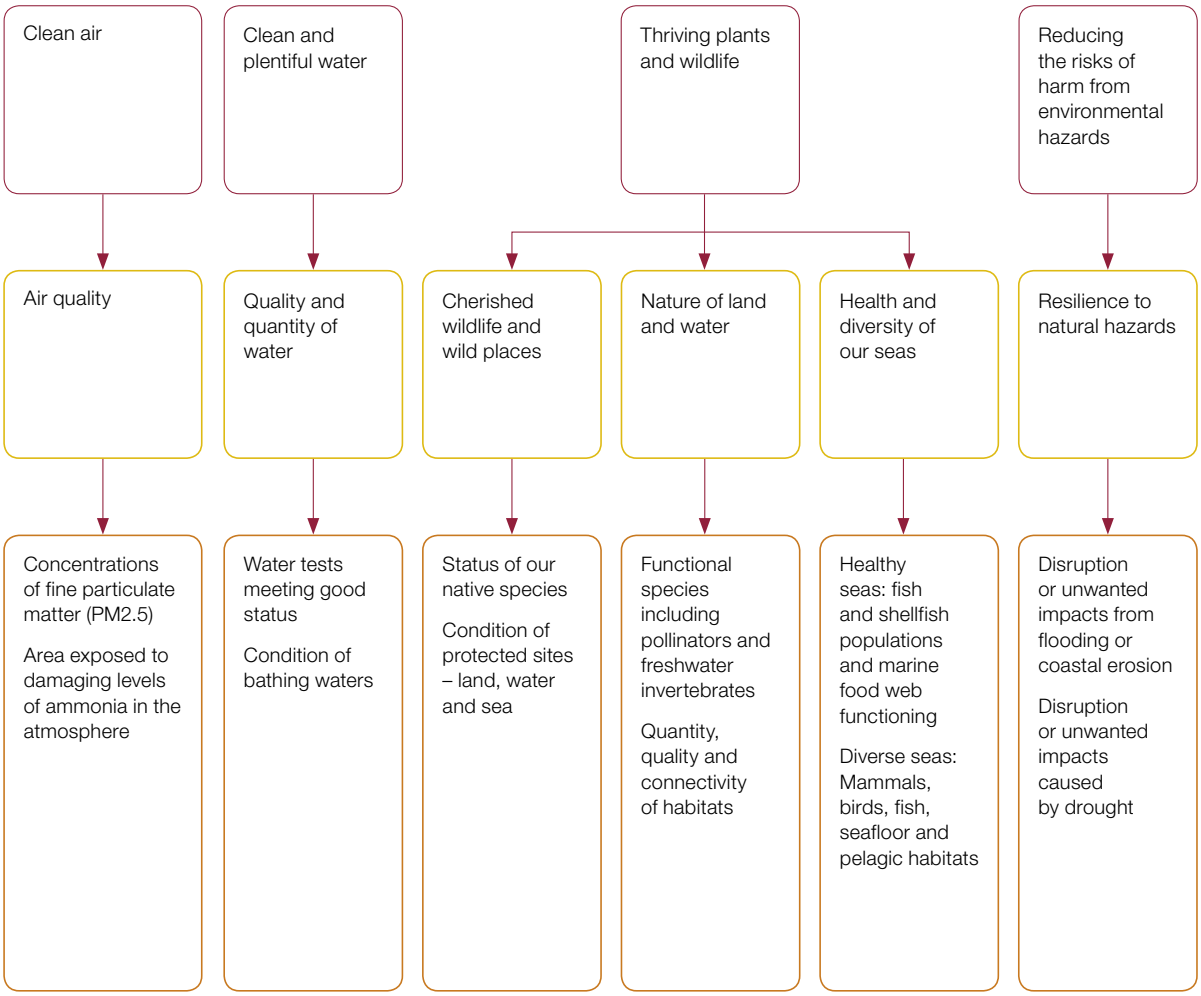
3.3 There are two sets of indicators, a set of 65 'system' metrics that measure environmental outcomes and a set of 230 'actions' that measure direct outputs. A sub set of the system indicators has been further grouped under 15 headlines that link directly to the goals of the Environment Plan (**Figure 14** on pages 42 and 43).

