House of Commons

Environmental Audit Committee

Biodiversity in the UK: bloom or bust?

First Report of Session 2021–22

HC 136

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Report and Appendices, together with formal minutes relating to the report

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Environmental Audit Committee

The Environmental Audit Committee is appointed by the House of Commons to consider to what extent the policies and programmes of government departments and non-departmental public bodies contribute to environmental protection and sustainable development; to audit their performance against such targets as may be set for them by Her Majesty's Ministers; and to report thereon to the House.

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About the photographs in this report

The Committee conducted a biodiversity photography competition for members of the public to highlight the beauty and breath of biodiversity in the UK: it received over 200 entries. The winners are featured on the cover and inside this report. Every entry serves as a visual reminder of why protecting biodiversity is so important. We thank all entrants for submitting their photographs to the competition.

Cover: Damselflies mating, Michael Swailes

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Red squirrel. Photo: Michael Cuff

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Canary-shouldered thorn moth. Photo: Charlie Elder

Summary

The world is witnessing a colossal decline in global biodiversity. One million animal and plant species are threatened with extinction. Most terrestrial biomes are damaged. Since 1970 there has been a 68 percent decrease in population sizes of mammals, birds, amphibians, reptiles, and fish. This global picture is reflected in the UK, one of the most nature-depleted countries in the world. 15 percent of UK species are threatened with extinction. Of the G7 countries, the UK has the lowest level of biodiversity remaining. At a minimum, the UK has failed to meet 14 of the 19 Aichi biodiversity targets, the global nature goals the UK committed to meet by 2020.

To reverse the trend of biodiversity loss requires urgent transformative change. This cannot be achieved simply though using natural resources more efficiently. Total material consumption in developed economies needs to be reduced, nature needs to be accounted for in economic decision making and governments and businesses need to take pre-emptive and precautionary actions to avoid, mitigate and remedy the deterioration of nature. Alternatives to GDP urgently need to be adopted as more appropriate ways to measure economic success, appraise investment projects and identify sustainable development.

In 2018, the Government published its 25 Year Environment Plan, setting out its ambition to improve the natural environment within a generation. More recently, the Government announced a 'state of nature' target aimed at halting the decline in nature in England by 2030. The Government plans to implement a raft of environmental policies to achieve these goals including: establishing Local Nature Recovery Strategies (LNRS), biodiversity net gain for new developments, and a Nature Recovery Network; and supporting nature-based solutions to climate change like tree planting and protecting peatland. The UK is also leading the Global Ocean Alliance to protect at least 30% of the global ocean by 2030.

These policies are a welcome start, but in their current form do not represent the transformative change required to bend the curve of biodiversity loss. As a result, nature will continue to decline and the next generation will inherit a more depleted, damaged natural environment. Action needs to be stepped up in scale, ambition, pace, and detail.

To help achieve the transformative change necessary, we propose a package of recommendations spanning biodiversity monitoring, funding, policy implementation, economics, and education. In particular, we want to highlight the following recommendations:

- For the Government's state of nature target to be truly the nature equivalent of Net Zero a comparable delivery mechanism to that within the Climate Change Act is required. Legally binding interim targets are needed, and outcome measures should include targets on species distribution, extinction risk, habitat condition and extent.

- A barrier to achieving all of the Government's policies is a severe skills shortage in ecologists. This is the result of cuts to public spending on biodiversity. Local authorities do not have enough ecologists to oversee the biodiversity net gain policy. We recommend that the Government invest in training and skills in chartered ecology as part of the Government's promised investment in Green Jobs.
- The 25 Year Environment Plan does not have a set of long-term objectives to achieve the Plan's ten goals. The Government must urgently establish a natural capital baseline to measure progress against these goals and there needs to be a formal mechanism tying performance against goals to planned action.
- There is no strategy indicating how new biodiversity policies will work together. Implementation of these policies could be piecemeal, conflicting, and of smaller scale as a result. The Nature Strategy should set out how environmental and planning policies will link together to form a coherent policy approach to realise the 25 Year Environment Plan.
- Significant changes to individual biodiversity policies are necessary to realise their transformative potential. Biodiversity net gains should endure beyond the 30 year minimum. Defra needs to set out how Local Nature Recovery Strategies will be co-ordinated and joined-up into a national Nature Recovery Network.
- We welcome the Government's pledge to protect 30% of UK land and seas by 2030, but simply designating areas as protected is not enough. These areas are poorly managed. This Committee examined marine protected areas in 2019 but none of the recommendations have been adopted. Monitoring needs to be stepped up to track illegal fishing and management plans are needed for all protected areas.
- Nature is not adequately being factored into government decision making. We recommend the Government identify and reform subsidies harmful to biodiversity, redirecting money to nature conservation. We recommend the Government set a target to reduce the UK's global environmental footprint.
- The Government should detail how it intends to move beyond GDP as the primary measure of economic activity, for example towards a concept of inclusive wealth, which includes consideration of the UK's produced, human and natural capital.
- The Government should conduct Net Zero stress tests on the 2021 Budget and all future fiscal events. Nature tests should also be developed to ensure spending packages align with the Post-2020 Biodiversity Framework. A new fiscal rule should be set focused on balancing our demands on nature with nature's supply, and efforts to mainstream climate-related financial risks into the financial system should be duplicated for nature-related risks.

- For biodiversity to be protected, it has to be valued. This starts with education. We support the establishment of a Natural History GCSE and recommend nature visits, teaching outside, and getting children involved in the Government's tree-planting drive to form part of education recovery plans.

This report focuses on improving biodiversity in the UK. In a subsequent report we will examine the UK's impact on international biodiversity and the measures Ministers ought to be advocating for at COP15 and COP26 to start nature on the path of recovery.

Damaging changes in the planet's biodiversity are not being treated with the same urgency and ambition as changes in the planet's climate. This is unacceptable. Measures to counter the collapse in biodiversity must be raised up the political agenda: each Government department must consider the potential impact of its actions on biodiversity, and such considerations must be factored into decision-making across the public and private sector. We have seen a shift towards this with climate change: the same is possible for biodiversity. To prevent biodiversity collapse becoming a global crisis, action must be taken now.

Introduction

European honeybee. Photo: Phill Dixon

1 Introduction

1. Biodiversity and well-functioning ecosystems are critical for human existence, economic prosperity, and a good quality of life. They play an important role in providing food, energy, shelter and medicines; sustaining water and soil quality; regulating the Earth's climate; and providing opportunities for recreation, recuperation and inspiration.[1] For many people nature also has deep intrinsic value itself.[2] And yet, measures show biodiversity is declining at a faster rate than at any time in human history.[3]

Box 1: Biodiversity

The UN Convention on Biological Diversity defines biodiversity as the variability among living organisms from all sources including, inter alia, terrestrial, marine and other aquatic ecosystems and the ecological complexes of which they are part; this includes diversity within species, between species and of ecosystems. In simpler terms, biodiversity refers to the variety of life on Earth.

Source: UN Convention on Biological Diversity, Article 2. Use of Terms (1992)

2. Around one million animal and plant species are now threatened with extinction, many within decades.[4] The majority of indicators of ecosystems and biodiversity show rapid declines.[5] Since 1970 there has been a 68 per cent decrease in population sizes of mammals, birds, amphibians, reptiles and fish.[6] This colossal decline in global biodiversity is impacting the quality and extent of services that nature provides to people. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services (IPBES) reported 14 of 18 categories of 'contributions of nature' assessed have declined since 1970.[7] According to IPBES, biodiversity loss and environmental degradation poses risks to global food security,[8] increases the risk of transmission of zoonotic diseases,[9] and makes coastal areas more vulnerable to floods and storm surges.[10]

3. This global picture is reflected in the trends observed in the UK, which is one of the most nature-depleted countries in the world. The State of Nature report has shown that since the 1970s 41 per cent of all UK species surveyed have declined, while 15 per cent of

1 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019); Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury).
2 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) p 309–313
3 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)
4 Ibid
5 Ibid
6 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020)
7 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2010)
8 Ibid
9 IPBES (2019): Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services.; Johnson et al., Global shifts in mammalian population trends reveal key predictors of virus spillover risk, Proceedings Royal Society B, vol 287, (2020), pp 5.
10 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)

species within the UK are said to be threatened with extinction.[11] The abundance of the species of greatest conservation concern; the UK's priority species, have declined by 60 per cent.[12]

4. It is not too late to change course. The IPBES has concluded that, through urgent 'transformative change', the trend of continued biodiversity loss can be reversed.[13] This will require unprecedented action, including developed economies lowering total consumption and waste, accounting for nature in economic decision-making, and pre-emptive and precautionary actions on the part of governments and businesses alike to avoid, mitigate and remedy the deterioration of nature.[14] It is only through changes at this scale that we can prevent biodiversity collapse becoming a global crisis.

5. This report examines the state of biodiversity in the UK and how the UK can best protect and enhance biodiversity in the future. Through this inquiry we have sought to evaluate the extent to which the UK is doing its part to deliver the transformative change necessary to reverse biodiversity loss. 2021 provides an unrivalled opportunity to take stock of this challenge and carve a path forward. This year has become 'the super year for nature'.[15] With the UK hosting the UNFCCC COP26, China hosting UNCBD COP15, and every country in the world considering how to recover from the covid-19 pandemic, 2021 serves as a year to rethink and act. COP15 will pave the way for future biodiversity action for the next 10 years. The Committee's inquiry has sought to contribute to this global process. We report below on the biodiversity issues facing the UK domestically; in a subsequent report we will evaluate the potential contribution the UK can make to the protection of biodiversity and ecosystems globally.

Background to the inquiry

6. We launched this inquiry in July 2020. Our objective was to examine the Government's progress in achieving international and domestic biodiversity targets in preparation for the fifteenth meeting of the Conference of the Parties (COP15) to the Convention on Biological Diversity (CBD). During the inquiry, we also sought to examine the state of biodiversity in the UK, and how the UK could best protect and enhance biodiversity, by examining:

a) domestic biodiversity policy and action;

b) how biodiversity factors into the Government's economic decision-making;

c) the effect UK activities have on biodiversity abroad; and

d) the outcomes and protections the UK Government should be advocating at COP15.

7. As domestic biodiversity policy is devolved in the UK, this report focuses principally on environmental policies in England promoted by the UK Government.

11 Hayhow et al, The State of Nature 2019. The State of Nature partnership, (2019)
12 Hayhow et al, The State of Nature 2019. The State of Nature partnership, (2019)
13 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)
14 Ibid
15 People and Nature (BIO0021)

8. We received 69 written responses and held six public evidence sessions, hearing from 30 witnesses including academics, environmental NGOs, intergovernmental organisations, independent public bodies, Government advisors, farmers and private sector actors from the finance, infrastructure, and food industries. To conclude the oral evidence to the inquiry, we heard from Rt Hon George Eustice MP, Secretary of State for Environment, Food and Rural Affairs; Rt Hon the Lord Goldsmith of Richmond Park, Minister for Pacific and the Environment at the Department for Environment, Food and Rural Affairs and at the Foreign, Commonwealth and Development Office, and Rt Hon Christopher Pincher MP, Minister for Housing at the Ministry of Housing, Communities and Local Government; and Kemi Badenoch MP, Exchequer Secretary to the Treasury.