3.4 Most of the system indicators are already published, or are similar to metrics that are, while around one-third still need further development before they can be used. It is not intended for the new metrics to replace any of the existing sets, but as the 25-Year Environment Plan supersedes the Natural Environment white paper, it is unlikely that the Natural Environment indicators will continue to be published.

Figure 14

Headline metrics of the 25-Year Environment Plan and how they link to the goals

Each goal in the 25-Year Environment Plan has at least one headline relating to it, and these in turn have a number of system indicators feeding into them



- 25-Year Environment Plan goals
- Headline indicators
- Draft system indicators

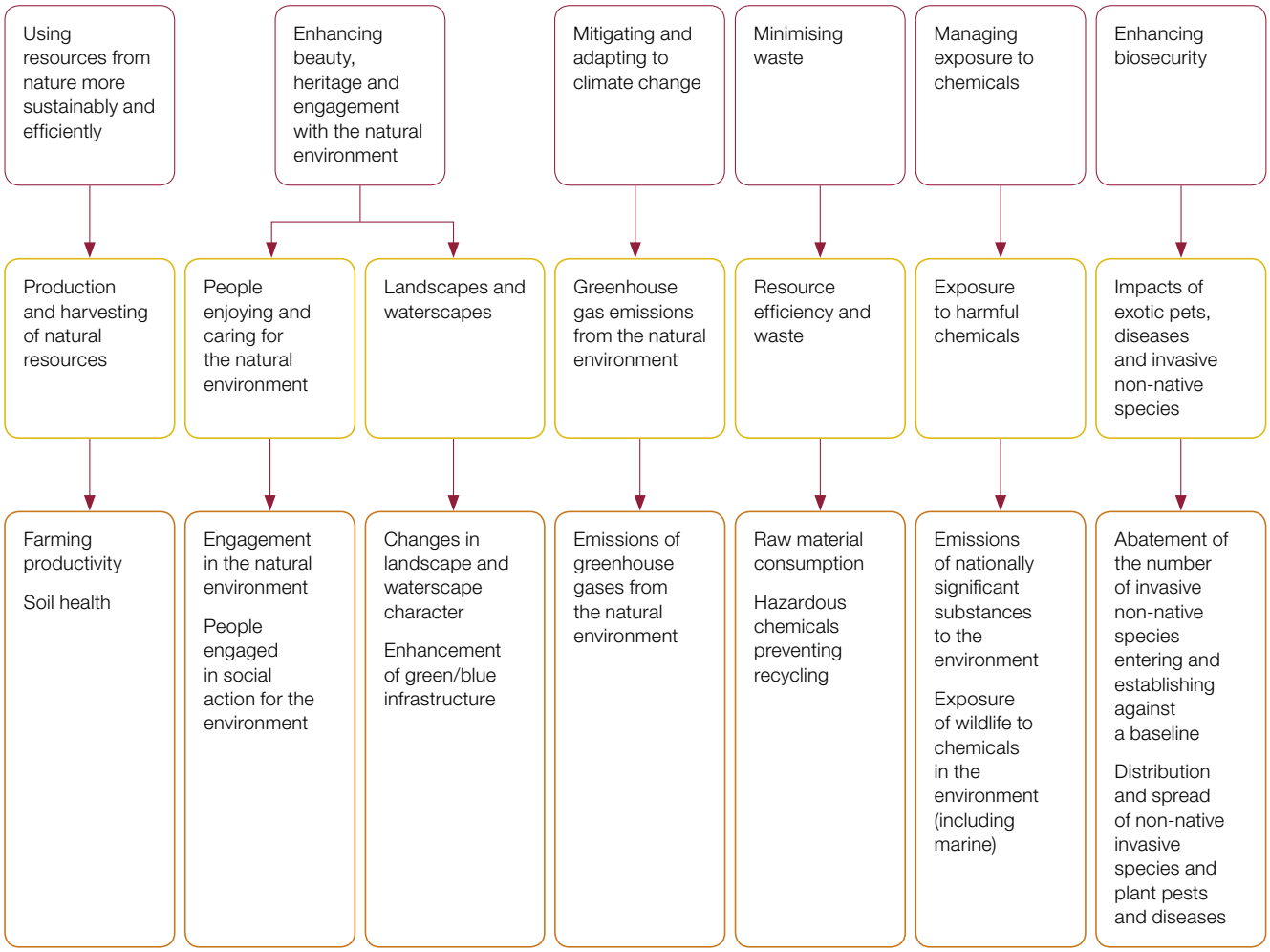
Notes

1 Headline indicators are intended to provide an overall summary of change to a wide audience.

2 System indicators track changes in specific aspects of the environment. The figure shows examples of some that feed into the headlines.