9. During our inquiry a Peat Action Plan and a Trees Action Plan for England were published in May 2021 and the Secretary of State for Environment, Food and Rural Affairs announced a legally binding target aiming to halt the decline of nature in England by 2030. Each of these initiatives are examined in this report. In February a global review into the Economics of Biodiversity (the Dasgupta Review), commissioned by the Chancellor of the Exchequer was published.[16] The review aimed to assess the economic benefits of biodiversity, the economic costs and risks associated with biodiversity loss and identify a range of best practice actions to enhance both biodiversity and economic prosperity. We heard from Professor Dasgupta twice during the inquiry. We are grateful for his assistance in drawing out how the UK Government can integrate nature into economic decision making.

10. We conducted a biodiversity photography competition for members of the public to highlight the beauty and breath of biodiversity in the UK: it received over 200 entries. The winners are featured on the cover and inside this report. Every entry serves as a visual reminder of why protecting biodiversity is so important.

11. Our work on this inquiry builds on former Environmental Audit Committee inquiries into *Sustainable Seas*[17] and *Invasive species*.[18] It also links to our current work on *Greening the post-Covid recovery* and on *Green jobs and the just transition*. Given the broad scope of the inquiry, we have chosen to make two reports to the House. In this report, we examine biodiversity in the UK and domestic biodiversity policy and action. Chapter 2 examines the state of biodiversity in the UK and globally and subsequent chapters examine different aspects of domestic biodiversity policy, action, and decision-making. In a subsequent report, we will examine the relationship between the UK and global biodiversity loss and the outcomes the UK Government should advocate at COP15 and COP26.

Legislative proposals

12. Much of the Government's policy on biodiversity protection is to be underpinned by statutory measures contained in the Environment Bill. The Bill was introduced to the House of Commons in January 2020, but found its passage delayed owing to the pressures placed on the legislative timetable from March 2020 by the pandemic. The Bill completed its committee stage in the Commons in November 2020 and was considered by the House

16 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury). On 14 July 2021 the Treasury issued the Government response to Professor Dasgupta's report: HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)

17 Environmental Audit Committee, Fourteenth Report of Session 2017–19, Sustainable Seas, HC 980

18 Environmental Audit Committee, First Report of Session 2019, Invasive Species, HC 88

in January 2021: the Bill was then carried over into the present session of Parliament.[19] Consideration was completed on 26 May and the Bill has now been introduced into the House of Lords. The Government expects to achieve Royal Assent to the Bill in the course of the current session. We discuss the Government's legislative proposals in greater detail in chapter 5.

13. This report is formally made to the House of Commons. We nevertheless trust that the observations we have made will be of assistance to the Lords in their own proceedings on the Bill, and indeed to the Commons in reviewing any amendments the Lords may propose.

19 See the Commons Library briefing material on the Bill, and in particular CBP 9119, *Environment Bill 2019–21 and 2021–22: Report on Committee and Remaining stages in the Commons*, May 2021

The state of biodiversity

Black darter dragonfly (Sympetrum danae). Photo: Tina Beck

2 The state of biodiversity

14. In this chapter we examine the state of biodiversity globally and in the UK, the drivers of biodiversity loss, UK and global performance against Aichi biodiversity targets and the transformational change necessary to reverse biodiversity's decline.

Global state of biodiversity

15. The IPBES's 2019 Global Assessment of Biodiversity and Ecosystem Services provided the first global assessment of biodiversity since the Millennium Ecosystem Assessment in 2005.[20] The report identified an unprecedented decline in nature and accelerating rates of species extinction, predicted to have significant impacts on economies, livelihoods, food security and quality of life. Around one million animal and plant species were reported to be threatened with extinction, many within decades, more than ever before in human history. The IPBES reported that the majority of indicators of ecosystems and biodiversity showed rapid decline: human actions threatened more species with global extinction than ever before, and around 25 per cent of species in assessed animal and plant groups were classed as threatened.

16. This colossal decline in global biodiversity has an impact on the quality and extent of services that nature provides to people. The IPBES reported that 14 of 18 categories of 'contributions of nature' assessed had declined since 1970.[21] These contributions include: regulation of the climate, air quality and ocean acidification; provision of energy, food, and medicinal resources; and provision of a source of inspiration and physical and psychological well-being.

17. The IPBES's findings are corroborated by other global studies into biodiversity. The WWF's Living Planet Report found an average 68% decrease in population sizes of mammals, birds, amphibians, reptiles and fish between 1970 and 2016. The WWF reported that until 1970, humanity's ecological footprint was smaller than the Earth's rate of regeneration, put simply, nature could withstand the impact of human activity. Now the WWF report that humanity is using the resources of 1.6 planets to provide the goods and services humanity demands—overusing the Earth's biocapacity by 56%.

20 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)

21 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services. (2019)

Figure 1: Global trends in the capacity of nature to sustain contributions to good quality of life from 1970[22]

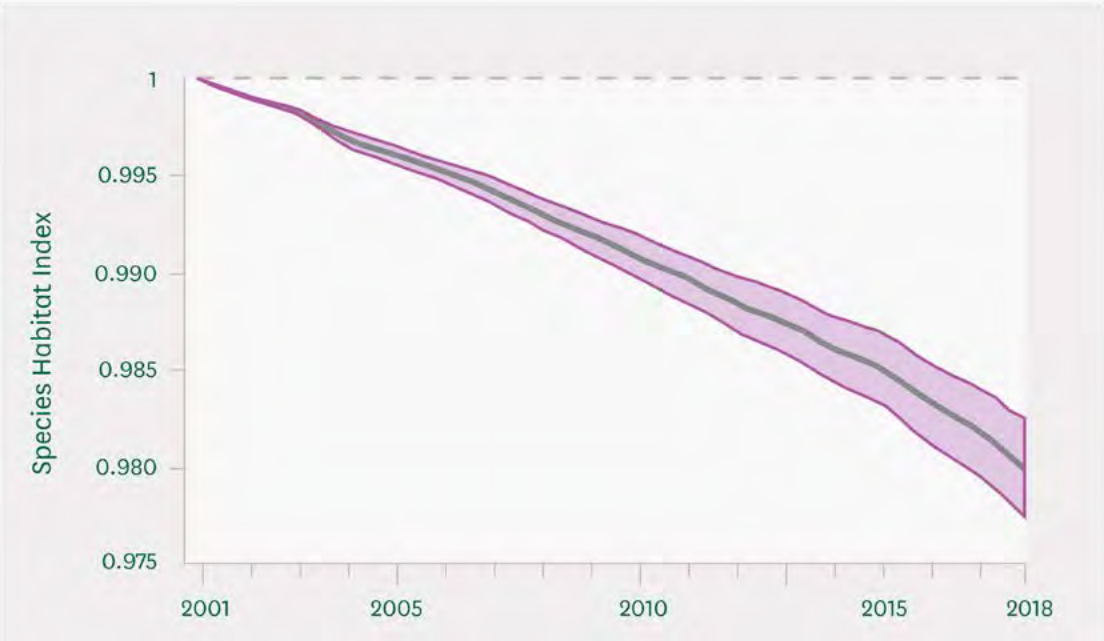
Figure SPM 1 **Global trends in the capacity of nature to sustain contributions to good quality of life from 1970 to the present, which show a decline for 14 of the 18 categories of nature's contributions to people analysed.**

Data supporting global trends and regional variations come from a systematic review of over 2,000 studies {2.3.5.1}. Indicators were selected on the basis of availability of global data, prior use in assessments and alignment with 18 categories. For many categories of nature's contributions, two indicators are included that show different aspects of nature's capacity to contribute to human well-being within that category. Indicators are defined so that an increase in the indicator is associated with an improvement in nature's contributions.

Source: IPBES (2019)

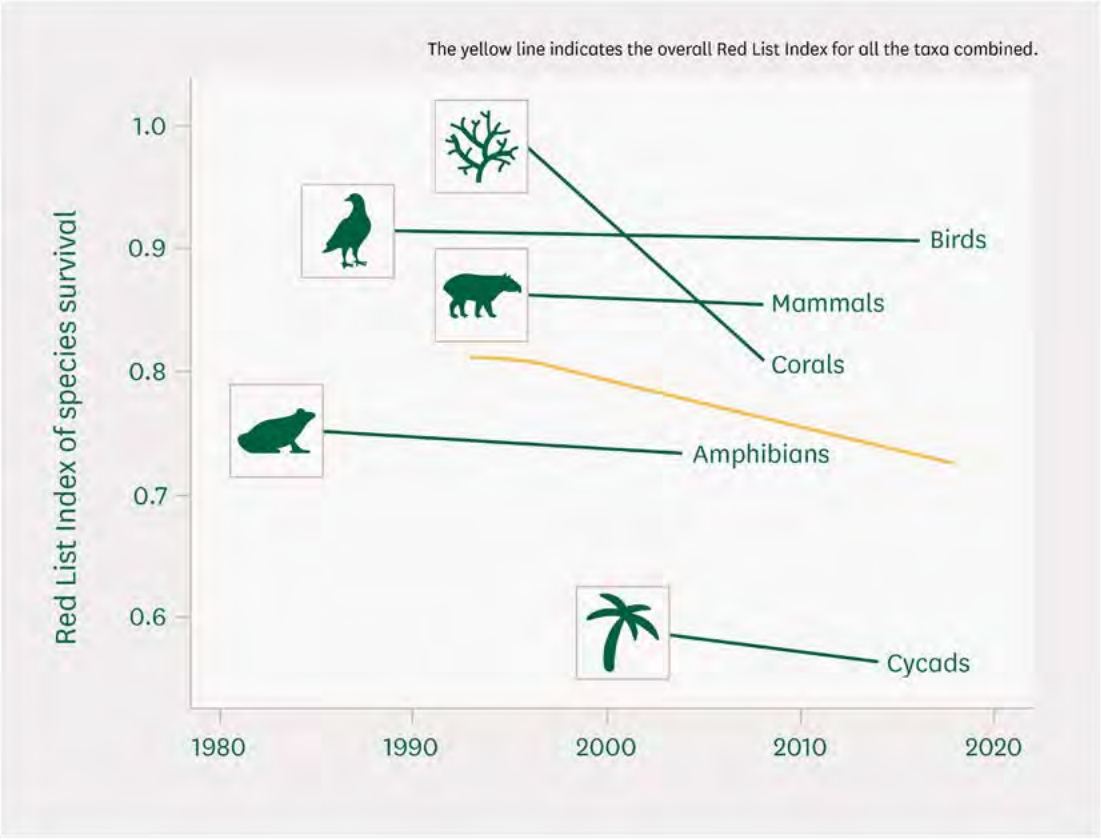
22 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019) p 23

Figure 2: Species Habitat Index[23]



Source: WWF (2020)

Figure 3: IUCN Red List Index[24]



Source: IUCN (2020)