3 There are 65 system indicators in total, 40 of these link to headlines.

Source: Draft indicator framework for the 25-Year Environment Plan metrics


Using resources from nature more sustainably and efficiently
Enhancing beauty, heritage and engagement with the natural environment
Mitigating and adapting to climate change
Minimising waste
Managing exposure to chemicals
Enhancing biosecurity
Production and harvesting of natural resources
People enjoying and caring for the natural environment
Landscapes and waterscapes
Greenhouse gas emissions from the natural environment
Resource efficiency and waste
Exposure to harmful chemicals
Impacts of exotic pets, diseases and invasive non-native species
Farming productivity
Soil health
Engagement in the natural environment
People engaged in social action for the environment
Changes in landscape and waterscape character
Enhancement of green/blue infrastructure
Emissions of greenhouse gases from the natural environment
Raw material consumption
Hazardous chemicals preventing recycling
Emissions of nationally significant substances to the environment
Exposure of wildlife to chemicals in the environment (including marine)
Abatement of the number of invasive non-native species entering and establishing against a baseline
Distribution and spread of non-native invasive species and plant pests and diseases

3.5 The outcome metrics and actions of the 25-Year Environment Plan are not intended to be a static set. Developments coming from existing sets of indicators, such as those for the Sustainable Development Goals (the Goals) or biodiversity, are expected to filter into the new set and additional actions from new policies, such as the upcoming Waste and Resources Strategy, will be incorporated into the list.

3.6 Defra has set up a board to oversee the implementation of the actions and goals within the 25-Year Environment Plan, reported to by a programme office responsible for assessing progress. This board meets every other month and receives a progress dashboard covering a subset of priority actions that have been deemed to make the biggest contribution to the goals. A high-level summary of this assessment is reported to the Environment Committee, chaired by the director-general of Environment and Rural at Defra and the chief executive of the Environment Agency, every two months. Currently, just under half of the priority actions are on track for completion, with the remainder at risk of missing their final deadline. Defra told us that it plans to incorporate monitoring of progress on the 65 system indicators into this process once they are agreed.

3.7 Defra plans to generate an annual progress report, which will be laid before Parliament and will communicate progress of the Plan. Both the new outcome indicators and actions are expected to be covered in this, with the first expected to be produced in the first half of 2019.

Other planned changes to metrics

3.8 Outside the 25-Year Environment Plan other work is also being carried out to develop the environmental metrics available to government:

- Defra is working with the Office for National Statistics (ONS) to continue development of a set of Natural Capital Accounts, which assess the ecosystem services provided by natural assets, to sit alongside the Environmental Accounts. This is currently due for completion in 2020.
- ONS is also working to progress the metrics that sit beneath the UN Sustainable Development Goals. It currently reports data for 157 (64%) of the global indicators agreed by the UN, with disaggregated data for 71 of these.[8] This means the UK is further ahead than most other countries: the Netherlands publish data for more indicators (172) but with no disaggregation; France and Germany publish data for 120 and 127 indicators respectively. ONS reports annually on progress in developing the dataset, and has published a plan for filling data gaps and increasing the levels of disaggregation.[9,10] It aims to report against 75% of the global indicators by April 2020.

8 Data can be disaggregated by sex, race, religion, geography, disability, ethnicity, migrant status, age or income quintiles. This is important because in agreeing the Goals member states agreed that they should be achieved for all segments of society, with a commitment to "leave no-one behind".

9 The ONS's first annual report on the progress made towards measuring the global Goals in the UK was published in November 2017 and is available at: www.ons.gov.uk/economy/environmentalaccounts/articles/sustainabledevelopmentgoalstakingstockprogressandpossibilities/november2017#global-indicators, with a second annual report in November 2018. Available at: www.ons.gov.uk/economy/environmentalaccounts/articles/sustainabledevelopmentgoalstakingstockprogressandpossibilities/november2018

10 Inclusive data charter action plan. Available at: www.ons.gov.uk/economy/environmentalaccounts/methodologies/inclusivedatacharteractionplanfortheglobalsustainabledevelopmentgoals

Risks and opportunities

3.9 Given that significant aspects of the 25-Year Environment Plan, such as interim targets and monitoring arrangements, have yet to be finalised, it is too early to conclude on whether it will create an effective performance framework for the government's environmental ambitions. However, it has several promising features:

- The draft 'system' metrics have been developed within a logical framework, which means that they are clearly aligned to the goals and targets published in the 25-Year Environment Plan. This should allow for more effective monitoring and clearer reporting. **Figure 15** overleaf shows how existing performance metrics and new ones that will be published align with the Plan's main objectives.

- The proposed metrics cover both outputs (goods and services that government will deliver) and outcomes (the impact on the environment). This combination should enable government to help assess the effectiveness of its short-term actions and progress against its long-term goals.

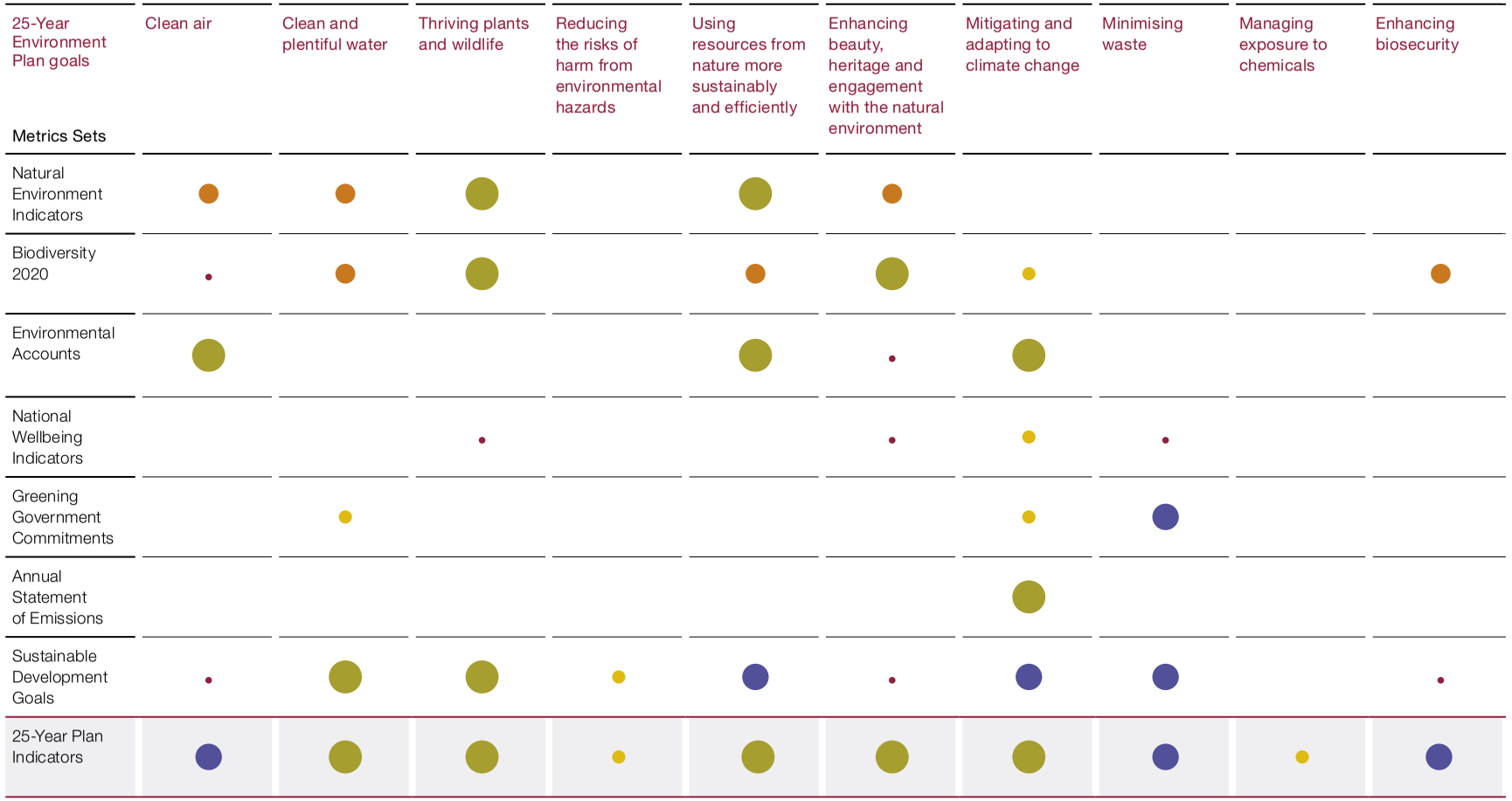
- Defra told us that it plans to publish both summarised and detailed data, to make the metrics accessible and transparent. Reporting summarised data (for example, by using composite performance metrics that summarise numerous sets of performance data with a single rating), should make it easier for Parliament and the public to interpret performance and assess progress towards environmental goals. More detailed data should allow stakeholders, such as conservation groups and academics, to identify significant trends in the underlying data and challenge government on more detailed aspects of environmental policy. It will, however, be important to make sure that composite performance metrics include the most important data: the proposed air quality 'headline' metric covers particulate matter and ammonia, but not nitrogen dioxide, despite the latter being a key area where government has failed to meet targets.