23 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020) p 28

24 IUCN, Red List Index, accessed 3 June 2021

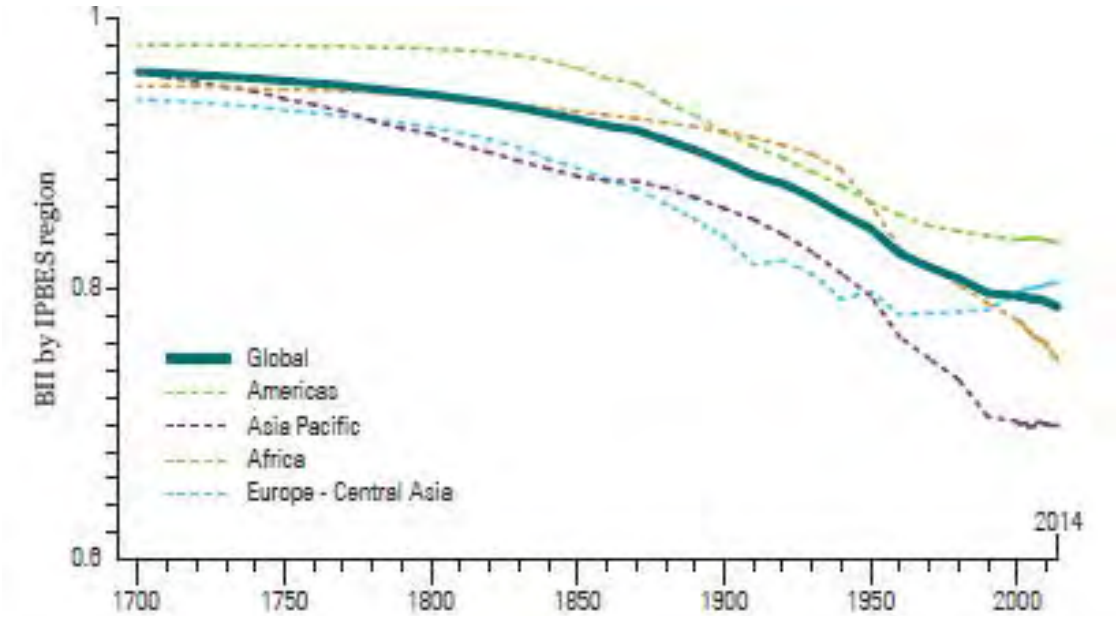
18. Further indications of the state of global biodiversity are provided by biodiversity and ecosystem indexes:

a) The Species Habitat Index measures the losses in habitat-suitable environments. Between 2000 and 2018 the index has fallen by 2%, indicating a significant downward trend in habitat available to species.[25]

b) The IUCN Red List Index (RLI) shows trends in overall extinction risk for species. The blue line indicates the overall RLI for all the species combined. Coral species are moving towards increased extinction risk most rapidly, while amphibians are, on average, the most threatened animal group.[26]

c) The Biodiversity Intactness Index (BII) estimates how much originally present biodiversity remains on average across the terrestrial biomes within a region. The global average BII (79%) is below the proposed lower safe limit (90%).[27]

Figure 4: Biodiversity Intactness Index[28]

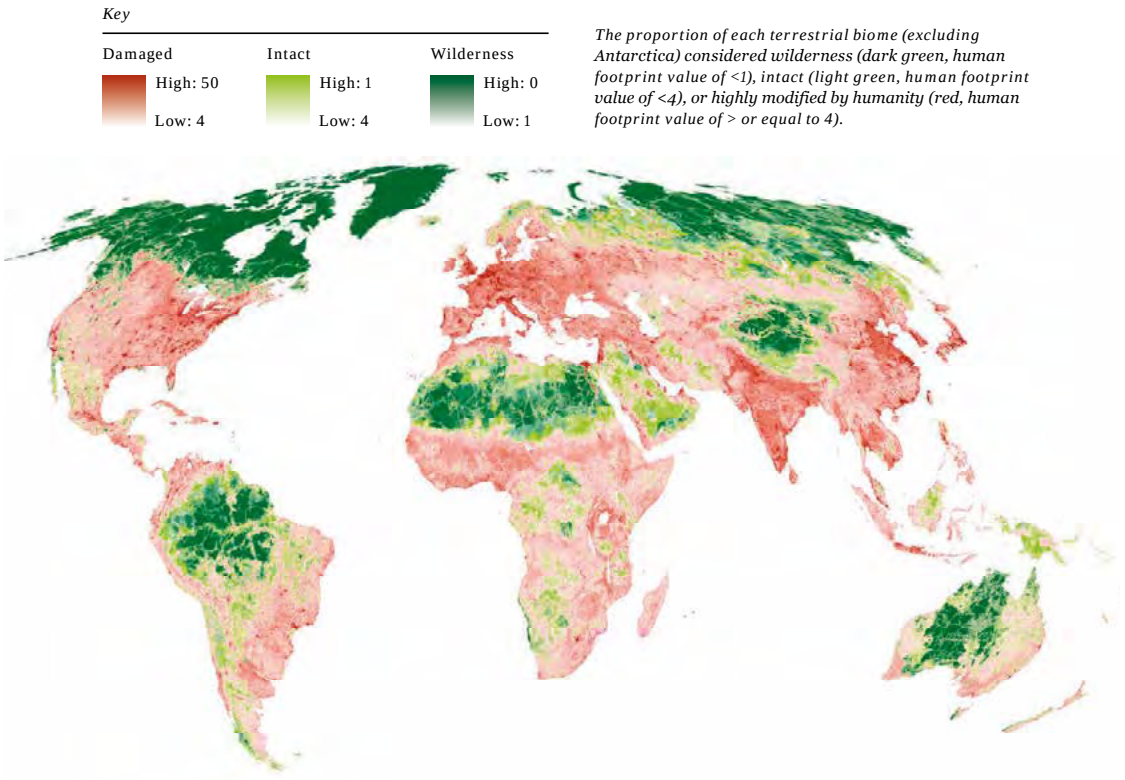


Source: IPBES (2019)

25 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020) p 28
26 IUCN, Red List Index, accessed 3 June 2021
27 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)
28 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)

19. Overall, the available evidence paints a picture of continued decline in global biodiversity across all spectrums. As Figure 5 shows, most of the world's terrestrial biomes are damaged.

Figure 5: Terrestrial biome and status of wilderness globally[29]



Source: WWF (2020)

Global performance against the Aichi Biodiversity Targets

20. The Aichi Biodiversity Targets were agreed by 196 countries under the Convention on Biological Diversity (CBD) in 2010. The Strategic Plan for Biodiversity 2011–2020, which contained the Aichi Targets, aimed to halt the loss of biodiversity globally by 2020 (See Appendix 1 for a full list of Aichi Biodiversity Targets). In September 2020, the final "stocktaking" report on the world's progress towards these targets was published.[30] The report showed that none of the 20 Aichi Biodiversity Targets were achieved in full, and only six were partially achieved.[31] Notable targets not achieved include: eliminating government subsidies harmful to biodiversity (target 3); halving the rate of loss of natural habitats (target 5); preventing the extinction of all known threatened species (target 12); and restoring and safeguarding ecosystems that provide essential services (target 14).

21. Evidence received during this inquiry has repeatedly emphasised the need to address Aichi target 3, eliminating subsidies harmful to biodiversity. Dr Anne Larigauderie, Executive Secretary of the IPBES, told us:

29 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020) p 67

30 Secretariat of the Convention on Biological Diversity, Global Biodiversity Outlook 5 – Summary for Policy Makers, (2020)

31 Secretariat of the Convention on Biological Diversity, Global Biodiversity Outlook 5 – Summary for Policy Makers, (2020) p 5

> We dedicate a lot of resources to conservation but we dedicate almost an order of magnitude more to subsidies that cause harm because they subsidise over-fishing, the use of fossil fuels or the use of pesticides. Our entire [economic] model and all these drivers need to be thought about.[32]

22. In his review into the economics of biodiversity, Professor Partha Dasgupta also concluded that government subsidies for exploiting nature are extensive.[33] Professor Dasgupta noted that a conservative estimate of these subsidies was between US$4 and US$6 trillion globally per year.[34] He cited that harmful subsidies account for 5 to 7% of global GDP.[35] These figures dwarf the size of finance for conservation and restoration of the biosphere—domestic public finance for biodiversity-related activities was US$67.8 billion per year on average between 2015 and 2017.[36]

23. This said, some progress towards meeting the Aichi targets has been made. Almost 100 countries have incorporated biodiversity values into national accounting systems.[37] The rate of deforestation has fallen globally by about a third compared to the previous decade. 44% of vital biodiverse areas are now under protection, an increase from 29% in 2000. Successful programmes to eradicate invasive species on islands have taken place.[38]

24. The Global Biodiversity Outlook is based on assessments provided by the IPBES and national reports provided by countries on their implementation of the Convention on Biological Diversity. These national reports provide a more granular picture of action on biodiversity. For 51% of national targets progress was being made but not at a rate that will allow the targets to be met.[39] The UN has noted that national targets have generally been poorly aligned with the Aichi Biodiversity Targets, in terms of scope and the level of ambition. Fewer than a quarter (23%) of the targets were well aligned with the Aichi Targets.[40] This suggests that gaps have arisen in both the level of ambition and commitment from countries to address the Aichi Biodiversity Targets.

32 Q5
33 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury)
34 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) p 209
35 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) p 493
36 OECD, A Comprehensive Overview of Global Biodiversity Finance, (2020)
37 Secretariat of the Convention on Biological Diversity, Global Biodiversity Outlook 5 – Summary for Policy Makers, (2020). p 4
38 Ibid. p 8
39 Ibid. p 4
40 Ibid. p 4

Drivers of global biodiversity loss

25. The IPBES analysed indirect and direct drivers that affect nature and its contributions to people.[41] Indirect drivers were defined as "factors behind human choices that affect nature."[42] The IPBES noted that the indirect drivers were

> underpinned by societal values and behaviours that include production and consumption patterns, human population dynamics and trends, trade, technological innovations and local through to global governance.[43]

26. The IPBES found that people's disconnection from nature and the resulting lack of value and importance placed on nature has resulted in five main drivers causing global biodiversity loss. Direct drivers were defined as "direct human influences upon nature".[44] These five direct drivers were (in order of importance):

a) changes in land and sea use;

b) direct exploitation of organisms;

c) climate change;

d) pollution; and

e) invasion of alien species.[45]

27. For terrestrial and freshwater ecosystems, the IPBES reported that land-use changes—the modification of the environments where species live—have had the greatest overall negative impact on nature since 1970.[46] Common changes in land use are caused by unsustainable agriculture, logging, transportation, residential or commercial development, energy production and mining. The WWF emphasised that where and how food is produced has been one of the biggest drivers of land-use change.[47] The second most significant driver reported by the IPBES was direct exploitation of animals, plants and other organisms through harvesting, logging, hunting and fishing. In marine ecosystems, direct exploitation of organisms (mainly fishing) has had the greatest impact, followed by changes in land and sea use change.[48]

28. Climate change is a direct driver that is increasingly exacerbating biodiversity loss through:

a) increasing average temperatures;

b) increasing the frequency and intensity of extreme weather events;

41 IPBES, Global Assessment on Biodiversity and Ecosystem Services, Chapter 2. Status and trends; indirect and direct drivers of change, (2019)
42 Ibid, p 20
43 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019) , p 12
44 IPBES, Global Assessment on Biodiversity and Ecosystem Services, Chapter 2. Status and trends; indirect and direct drivers of change, (2019), p 21
45 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)
46 Ibid
47 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020)
48 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019)

c) changing the chemistry of the ocean, such as through deoxygenation and acidification; and

d) increasing sea levels.[49]

These climatic changes have affected species distribution, population dynamics and ecosystem functions.

29. Increases in pollution and the number of invasive species have also been reported to have an negative impact on levels of biodiversity. The IPBES reports that air, water and soil pollution have continued to increase in some areas. Marine plastic pollution has increased tenfold since 1980.[50] The IPBES found that these pollutants had had strong negative effects on soil, freshwater and marine water quality and on the global atmosphere. Additionally, cumulative records of alien species have increased by 40% since 1980, associated with increased trade and human population dynamics and trends. The IPBES noted that the rate of introduction of new invasive alien species showed no signs of slowing down.[51]

Box 2: Invasive species

An invasive species is "any non-native animal or plant that has the ability to spread, causing damage to the environment, our economy, human health and the way we live".[52] Non-native species are those living outside their natural range which have arrived by human activity, either deliberately or accidentally. Non-native species are sometimes referred to as alien species. Of these, invasive species are those that negatively affect native biodiversity, ecosystem services and public health, through predation, competition or by transmitting disease.

Source: Great Britain Non-native Species Secretariat (GBNNSS) (2019)

30. Examining the indirect drivers and societal values and behaviours associated with biodiversity loss, the IPBES wrote that:

> in the past 50 years, the human population has doubled, the global economy has grown nearly fourfold and global trade has grown tenfold, together driving up the demand for energy and materials. A variety of economic, political and social factors, including the globalisation of trade have shifted the economic and environmental gains and losses of production and consumption.[53]

The IPBES concluded that this has had impacts on nature, the services it can provide, and how people value nature across the world, as they become more disconnected from the effects of their consumption.

49 Ibid
50 Ibid, p 70
51 Ibid, p 13
52 Great Britain Non-native Species Secretariat (GBNNSS), Definition of terms, accessed 27 May 2021
53 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019) p 13–14

31. Professor Dasgupta's review of the economics of biodiversity demonstrated that the failure to recognise that economic systems are embedded in nature, and therefore the resulting failure to value nature and account for it in decision-making processes, has facilitated humanity's ability to continuously degrade nature with impunity.[54] The IPBES findings support this general conclusion: they found that economic incentives had generally favoured expanding economic activity, and often environmental harm, over conservation or restoration.[55]

The need for transformative change

32. The IPBES characterised the current global response to biodiversity loss as insufficient but concluded that it was not too late to change course. This, however, will require 'transformative change' across economic, social, political and technological factors.[56] By transformative change the IPBES means 'doing things differently—not just a little more or less of something we are already doing.'[57]

33. The IPBES identified eight priorities to generate transformative change. These include:

a) enabling visions of a good quality of life that do not entail ever increasing material consumption;

b) lowering total consumption and waste;

c) accounting for nature deterioration from local economic activities and socioeconomic and environmental interactions over distances; and

d) promoting education regarding nature, conservation and its sustainable use.

34. To help realise these priorities, the IPBES recommends using a set of levers which include:

a) developing incentives and widespread capacity for environmental responsibility and eliminating perverse incentives;

b) governments and businesses taking pre-emptive and precautionary actions to avoid, mitigate and remedy the deterioration of nature;

c) strengthening environmental laws and policies and their implementation.[58]

54 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury)

55 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019) p 14

56 Ibid

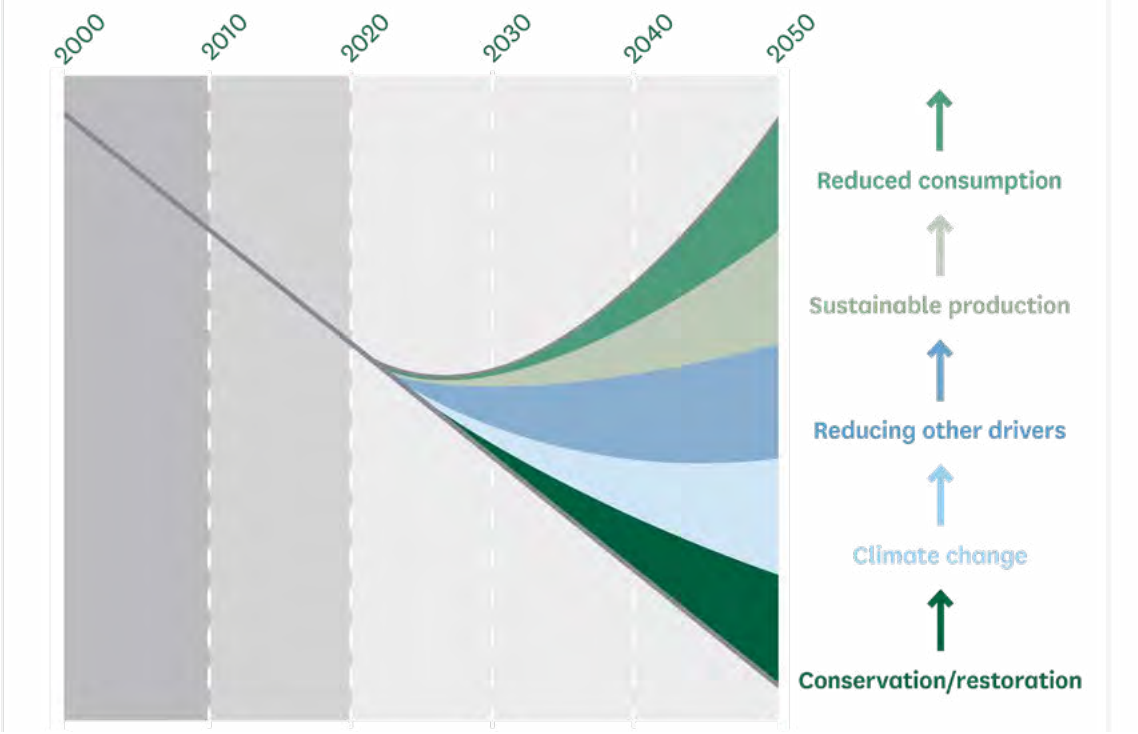
57 IPBES, What Is Transformative Change, and How Do We Achieve It?: Think Globally Act Locally, Guest blog by Kai Chan, Global Assessment Coordinating Lead Author, accessed 15 October 2020

58 IPBES, Summary for policymakers of the global assessment report on biodiversity and ecosystem services of the Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services, (2019) p 17

35. The IPBES's call for transformative action is echoed in almost every other authoritative study into the global environment. The WWF have provided a 'proof of concept' that it is possible to halt, and reverse, terrestrial biodiversity loss.[59] It has found that through: increased conservation efforts where the extent and management of protected areas is increased; more sustainable production in agriculture; and more sustainable consumption, the trend of increased and accelerating biodiversity loss can be reversed.

36. Similar transformative action is recommended by the Secretariat of the Convention on Biological Diversity (CBD). They see the key to action being a strengthening of national biodiversity strategies and action plans and adoption of these plans as whole-of-government policy instruments.[60] Like the IPBES and WWF, they see the need to: transform production systems for agriculture, forestry and fishing; overhaul consumption patterns; and address other pressures, such as overexploitation and pollution.[61]

Figure 6: Actions to reduce loss and restore biodiversity[62]



Source: CBD (2020)

59 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020)

60 Secretariat of the Convention on Biological Diversity, Global Biodiversity Outlook 5 – Summary for Policy Makers, (2020). p 5

61 Ibid

62 Ibid

Our view

37. **The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services' call for transformative change provides a yardstick against which action to address biodiversity loss should be measured. The global response to biodiversity loss has so far been inadequate. Piecemeal conservation efforts, and increases in the efficiency of production, cannot tackle the wholesale deterioration of the natural environment the world is now experiencing. Fundamental changes in the production and consumption of natural resources must be made. Without urgent, substantial action, ecosystem tipping points will be exceeded and the global biosphere will be left beyond repair.**

38. **Recommendation:** ***We recommend that the UK Government play a leadership role in addressing global biodiversity loss by demonstrating what 'transformative action' to address biodiversity loss in an advanced industrialised economy looks like. This should entail the production of credible plans, which include measures to phase out economic incentives which threaten conservation and restoration, with a view to meeting the 2030 Biodiversity Framework, once agreed, and the development of robust means to ensure that these plans are owned and implemented across Government. Assessments of the potential impact of Government actions on biodiversity loss must be introduced for all Government departments.***

The state of biodiversity in the UK

39. The global picture of biodiversity decline is mirrored in the UK. The Department for Environment, Food and Rural Affairs (Defra) acknowledges this; the Department told us that, despite some conservation successes in recent years:

- a significant proportion of the best wildlife habitats inside and outside protected sites remains in an unfavourable condition;
- many species groups are in long-term falls;
- invasive species continue to increase in prevalence across the UK; and
- action is needed on funding for biodiversity and ecosystems in the UK.[63]

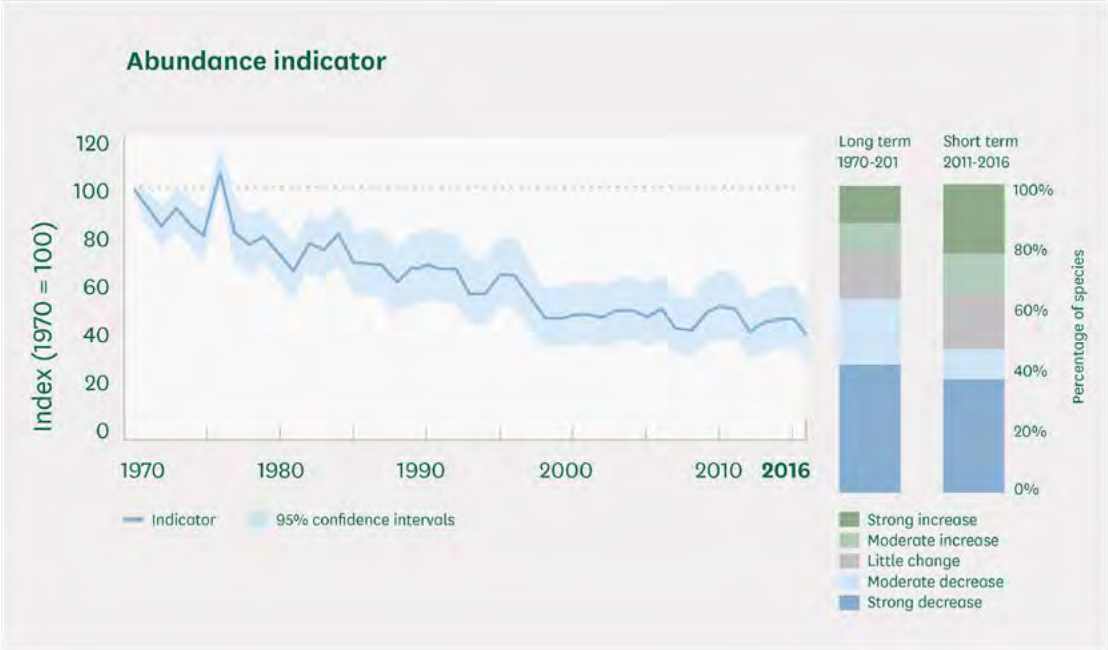
40. Defra noted that progress had been made in biodiversity levels among some species. The Joint Nature Conservation Committee (JNCC) has found that this has often been the product of targeted partnerships, where conservation NGOs, farmers, landowners, scientists and government have worked together, and has generally been due to landscape scale interventions.[64]

41. The 2019 State of Nature report provided a detailed picture of biodiversity in the UK. The report was produced by a partnership of more than 70 organisations involved in the conservation of nature in the UK, including the nature conservation bodies for the UK and its four constituent nations. It found that the UK has experienced a decline in species

63 Defra (BIO0054)
64 JNCC (BIO0012)

abundance of 13 per cent on average. 15 per cent of species within the UK are threatened with extinction, and since 1970 the abundance of UK priority species has declined by 60 per cent.[65]

Figure 7: Change in relative abundance of UK priority species, 1970 to 201666



Source: JNCC (2020)

42. The National History Museum has observed that, when compared to other G7 countries, the UK is at the very bottom in terms of how much biodiversity survives.[67] The Chair of Natural England, Tony Juniper, gave us his view of the overall state of UK biodiversity:

> We are a nature-depleted nation, and what we have left are remnants of what was once here. Some of the statistics we have are quite troubling […] We have only a tiny percentage left of some of the very biodiverse herb-rich meadows that we had in the middle of the last century. Our native woodlands are down to just a few percent of the country and continue to be under pressure, so we can paint a pretty gloomy picture of where we have reached.[68]

65 Hayhow et al, The State of Nature 2019. The State of Nature partnership, (2019)
66 JNCC, C4a. Status of UK priority species – Relative abundance, accessed 3 June 2021
67 The National History Museum, UK in the relegation zone for nature, reveals Natural History Museum and RSPB, accessed 27 April 2021
68 Q8

UK performance against the Aichi Biodiversity Targets

43. On behalf of Defra, the JNCC assessed the UK's performance against the Aichi Biodiversity Targets in March 2019.[69] Assessment reports are submitted to the Convention on Biological Diversity secretariat in keeping with the aims of the Convention and are used to evaluate the contribution of state parties to the Convention towards the global biodiversity goals set out in this UN treaty.