- The government has made efforts to link the 25-Year Environment Plan metrics to the data being collected for the UN Sustainable Development Goals. This suggests it is taking positive steps to rationalise and streamline its process for collecting data, which is a weakness of the current system. This should reduce duplication of effort by integrating data collection and reporting against different policies. It should also allow more effective accountability by clarifying the links between performance metrics and environmental targets.

Figure 15

How the metrics in the 25-Year Plan link to government's environmental objectives and other sets of metrics

The proposed metrics for the 25-Year Environment Plan cover a broad range of environmental areas, linked to the headline ambitions of the plan. Many of the previous metric sets covered specific areas



Source: National Audit Office analysis of a selection of government's environmental metrics

3.10 Our review of the proposed performance framework to support the 25-Year Environment Plan also identified several weaknesses and issues that government will need to address to ensure an effective performance framework:

- A significant portion of the goals and targets in the 25-Year Environment Plan are currently too vague to allow government to measure and monitor performance effectively (we assess that less than one-quarter of the 44 targets are entirely specific, measurable and time-bound). While there is a risk that fixed targets can create perverse incentives, it is essential to have a clear idea of what sort of progress is expected by when. If the government does not break down its strategic objectives into clear and measurable long-term and interim goals, it will not be able to use performance data effectively to assess whether it is on track to achieve its ambitions. Defra has committed to "explore options" for including additional cross-cutting targets for environmental improvement, as part of the new framework for environmental planning, monitoring and reporting to be established by the forthcoming Environment Bill.

- The ambitions in the plan will need effective inter-departmental working and active involvement from other departments with the metrics to achieve this. Defra told us that it has taken steps to engage other departments with the metrics including speaking to experts in the Department for Business, Energy & Industrial Strategy (BEIS) about climate data. However, it is not clear that this was sufficient to ensure that all departments had the opportunity to contribute to developing the metrics and to maximise the opportunity to draw on the significant amounts of data that other departments collect with environmental implications. Government has also not established clear accountability for other departments' progress as measured by the metrics, both in terms of policies with intended environmental benefits, as well as wider policies that risk environmental harm. No department (other than Defra) is represented on the implementation board that oversees progress on the 25-Year Environment Plan (paragraph 3.5). This means there is no clear, single point of ownership for performance as a whole across government on the 25-Year Environment Plan. Other key cross-government risks and priorities, such as housing, modern slavery and the ageing society, are coordinated through Cabinet-level implementation taskforces and HM Treasury groups. There is an Inter-Ministerial Group for Environment and Clean Growth, which Defra chairs jointly with BEIS, but government has been unable to tell us how often, if at all, the Group had met.

- In several areas of the 25-Year Environment Plan metrics will not be ready by December 2019, and in others existing metrics will continue to be used, at least in the short term, even though the Department does not consider them to be fully adequate (**Figure 16** on page 49). Defra estimates that one-quarter of the proposed metrics will not be ready until at least December 2019. A further 9% are likely to still need further development after that point. Defra has told us that significant work still needs to be done on measuring the health and diversity of our seas and on measuring the UK's environmental impact abroad.