44. The JNCC found that, at a minimum, the UK had to date failed to meet 14 of 19 Aichi biodiversity targets assessed. In the JNCC's report, the UK was assessed as "on track to achieve" five of the targets, and progressing towards 14 of the targets "at an insufficient rate".[70]

45. Targets that the JNCC assessed as "on track" included:

- integration of biodiversity into planning processes and national accounting;
- extent of protected areas;
- development and implementation of a national biodiversity action plan; and
- increasing the scientific base and knowledge transfer related to biodiversity.

All these targets can be characterised as 'process targets'.

46. Much less progress appears to have been made towards 'outcome targets'. For example, the JNCC reported that the status of habitats and species has deteriorated; that the prevalence of invasive species has continued to increase across the UK,[71] and that there has, in real terms, been a short-term fall in Government funding for biodiversity of 29 per cent, from £641 million to £456 million, between 2012–13 and 2017–18.[72] Important measures of ecosystem services, such as fish size classes in the North Sea and the status of pollinating insects, have also continued to deteriorate.

47. The RSPB's analysis of the UK's progress on the Aichi targets suggested that the UK's performance had in fact been worse than that reported by the JNCC.[73] The RSPB told us that:

> The targets where the most progress has been made are mainly procedural. Target 11 on protected areas is the only outcome-focussed target for biodiversity which the JNCC report that the UK is 'on track to achieve'. However, this assessment is not supported by the evidence. The UK reports a 28% coverage on land, but this includes landscape designations (National Parks, AONBs and NSAs) which are consistently failing to deliver for biodiversity across the UK. We estimate that only around 5% of the UK's land is both protected and effectively managed for nature … [additionally] against both the species and financing targets (Targets 12 and 20 respectively)

69 JNCC, United Kingdom's 6th National Report to the Convention on Biological Diversity, (March 2019). The Aichi Biodiversity Targets are listed in Appendix 1.

70 The JNCC did not assess progress towards one of the 20 targets, relating to indigenous peoples and local communities, as it was deemed not relevant to the UK.

71 JNCC, United Kingdom's 6th National Report to the Convention on Biological Diversity, (March 2019).

72 JNCC, Expenditure on UK and international biodiversity, accessed 3 June 2021

73 RSPB, A Lost Decade for Nature, (2020)

> the UK has reported 'Progress towards target but at an insufficient rate'. However, most assessments of UK biodiversity point towards ongoing loss, or no recovery from depletion and public sector spending on biodiversity in the UK [has fallen by] 29%.[74]

Overall, the RSPB considers that the UK has failed to reach 17 out of the 20 Aichi targets and has ultimately failed in its contribution towards the global goal of halting the loss of biodiversity.

48. In reviewing the Government's progress towards the 25 Year Environment Plan (25 YEP), the Nature Capital Committee has concluded that the Government is not on track to achieve its objective to improve the environment within a generation. As a result "the next generation will inherit a poorer set of natural assets."[75]

The case for legally binding targets for nature

49. Many environmental NGOs and other stakeholders told us that in order to address the deteriorating state of nature, legally binding, long-term targets were required. The RSPB has argued that such targets must be owned across government, must include outcome measures on the state of nature (species abundance, distribution, extinction risk, habitat extent and condition) and must be underpinned by milestones and appropriate policy instruments.[76] As Beccy Speight, chief executive at the RSPB, said:

> We have targets enshrined in law to tackle the climate emergency, but none, yet, to reverse the crisis facing nature. We cannot be in this same position in 2030 with our natural world vanishing due to inaction.[77]

The Government has accepted the need for biodiversity targets in principle in the Environment Bill, which is a positive breakthrough. As currently drafted, the Environment Bill includes powers to set legally binding targets for air quality, water, biodiversity, and resource efficiency and waste reduction.[78] But, the bill only commits Ministers to setting one target in each of the four areas. The Secretary of State must by regulations set a target for reducing concentrations of particulate matter in ambient air.

50. In August 2020, Defra published a paper setting out options for the environmental targets under consideration.[79] The paper highlighted options for biodiversity targets which would potentially cover include Sites of Special Scientific Interest (SSSIs), Marine Protected Areas (MPAs), species, habitats outside of protected areas, soil health and woodland cover. Each area could have several targets, but such targets would not have to be legally binding. The scope and level of ambition of the targets would be determined by Ministers.

51. The Wildlife Trusts observed that there were encouraging aspects to the Government's proposed options that would address some of the concerns expressed to date in respect of monitoring, but noted that gaps in potential protection remained.[80] Defra had proposed

74 RSPB, A Lost Decade for Nature, (2020); RSPB (BIO0023)
75 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020) p. 1
76 RSPB, A Lost Decade for Nature, (2020)
77 The Guardian, World fails to meet a single target to stop destruction of nature – UN report, accessed 15 October
78 Environment Bill [Lords], Clauses 1–6 [Bill 16 (2021–22)]
79 Defra, 19 August 2020: Environment Bill – environmental targets (October 2020)
80 The Wildlife Trusts (BIO0015)

retaining action-based targets for habitats outside protected areas:[81] the Wildlife Trusts told us that using the same proxy measures as for the Biodiversity 2020 exercise would mean that no further progress would have been made in developing an outcome-based indicator in nearly ten years.[82] Defra had also proposed targets that assessed abundance and extinction risk, but not distribution.[83] Richard Benwell, Chief Executive of Wildlife and Countryside Link (Link), stated that a target for both would give the fullest picture, although he considered that the Government's proposals were "going in the right direction."[84]

52. The lack of binding interim targets in the Government's proposals has been a major concern for environmental stakeholders, who argue that this could allow the government to defer meaningful action to address the continuing deterioration of nature. The RSPB and the Wildlife Trust recommended that the Climate Change Act's model of five-yearly carbon budgets should be adopted for nature recovery, so as to ensure that actions to deliver on long-term biodiversity targets were not delayed until the end of the target period.[85]

53. We also heard concerns over the way in which targets are to be linked to requirements to act, and how public bodies are to be put under an obligation to act to address nature recovery. The RSPB and Link recommended linking targets to Environmental Improvement Plans, by requiring that plans contain specific time-bound actions linked to achieving the outcomes required by targets.[86]

54. The Natural Capital Committee (NCC) recommended that an overall statutory duty to protect and improve the environment be enacted via the Environment Bill as a priority, with the Office for Environmental Protection responsible for enforcement.[87] The NCC also advises that several former component targets now be made legally-binding, such as the protected habitat and SSSI targets in the expired 2020 Biodiversity Strategy.

55. A coalition of over 50 nature organisations, including the Wildlife Trusts and Link, have advocated for a 'State of Nature' target. This would be a legally binding target to halt the decline of habitats and species by 2030 at the latest. The group thinks of this target as a 'net zero for nature' that will:

> ensure that action to solve the ecological crisis has the same statutory force as action on climate change.[88]

56. The group advocate that the target takes account of species abundance, species extinction risk and the extent and condition of habitats. In May 2021, the Secretary of State for Environment, Food and Rural Affairs, announced that the Environment Bill

81 The Wildlife Trusts (BIO0015); Wildlife and Countryside Link (BIO0014)
82 The Wildlife Trusts (BIO0015)
83 Ibid
84 ENDS Report, The Environment Bill – why setting legally-binding nature target is not going to be easy, accessed 3 June 2021
85 RSPB (BIO0023); Q56
86 RSPB (BIO0023
87 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020); NCC, The Natural Capital Committee's Response to the 25 Year Environment Plan Progress Report (2019)
88 The Wildlife Trusts; Wildlife and Countryside Link (BIO0067)

would be amended to include a new legally binding target for species abundance for 2030, aimed at halting species decline.[89] Nature organisations welcomed the announcement. Richard Benwell, CEO of Link said:

> If the legal detail is right, and the targets are comprehensive and science-based, then this could inspire the investment and action needed to protect and restore wildlife, after a century of decline.[90]

57. Conservation groups are now focused on ensuring the details of the target are right. The Secretary of State's announcement focused on a target for species abundance, but did not mention extinction risk, and extent and condition of habitats. Interim legally binding targets were also not mentioned. A Green Paper setting out how the Government plans to deliver the target is to be published later in 2021.[91]

Our view

58. **The UK has established a sophisticated public policy mechanism to tackle the effects of climate change by driving sustained long-term reductions in harmful emissions. This comprises legally binding interim and long-term targets authorised by Parliament, and an independent Climate Change Committee to advise Parliament and Ministers on the actions required to ensure such targets are met.**

59. **No such system yet exists to restore the UK's greatly depleted natural environment. It is thus unsurprising that the UK failed to achieve at least 14 of the Aichi Biodiversity Targets, and the Government is not on track to achieve its goal to provide the next generation with a better natural environment.**

60. **We welcome the Government's announcement of a 'State of Nature' target on species abundance for 2030. This goes some way in providing a legal mechanism to achieve nature goals, but for this to translate into urgent, transformative action, the target must capture other aspects of biodiversity and include interim targets.**

61. **Recommendation:** ***We recommend that the Government introduce, preferably via the Environment Bill currently before Parliament, a mechanism for statutory interim targets to ensure that its proposed species abundance target is met to halt the decline of nature by 2030. We further recommend that the scope of the proposed 2030 target be extended to encompass legally binding outcome measures on species distribution, extinction risk, habitat extent and condition: it must also reinstate the expired target for Sites of Special Scientific Interest.***

62. **Recommendation:** ***We recommend that the Government introduce mechanisms to ensure that each Government department and non-departmental public body is required, by their policies and actions, to contribute to reaching the targets set out above. The Office for Environmental Protection should be responsible for ensuring their enforcement.***

89 Defra, Environment Secretary speech at Delamere Forest on restoring nature and building back greener. (May 2021)

90 BBC, Green light for 'net zero' equivalent for nature, accessed 3 June 2021

91 Defra, Environment Secretary speech at Delamere Forest on restoring nature and building back greener. (May 2021)

Drivers of biodiversity loss in the UK

63. According to the UK State of Nature report, issued in September 2019 by a grouping of over seventy nature conservation organisations, the major pressures on the UK's nature are: unsustainable forms of agricultural and woodland management, climate change, urbanisation, pollution, hydrological change and invasive non-native species.[92] The report found that agricultural productivity, linked to the intensification of land management and the decline in farmland nature, was increasing, although some farmers had adopted wildlifefriendly farming with financial assistance from the Government. Thousands of hectares of farmland, woodland and wetland were being built on every year to meet the needs of the UK's increasingly urbanised population, although woodland cover had increased, new wetland habitat had been created and heathlands and moors had been restored.

64. These findings have been supported by Wildlife and Countryside Link, which highlighted that, for instance, 97 per cent of wildflower meadows had been lost since the 1930s, due to agricultural intensification and changes in land use.[93] Link also noted that 70 per cent of floodplains were now under intensive agriculture[94] creating issues of flooding, poor water quality and siltation. Development was singled out as a key cause of land-use change: Link demonstrated that building on greenfield sites had resulted in a net reduction in grassland since 1990 of 1.9 million acres, an area greater than the size of Suffolk and Sussex combined.[95] The transformation of ancient woodland to productive forestry was highlighted as another contributory land use change: ancient woodland, one of the UK's richest and most complex habitats in ecological terms, now accounts for only 2.4% of land use in the UK.[96] The Woodland Trust estimated up to 70% of the UK's ancient woodland has been lost or damaged.[97]

Invasive species

65. One driver of biodiversity loss of particular concern in the UK is an increase in invasive species. Whilst progress has been made globally to reduce the negative impact of invasive species, the reverse appears to be occurring in the UK:[98] according to Defra's own progress report, the number of invasive species, tree pests and diseases in Great Britain has increased since the last reporting period.[99] An estimated 25 new listed species considered to be invasive have established themselves in Great Britain in the last 20 years, causing environmental damage estimated to cost £1.8 billion a year.[100]

66. In 2019 our predecessor Committee conducted an inquiry into invasive species. The Committee's report found that the Government had missed its targets for tackling invasive species and had failed to give the issue the same priority and funding as other animal and

92 Hayhow et al, The State of Nature 2019. The State of Nature partnership, (2019) p 10
93 Wildlife and Countryside Link (BIO0014)
94 Lawson et al, The natural capital of floodplains: management, protection and restoration to deliver greater benefits. Valuing Nature Natural Capital Synthesis Report. (2018)
95 UK Centre for Ecology and Hydrology, Almost 2 million acres of GB grassland lost as woodland and urban areas expand [accessed 15 October, 2020
96 Wildlife and Countryside Link (BIO0014)
97 Woodland Trust, Ancient Woodland, accessed 28 May 2021
98 JNCC, United Kingdom's 6th National Report to the Convention on Biological Diversity , (2019)
99 Defra, 25 Year Plan Progress report, (2020)
100 Environmental Audit Committee, First Report of Session 2019, Invasive Species, HC 88

plant health regimes. It found that while funding for biosecurity in Great Britain was estimated at £220 million a year: action against invasive species received less than one per cent of that sum (£0.9m). To address this, the Committee recommended:

a) that funding to tackle invasive species should be increased to at least £3 million a year;

b) creating a 'nature volunteer force' so that the public can assist in preventing the introduction of invasive species; and

c) setting up a dedicated inspectorate to improve biosecurity at the UK's borders.[101]

None of these recommendations were accepted or implemented by the Government.[102]

Our view

67. **Invasive species contribute significantly to the decline in biodiversity levels in Great Britain. By its own admission, the Government has failed to prevent the arrival and continued spread of damaging invasive species. None of our predecessors' recommendations on tackling invasive species—on funding, setting up an inspectorate, and creating a 'nature volunteer force'—were adopted by Ministers: yet the incidence of invasive species, tree pests and diseases continues to increase.**

68. **Invasive species continue to cost the economy £1.8 billion per year. It is significantly cheaper to prevent invasive species from establishing, rather than tackling them once they are established.**

69. **Recommendation:** ***We strongly recommend that Ministers urgently review the recommendations of the Committee's report on Invasive Species made in October 2019 and implement them without further delay. This includes increasing the proportion of biosecurity funding directed at countering invasive species to at least £3 million a year.***

101 Environmental Audit Committee, First Report of Session 2019, Invasive Species, HC 88

102 Environmental Audit Committee. First Special Report of Session 2019–21, Invasive species: Government response to the Committee's First report of Session 2019. HC 332

Measuring biodiversity

Common shield beetle - Somerset lavender farm. Photo: Akif Ali Khan

3 Measuring biodiversity

70. The development and use of biodiversity indicators are challenging, but they can provide a basis for communicating progress towards the multiple international and national biodiversity goals and targets the UK has committed to and can be used to evaluate policies underpinning conservation measures.[103]

71. The Government states it has extensive monitoring and surveillance in place in order to track sites, habitats and species, with much of species data collected by "expert volunteers."[104]

72. Domestic biodiversity policy is devolved, so each country has developed its own approach to monitoring. Due to its transboundary nature, marine policy is monitored at a UK level, as is species data because the volunteer bodies the JNCC rely on operate at this scale.[105] In this chapter we examine the current state of terrestrial and marine biodiversity monitoring and progress in the measurement of soil health.

UK terrestrial biodiversity monitoring

73. Several environmental groups[106] told us that Government spending on biodiversity had been substantially cut over recent years. There has been a real-term decrease of 42% in public funding for UK biodiversity since a peak in 2008/09 .[107] The ensuing scaling back in monitoring meant that there was now "an alarming lack of knowledge about the current state of sites and the most vulnerable species" in the UK.[108] The RSPB told us that the implications of reductions in funding included only monitoring trends in 10% of UK terrestrial and freshwater species, the near termination of national surveys on the most threatened species[109] and a lack of nature assessments of National Parks, Areas of Outstanding Natural Beauty (AONBs) and National Scenic Areas (NSAs).[110]

74. In its assessment of the state of biodiversity monitoring, the Chartered Institute of Ecology and Environmental Management (CIEEM) has highlighted issues regarding the capacity and skills of ecologists. These included an over-reliance on the contribution of the voluntary sector which, although of value, lacked the capacity to provide comprehensive, expert monitoring; an ageing population of specialists close to retirement; and a lack of investment in training and skills in botany and taxonomy which would be needed to implement the biodiversity net gain policy, changes to the protected species licensing system and proposed changes to the planning system.[111] The environmental news organisation ENDS has reported that only one in four local authorities in England had

103 POST, Effective Biodiversity Indicators. (24 May 2021)
104 Defra (BIO0054)
105 Defra (BIO0054)
106 (BIO0023); Association of Local Environmental Records Centres (BIO0041); Chartered Institute of Ecology and Environmental Management (BIO0039)
107 JNCC, UK Biodiversity Indicators 2020. E2 Expenditure on UK and international biodiversity , 15 October 2020
108 RSPB (BIO0023)
109 RSPB (BIO0023)
110 Defra, Landscapes review (September 2019)
111 Chartered Institute of Ecology and Environmental Management (BIO0039)

access to an in-house ecologist.[112] This means the situation has deteriorated since the 2013 study by the Association of Local Government Ecologists (ALGE) which found one in three councils had access to in-house ecological expertise.[113]

75. CIEEM told us that, most importantly, the Government needed to ensure that monitoring was tied to robust action.[114] CIEEM demonstrated that action was not being taken in response to critical indicators from monitoring, citing Defra's own acknowledgment that while monitoring had shown the illegal killing of hen harriers, no meaningful policy response had ensued. This observation has been supported by the National Audit Office (NAO) and the Association of Local Environmental Records Centres (ALERC) who found that some sets of metrics were still not linked to effective mechanisms for taking action in the light of poor performance. These sets include the Environmental Accounts, the Greening Government Commitments for the sustainability of the government estate, and for UK Biodiversity Indicators.[115]

76. The National Trust told us that the efficient management of biological data was made difficult due to the sheer variety of data systems used by monitoring bodies.[116] The resulting inefficiencies limited the availability of monitoring data and hindered the development of an evidence base for assessment of the UK's natural capital. To address this, the Trust recommended that the Government implement a "preferred approach to data management which plays to complementary strengths of the relevant actors".[117] To improve the quality of monitoring, the JNCC and NAO have both recommended greater use of earth observation data to assess how different management activities are affecting habitat condition.[118] The benefits of this approach include cost savings, near-real-time monitoring and improved spatial disaggregation.[119]

Monitoring of Sites of Special Scientific Interest (SSSIs)

77. Natural England monitors the condition of Sites of Special Scientific Interest (SSSIs) in England. The condition monitoring undertaken by Natural England provides data for the Government to track progress against the 25 Year Environment Plan goal to restore 75 per cent of the SSSI area to a favourable condition (from the current value of 38.9 per cent).[120]

78. The number of sites monitored annually has fallen. 47 per cent of SSSIs in England have not been assessed within the last six years. In nearly ten years, the condition of just 1.5 per cent of these sites have improved.[121] Overall this means that wildlife, even in the most important wild spaces in England, is under threat. Numerous environmental

112 ENDS Report, Capacity crunch: do councils have the expertise to deliver their biodiversity goals?, accessed 19 April 2021
113 Association of Local Government Ecologists, ECOLOGICAL CAPACITY AND COMPETENCE INENGLISH PLANNING AUTHORITIES, What is needed to deliver statutory obligations for biodiversity? (November 2013)
114 Chartered Institute of Ecology and Environmental Management (BIO0039)
115 NAO, Environmental metrics: government's approach to monitoring the state of the natural environment, Session 2017–19, HC 1866 (January 2019); Association of Local Environmental Records Centres (BIO0041)
116 National Trust (BIO0035)
117 National Trust (BIO0035)
118 NAO, Environmental metrics: government's approach to monitoring the state of the natural environment, Session 2017–19, HC 1866 (January 2019); JNCC (BIO0012)
119 NAO, Environmental metrics: government's approach to monitoring the state of the natural environment, Session 2017–19, HC 1866 (January 2019)
120 Natural England (BIO0027);
121 The Wildlife Trusts (BIO0015)

groups[122] pointed to the effect of funding reductions on Natural England's ability to monitor, assess and improve the condition of SSSIs and National Nature Reserves. The National Biodiversity Network concluded that Natural England and similar bodies in the devolved nations were not resourced to properly monitor and improve the environment.[123]

79. The Government told us that additional funding had been made available in the financial year 2020–21 to accelerate protected site monitoring reforms, in line with the Natural England Monitoring Strategy 2019[124] and we welcome the recent funding announcement for Natural England for the 2021–22 financial year[125] discussed in Chapter 4. In 2020, Ministers also announced a £5m Natural Capital and Ecosystem Assessment programme to strengthen monitoring within and outside protected areas.[126] With regards to the 2020 announcements, the Wildlife Trust was nevertheless doubtful that this extra funding would make a noticeable difference, given the existing severe backlog in SSSI condition assessment.[127]

Our view

80. **Public expenditure on measures to promote biodiversity has been cut in real terms over recent years. As a result, levels of monitoring have been scaled back, and the capacity for assessing the state of protected areas and vulnerable species nationally has been reduced. Government bodies do not have enough skilled ecologists to provide comprehensive expert monitoring, and these bodies are over-reliant on the voluntary sector to fill the gaps which arise. Currently, local authorities do not have enough in-house ecologists to provide the monitoring which is expected to underpin the Government's policy on biodiversity net gain.**

81. **Recommendation:** ***We recommend that Ministers make a material increase in levels of investment in training and skills for chartered ecology and associated disciplines. This ought to form an element of the Government's promised investment in Green Jobs.***

82. **The relationship between environmental monitoring and remedial action is far too weak. This must change. Data on biodiversity levels must inform decision-making in Government far more substantially than at present.**

83. **Recommendation:** ***We recommend a formal mechanism be established to review and act on the information provided in the Environmental Accounts.***

84. **Recommendation:** ***The Government's new species abundance target for 2030 provides a potential mechanism for the measurement of progress on addressing biodiversity loss, and a driver for consequent actions. We recommend that once the target is established, regular, formal reviews of progress against the target should be required to be made, to feed into decision-making at senior levels in all Government***

122 RSPB (BIO0023); The Wildlife Trusts (BIO0015); Chartered Institute of Ecology and Environmental Management (BIO0039); Association of Local Environmental Records Centres (BIO0041)
123 National Biodiversity Network Trust (BIO0026)
124 Natural England, Natural England Monitoring Strategy 2019 (RP2924), (2019)
125 Guardian (2021) Natural England to get 47% funding increase amid 'green recovery' plans. 20 May 2021
126 Defra (BIO0054)
127 The Wildlife Trusts (BIO0015)

departments. Ministers should also report regularly to Parliament on projected and current performance against the target and associated biodiversity outcome measurements on species distribution, extinction risk, habitat extent and condition.