- To maximise their impact, it is important for environmental performance metrics to have a spatial element – that is to say, that the data can be disaggregated sufficiently to identify whether there are significant variations in different geographical areas. Without this spatial element, there is a risk that the metrics will not highlight cases where there are significant regional issues and problems that need to be addressed. For example, government data on air quality is grouped into geographical zones, but does not show whereabouts within each zone breaches of air pollution limits occur. How significant a breach is in terms of public health depends very much on where this poor air quality occurs: if it is in a densely populated urban area it has much more serious implications than if it occurs away from a major population centre, but this cannot be determined from the published data. However, while Defra told us that it wanted to publish the performance data for the 25-Year Environment Plan at the greatest spatial resolution possible, some data sets (for instance, those based on national sample surveys) will not be collected in such a way to make this level of disaggregation available.

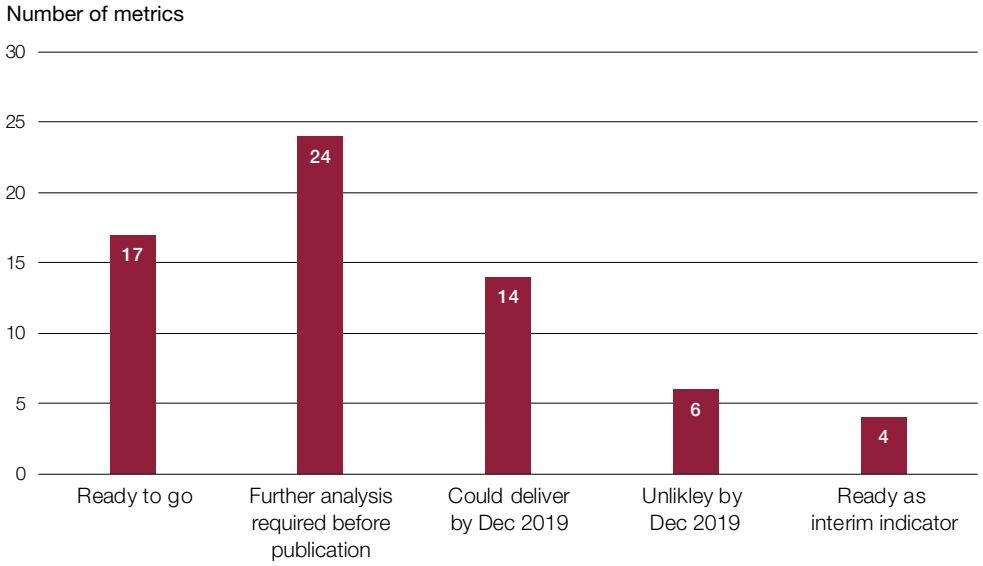
- Defra acknowledges that the system of performance metrics will need to be flexible and plans to make use of new data collection techniques and technology as they become available. Satellite data are becoming increasingly widespread in private and public sectors. The benefits this can provide include cost savings, through reductions in physical inspections, near-real-time monitoring and improved spatial disaggregation. Defra and its arm's-length bodies are already looking to increase the use of satellite data in some of their activities. The Rural Payments Agency (RPA), which pays subsidies to farmers, has been increasing remote checks on farms using open source satellite data each year while reducing the number of physical farm inspections it carries out. Defra is interested in exploiting geospatial data further in monitoring environmental land management schemes and a number of areas linked to the 25-Year Environment Plan, such as mapping habitats and woodland change.

- Defra shared the draft framework of indicators with some stakeholders before publication, which is a positive step, although some told us that there was little time for them to comment on the proposed metrics, which prevented them from engaging with them fully. Defra has not yet made any changes to the indicators in response to this feedback. Given that a significant amount of environmental data is collected by non-government groups and that stakeholders have sector expertise, a formal consultation that allowed stakeholders adequate time for a considered response would have been useful to ensure that the performance metrics for the plan are as robust as possible. Defra published the framework for wider public consultation on 19 December 2018. It gave stakeholders just over five weeks to respond, with that time period spanning Christmas and New Year, although it expects to keep the indicator framework under "regular review".

Figure 16

Readiness of proposed system metrics for the 25-Year Environment Plan

Most of the new metrics are ready to go at the beginning of 2019; around one-third may not be ready until 2020



Source: National Audit Office analysis of draft indicator framework for the 25-Year Environment Plan

3.11 In May 2018, Defra announced plans to create a new, "world-leading, statutory and independent" environmental watchdog to hold government to account on its environmental ambitions and obligations after the UK leaves the EU. The European Union (Withdrawal) Act 2018 states that the body will have the power to take "proportionate enforcement action (including legal proceedings if necessary) where it considers that a Minister of the Crown is not complying with environmental law". The draft Environment Bill, published in December 2018, sets out more detailed requirements and arrangements for the new body, including that it:

- is known as the Office for Environmental Protection;
- must publish an independent annual progress report on implementation of the 25-Year Environment Plan, and investigate the compliance of public authorities with environmental law;
- has the power to set its own strategy, to issue formal compliance notices to public authorities and to apply for judicial review, but not to issue fines; and
- its chair and non-executives are appointed by the Secretary of State for Defra, and it is funded through Defra.

3.12 A strong and independent watchdog is vital in ensuring that environmental performance metrics are used effectively. A regulatory body can have significant influence by providing external scrutiny to highlight key issues raised by performance data. While in principle funding and oversight through a parent department are not incompatible with a body being functionally independent, the proposed arrangements for funding, and for appointment of the Chair, could bring risks for the watchdog's independence in practice or for its perceived independence. To safeguard its independence it will be important that the watchdog:

- has sufficient resources to develop expertise and maintain awareness of the full policy portfolio;
- the discretion to determine its own programme of work and to respond to emerging environmental issues; and
- leadership with the right experience, seniority and experience to implement a strong culture of independence.

Implications of EU exit

3.13 The European Environment Agency (EEA) currently lists the UK as having 161 reporting obligations to itself, the European Commission and EUROSTAT. The majority of these obligations relate to specific EU directives, and the structure by which these data are handled after EU exit will depend on the UK's future relationship with the EEA. The impact this will have on environmental monitoring is complex, as some of the reported data, such as on recycling rates or emissions, is also collected for domestic purposes or for reporting on international obligations. The Draft Withdrawal Agreement states that both the EU and the UK will ensure that the level of environmental protection is not reduced below the level provided by current standards in relation to the access to environmental information.

3.14 Although there is a risk that some data would no longer be collected if it is not required to be reported to the EU, there may also be the opportunity to simplify or innovate dataflows that are currently complex or include perverse incentives. Stakeholders have identified waste and recycling reporting as an example: recycling metrics are weight-based, which means there is an incentive to recycle more dense materials rather than lower-density materials such as plastics.

3.15 The new environmental body will be crucial in replacing the enforcement capacity of the European Commission. The threat of legal action from the Commission has, for example, been an incentive for the government to take action on air quality, having failed to meet EU concentration limits for nitrogen dioxide concentrations (Figure 12). If the new environmental body is unable to provide an equivalent incentive, there is a risk that areas of poor performance will not receive adequate funding or attention.

3.16 EU exit has significantly increased the portfolio of work Defra is required to deliver.[11] Defra cites the transfer of resources to EU exit work or links to the new bills required by EU exit as the reason for delay for the majority of priority actions for the 25-Year Environment Plan that are not on track.