85. **The efficient management of data relevant to assessing levels of biodiversity is made difficult due to the sheer variety of data systems used to monitor UK biodiversity.**

86. **Recommendation:** ***We recommend that the Government implement a preferred approach to data management and monitoring, to strengthen a consistent evidence base on the UK's natural capital. The Government should also make greater use of earth observation data as a cost-effective means of filling gaps in the data obtained from terrestrial monitoring.***

UK marine monitoring

87. To tackle the risks from over-exploitation, pollution and climate change, areas of the sea are designated and protected both nationally and under international treaties. Marine protected areas (MPAs) are clearly defined geographical spaces, identified through legal or other effective means, and are dedicated to achieving the long-term conservation of nature.[128] In this report we have used MPA as a generic term to cover a number of different area designations, all of which are considered as forming part of the network of UK marine protected areas.

88. The UK is committed to the establishment of an ecologically coherent network of well-managed MPAs under the Aichi targets of the Convention on Biodiversity as well as the Convention on Protection of the Marine Environment of the North-East Atlantic (the OSPAR Convention). The UK has designated 372 MPAs to date: as of March 2021, 38 per cent of UK territorial waters were covered by MPAs.[129] This exceeds the ten per cent required by the Aichi targets.

89. Just as our predecessor Committee heard during its Sustainable Seas inquiry in 2019, we were told that the Government's approach to marine protection was not working. Dr Doug Allan, filmmaker for the Planet Earth and Blue Planet BBC series, told us that:

> as marine reserves are concerned, yes, they are there on paper but they are very much unenforced and we need to get serious with how we are looking after them …. They receive far too little protection and enforcement. We have the means to identify the boats that are in those areas. All the fishing boats carry AIS, or automatic identification systems … .We can tell from how those boats are behaving what they are doing … .When they go dredging across these areas, it decimates the whole environment. The small fisheries on the east coast of the UK, for example, are very much in favour of supporting MPAs to protect their stocks.[130]

128 Marine Conservation Zones in England, Commons Library Briefing SN06129, (17 July 2015) ; Selection of Marine Conservation Zones, POST Note, (6 June 2013); Biodiversity in UK overseas territories, POST note, (18 January 2013);

129 JNCC, UK Marine Protected Area network statistics, accessed 30 April 2021

130 Q10

90. A 2018 study reported that management measures had only been fully implemented in 10% of marine sites, and only 13% of sites had full monitoring in place.[131] In 2019, the WWF conducted a similar study that found that less than half of all Marine Conservation Zones in English waters were achieving their objectives. The WWF found that MPAs were missing key components to meet protected area classification, including adequate management plans and monitoring.

91. In 2019, our predecessor committee heard that bottom trawling restrictions were only applicable in 1.7% of UK seas.[132] We heard that fishing activity was still being allowed to take place in MPAs,[133] despite evidence that fully protected areas that exclude fishing (also called "no-take zones") could be good for the fishing industry. One study found that no-take zones can increase fish biomass by 600% and species richness by over 20% compared to unprotected areas nearby: this could benefit fishing as shoals moved out into the wider marine environment.[134]

92. Ultimately the lack of monitoring and management of MPAs has led several witnesses to conclude that the UK is failing to achieve its marine protection targets.[135] Tony Juniper, Chair of Natural England told us that to address the gap between designation and protection:

> we have to move towards the effective management of those areas… we need to be investing in a programme to agree the management practices, including in relation to fishing, that will be compatible with those areas.[136]

93. In 2019, the predecessor Committee concluded that the Government was complacent in its approach, since its goal should not only be to designate protected areas, but to ensure they were achieving the desired effect to improve the overall ecological status of the UK's territorial waters.[137] To address this the Committee recommended that:

a) Defra set out a strategy for how it will deliver more integrated marine planning, restoration and adaptive management to achieve ecologically diverse, healthy and productive seas, and a timetable for when all MPAs would have management plans and monitoring in place; and

b) the Government should work in collaboration with all Overseas Territories with MPAs in their territorial waters to set up a fully integrated monitoring and surveillance regime for satellite tracking of illegal, unreported and unregulated fishing.

Neither of these recommendations have been implemented by the Government, and since the report of that inquiry was published in January 2019, only four out of 15 indicators of Good Environmental Status for UK seas have been achieved, according to the Government's own assessment of the UK's marine environment.[138]

131 Chaniotis et al Developing an ecologically-coherent and well managed Marine Protected Area network in the United Kingdom: 10 years of reflection from the Joint Nature Conservation Committee (2018)
132 Environmental Audit Committee, Fourteenth Report of Session 2017–19, Sustainable Seas, HC 980
133 Q11
134 RPA, The value of restored UK seas, Final Report for WWF, (July 2020) Norfolk
135 WWF (BIO0047); RSPB (BIO0023); Great British Oceans (BIO0013);One Ocean Hub (BIO0062)
136 Q9
137 Environmental Audit Committee, Fourteenth Report of Session 2017–19, Sustainable Seas, HC 980
138 Defra (2019) Marine Strategy Part One: UK updated assessment and Good Environmental Status, (2019)

94. Defra have said a legally binding target for Marine Protected Areas could complement on-going work to improve the quality of marine habitats.[139] The JNCC pointed out that the UK Marine Strategy showed that for several marine habitats and species, the current level of monitoring was insufficient to provide confident assessments of changes in condition.[140] This observation was corroborated by the NCC who reported that marine data and targets were very limited; only 4 of the 36 measurements assessed by the NCC had an associated quantitative commitment.

95. The only marine targets in operation relate to targets for biodiversity in MPAs.[141] The NCC highlighted that other changes to the marine environment, not currently monitored, affected flows of ecosystem services and recommended that the development of further marine indicators be fast tracked. One of the reasons marine life is under threat is because of the sewerage, plastic pollution and agricultural chemicals deposited in rivers, harming freshwater ecosystems, and impacting the oceans. Our Committee is currently investigating *Water Quality in Rivers* and expects to make recommendations in this area later this year.

Our view

96. **If Marine Protected Areas continue to be poorly managed and monitored, with little enforcement of their protected status, there is a risk that the Government will have established a network of 'paper parks'. According to monitoring data, the condition of MPAs is much the same as our predecessors observed in 2019: this must call into question the effectiveness of the Government's approach to managing biodiversity in the UK's territorial waters.**

97. **Recommendation:** ***We reiterate the conclusions and recommendations of our predecessor Committee's 2019 inquiry into Sustainable Seas.***

- ***Ministers must urgently set out a timetable to put management plans and monitoring in place for all MPAs.***
- ***Different categories of destructive bottom trawling should be banned or restricted in all MPAs, and more MPAs should be established as 'no-take' zones with benefits for the local fishing industry and for marine biodiversity.***
- ***MPAs established by the Blue Belt programme need to meet international best practice guideless, set by the International Union for Conservation of Nature for designation.***
- ***MPAs need to be monitored to deter illegal activity and to establish if species and habitats are recovering, to inform future designations and adaptive management decisions.***
- ***The Government should make better use of data from automatic identification systems installed in vessels operating in MPAs to understand the activity***

139 Defra (2020) 19 August 2020: Environment Bill - environmental targets, (2020)
140 JNCC (BIO0012)
141 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020)

in these areas; the operators of vessels with these systems installed ought to be under an obligation to keep the systems active when in areas requiring monitoring.

- ***The Government should establish a fully integrated monitoring and surveillance regime for satellite tracking of illegal, unreported and unregulated fishing in UK territorial waters.***

Monitoring soil health

98. Soil health is a critical component of the natural environment and ecosystem services. Soil hosts one of the largest reservoirs of biodiversity on Earth: up to 90 per cent of living organisms in terrestrial ecosystems, spend part of their life cycle in soil habitats. Soil organisms underpin life on this planet.[142]

99. The 25 Year Environment Plan (25 YEP) contains a commitment to the improvement of soil health, and 'healthy soils' is a headline indicator in the Government's Outcome Indicator Framework to assess progress against the Plan's targets. There are currently no government national statistics on the state of soils in England.[143] The Environment Bill targets policy paper states that the development of a long-term, outcome based soil target can only begin once work to develop metrics and an indicator for soil health is complete.[144] The Government is currently considering the potential scope for a soil health action plan for England.[145]

100. The Natural Capital Committee (NCC) found that monitoring data on soils was "entirely absent" from the 25 YEP 2020 Progress Report.[146] The Microbiology Society told us that there had been under-investment in soil monitoring compared to levels of investment in water quality and other areas.[147] According to a 2020 report by the Sustainable Soil Alliance, soil accounts for just 0.41 per cent of money invested in environmental monitoring in England.[148] The NCC has recommended that if current evidence was not sufficient to support a legally binding target for soils in the Environment Bill, then government should set a shadow target for soils in the interim, in line with the ambition to ensure soils are sustainably managed by 2030.[149]

101. The new Environmental Land Management Schemes (ELMS) introduced through the Agriculture Bill will support farmers by providing public money for public goods—such as helping wildlife, planting woods to capture carbon and improving the soil. Several witnesses told us that the Environmental Land Management Schemes ought to be used to encourage farmers and landowners to improve the condition of their soils. Ben McCarthy, Head of Nature Conservation and Restoration Ecology at the National Trust told us that:

142 WWF, Living Planet Report 2020- Bending the curve of biodiversity loss. (2020)
143 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020)
144 Defra, 19 August 2020: Environment Bill - environmental targets (2020)
145 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
146 NCC, Interim response to the 25 Year Environment Plan Progress Report & advice on a green economic recovery. (July 2020) p 17
147 Microbiology Society (BIO0011)
148 Sustainable Soils Alliance, Soil monitoring in England, (2020)
149 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020) p 10

> there is a growing body of farmers who are recognising the value of investing in the natural capital … . We need to be signposting farm managers on good farm practice that is not depleting their natural assets and equally is not causing environmental impact off-site.[150]

102. Caroline Knox, a member of the National Farmers' Union Environment Forum, provided one example of where once one farmer on the Isle of Wight realised the benefits of cover crops for soil health and productivity other farmers started to adopt the same practice, and that the biodiversity benefits of this intervention remain today.[151] She added that co-cropping, the practice of growing two or more crops simultaneously in the same field, brought huge benefits to farm land, "benefits for run-off, for soil organic matter, for carbon capture, for microbes and everything happening in the soil to feed the web [of life]".[152] She said the NFU's focus was to enable:

> farmers to be able to produce food on the good, high quality, productive land but perhaps bring in some regenerative farming techniques.[153]

103. Opinion among our witnesses was divided on the extent to which the Government ought to reward farmers for adopting practices that would be beneficial to farming businesses. Dr Ruth Little, Lecturer in Human Geography at the University of Sheffield. told us that identifying and prompting some "win-wins" in the ELMS schemes which increase productivity and biodiversity could start farmers "on a trajectory to buying in to more pro-environmental behaviour" and "draw in those farmers who have not engaged before because they see the scheme as too complex."[154]

Our view

104. **Healthy soils are essential to biodiversity; and yet the data and indicators to measure soil health do not exist to the degree required to ensure effective monitoring. Without credible arrangements for monitoring and measuring soil health, the Government will not meet the soil health commitments made in its own 25 Year Environment Plan. The Government must therefore urgently address this large data gap.**