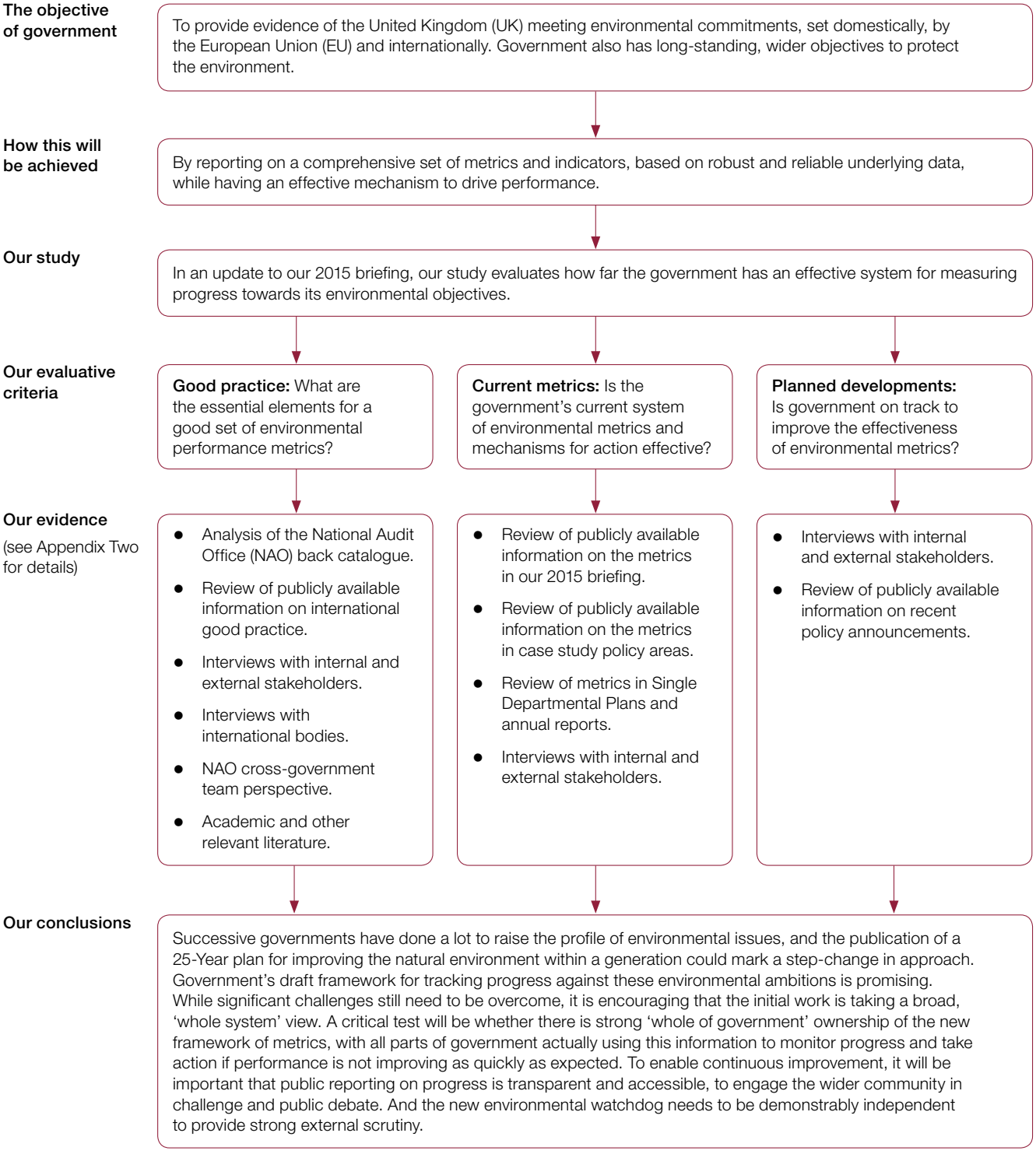
11 Comptroller & Auditor General, Department for Environment, Food & Rural Affairs, *Progress in Implementing EU Exit*, Session 2017–2019, HC 1498, National Audit Office, September 2018,

Appendix One

Our audit approach

1 See **Figure 17**.

Figure 17
Our audit approach



Appendix Two

Our evidence base

1 Our review of environmental metrics is based on evidence gathered in October and November 2018. Our audit approach is outlined in Appendix One.

Interviews

2 We conducted semi-structured interviews with stakeholders to understand their view on existing sets of environmental and sustainability metrics, what they thought to be good practice for environmental metrics, the government's performance and the current mechanisms for action that government has. We also used these interviews to identify relevant documentary evidence. We spoke to representatives including those from: Royal Society for the Protection of Birds (RSPB), UK Environmental Law Association (UKELA) and the Committee on Climate Change.

3 We also conducted interviews with other staff across government, including various staff from the Department for Environment, Food & Rural Affairs, the Department for International Development, the Department for Business, Energy & Industrial Strategy and the Cabinet Office. In addition, we consulted the Welsh Future Generations Commissioner. We also spoke to representatives from the Supreme Audit Institutions of Finland, The Netherlands, Germany and Canada, as well as from the Welsh Future Generations Commissioner, to find further examples of good practice the UK could borrow.

Document review

4 We reviewed documentation from the departments and stakeholders and documentation in the public domain. This included Single Departmental Plans, reports prepared by the Environmental Audit Committee, online publications of metrics currently available and relevant published National Audit Office reports. We used this documentary evidence to understand the sets of metrics that are currently collected by government and to review the mechanisms for action where performance is poor.

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