105. **Recommendation:** ***We support the recommendations of the Natural Capital Committee that the development of soil indicators should be fast-tracked; that a shadow target for soil health should be established urgently; and that a legally-binding target for soil health ought to be established as soon as monitoring data allows. Healthy soils should be a priority outcome for the Environmental Land Management Schemes, so as to encourage farmers to adopt beneficial agri-environmental practices.***

150 Q113
151 Q103
152 Q83
153 Q83
154 Q64

Funding biodiversity

Heather in Ashdown Forest. Photo: Eloise Cuff

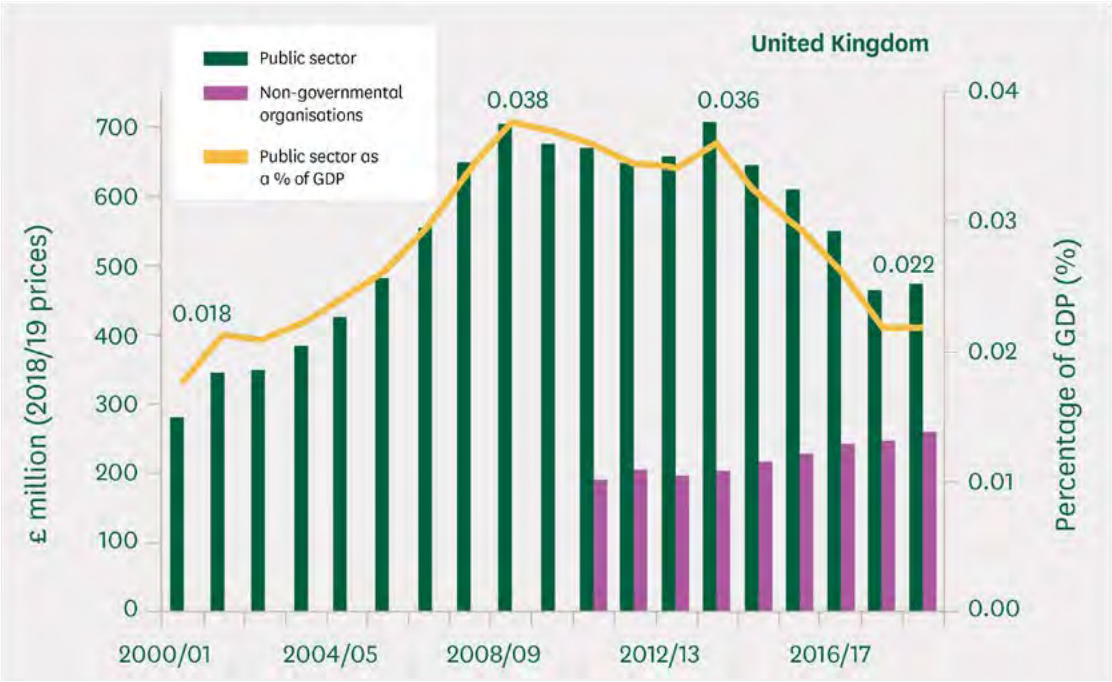
4 Funding biodiversity

106. This chapter examines the arrangements and levels of funding for biodiversity in the UK, and UK funding for international biodiversity.

Public funding for UK biodiversity

107. The JNCC reports that in 2018–19, £473 million of UK public sector funding was allocated to biodiversity measures in the UK. This figure represents a net decrease of 42 per cent since funding levels peaked in 2008–09.[155]

Figure 8: Expenditure on biodiversity in the UK, 2000/01 to 2018/19[156]



Source: JNCC (2020)

108. The JNCC observes that public sector funding for UK biodiversity relative to GDP has followed a very similar pattern to that of total public sector expenditure. The measure peaked in 2008–09, when approximately £3.80 was spent on biodiversity for every £10,000 of GDP (in 2018–19 prices). This figure has now fallen to approximately £2.20 per £10,000 of GDP in the latest year of reporting (2018/19).

109. Between 2018 and 2020 Government reported announcements totalling £36.6m of funding for initiatives to support its goals of 'enhanced beauty, heritage and engagement with the natural environment', and £30.8 m of funding for its goal on 'thriving plants and wildlife' as part its 25 Year Environment Plan and progress reports.[157] This includes £25 million to create a new 'nature recovery network' in England. As the NAO and the Public Accounts Committee (PAC) have demonstrated, the Government has not provided a comprehensive, consistent and time-bound record of funding for the Plan: nor does

155 JNCC, UK Biodiversity Indicators 2020. E2 Expenditure on UK and international biodiversity, 15 October 2020
156 JNCC, UK Biodiversity Indicators 2020. E2 Expenditure on UK and international biodiversity, 15 October 2020
157 NAO, Achieving government's longterm environmental goals (2020) p 14

it monitor total expenditure on delivering its environmental goals. It is therefore not clear how much of the committed funds have been spent so far, nor whether the funding announcements listed in Table 1 represent the full picture.[158]

110. The NAO concluded that there was no single point of responsibility within Government for ongoing monitoring of overall environmental expenditure or costs. The NAO recommended that Defra work with the Cabinet Office and HM Treasury to monitor "annual costs and spend on key environmental initiatives across government, alongside the benefits they achieve, as part of developing performance reporting against the Plan."[159] PAC also recommended that Defra work with the Treasury to review and outline the total costs required to meet the 25 Year Environment Plan Goals, and the means required to meet these costs, in a manner similar to that underpinning the Treasury's Net Zero review.[160]

111. Table 1, on the following page, provides a summary of funding announcements for biodiversity projects in the 25 Year Environment Plan and its progress reports. It does not reflect the recent announcement of increased funding for Natural England for the 2021–22 financial year. We have discussed the effect of funding cuts on the state of UK biodiversity monitoring in Chapter 3 above. Many environmental groups[161] told us that overall cuts in biodiversity funding had led to a scaling back of biodiversity monitoring so that the UK now had "an alarming lack of knowledge about the current state of sites and the most vulnerable species."[162] This included only monitoring trends in 10 per cent of UK terrestrial and freshwater species, the near termination of national surveys on the most threatened species[163] and a lack of nature assessments of National Parks, Areas of Outstanding Natural Beauty (AONBs) and National Scenic Areas (NSAs).[164]

112. The Association of Local Environmental Records Centres (ALERC) stated that cuts to Defra budgets had fallen disproportionately on Natural England and in particular on the agency's budget for monitoring and information provision.[165] This affected the quality of information available to Natural England and the quality of services it could provide. ALERC also reported cuts to support for the National Biodiversity Network, the grouping of nature bodies which produces the UK's State of Nature report.[166]

158 NAO, Achieving government's longterm environmental goals (2020); Public Accounts Committee Fortieth Report of Session 2019–21, Achieving government's long-term environmental goals, HC 927

159 NAO, Achieving government's longterm environmental goals (2020) p 14

160 Public Accounts Committee Fortieth Report of Session 2019–21, Achieving government's long-term environmental goals, HC 927 p. 6

161 RSPB (BIO0023); Association of Local Environmental Records Centres (BIO0041); Chartered Institute of Ecology and Environmental Management (BIO0039)

162 RSPB (BIO0023)

163 RSPB (BIO0023);

164 Defra, Landscapes review (September 2019)

165 Association of Local Environmental Records Centres (BIO0041)

166 Ibid

Table 1: Funding announcements for biodiversity projects in the 25 Year Environment Plan and its progress reports[167]

25 Year Environment Plan Goal	"Funding announcements mentioned in the 25 Year Environment Plan 2018"		"Other funding announcements mentioned in the first progress update report (2019)"		Other funding announcements mentioned in the second progress update report (2020)	
Thriving plants and wildlife	"£5.7 million"	"Support for the Northern Forest and to plant 1.8 million trees along the M62 corridor from Liverpool to Hull."	£0.1 million	Funding for six nature recovery projects.	£25.0 million	"Nature Recovery Network to protect and restore wildlife."
Enhanced beauty, heritage and engagements with the natural environment	"£3.5 million"	"A Heritage Lottery Fund Landscape Partnership grant.*"	"£13.1 million £10.0 million £10.0 million"	"Ministry of Housing, Communities and Local Government funding to improve and create parks and green spaces. Department for Education funding for the Children in Nature programme. Urban Trees Challenge Fund to plant and maintain at least 100,000 urban trees."	-	-

Notes: 1 All examples in the figure are government funded except the three examples marked with an asterisk.

Source: NAO (2020)

113. In October 2020 Natural England published a new five-year plan for nature's recovery.[168] The plan included: a well-managed Nature Recovery Network; connecting people to the natural environment; focusing on nature-based solutions to climate change; improving

167 NAO, Achieving government's long term environmental goals (2020) p 23–24
168 Natural England, Building Partnerships for Nature's Recovery (2020)

natural capital; and using evidence and expertise to achieve recovery.[169] Natural England look to deliver this through four 'strategic programmes' on: resilient landscapes and seas; sustainable development; greener farming and fisheries; and connecting people with nature. Part of their plan includes ensuring protected areas (including SSSIs, MPAs and AONB) are monitored and managed.

Natural England funding

114. Natural England has a key role to play in delivering the Government's environmental goals. Between 2013/14 to 2019/20 Natural England confirmed it had had its baseline funding reduced by 49 per cent.[170] Natural England told us its current funding was below the level required to deliver all its statutory duties to a good standard.[171] Tony Juniper, Chair of Natural England, stressed that this situation put the organisation at risk of legal action for not exercising its required functions, quite apart from the opportunities for environmental enhancement which had been forgone.[172]

115. Tony Juniper outlined the extent of work curtailed or reduced due to funding constraints:

> There is a whole range of consequences of [funding cuts]. … the halving of the budget that we had available to do site condition assessments. Our planning function obviously has been eroded. The grant-making that we used to be able to do to help NGOs to do conservation work has largely gone. The headcount has been reduced, meaning we have fewer people on the ground compared to what we used to have.[173]

116. Natural England outlined for us the consequences of cuts to its funding. These had included:

- **Reduction in land use planning advice**: Natural England stated it could not meet the 28-day turn-around time for net gain consultations causing delays and financial impacts to developers and it could not respond at all to "a large number of medium and lower risk cases", increasing the risks to the environment.
- **Curtailment of action to reduce species extinction.**
- **National Nature Reserves**: Natural England has ceased all management duties beyond those legally required or for Health and Safety needs.
- **Sites of Special Scientific Interest**: England has a much-reduced programme of SSSIs designations and monitoring has been reduced to a level where Natural England does not have a robust evidence base for the state of SSSIs and their management needs. 47 per cent of English SSSIs have not been assessed within the last six years. According to the Wildlife Trusts, in nearly ten years, just 1.5 per cent of sites have improved.[174] Condition monitoring is necessary for the Government to track progress against the 25 Year Environment Plan to restore 75

169 Ibid
170 Natural England, Annual Report and Accounts 1 April 2019 to 31 March 2020. HC 712 (September 2020)
171 Letter from Chair of Natural England to the Chair of the Committee, 2 November 2020.
172 Q18
173 Q18
174 The Wildlife Trusts (BIO0015)

per cent of SSSI areas to favourable condition and to identify when management interventions are required. Overall, the lack of monitoring means wildlife, even in the UK's most important wild spaces, is under threat.

- **Landscape:** Natural England has only been able to extend the area of one National Park and one AONB in the last five years due to a lack of resources: it had not been able to meet demands to extend several others. The Glover Review, examined in Chapter 5, has made recommendations regarding the UK's system of landscape protection.

- **Research**: Natural England has been unable to invest in horizon scanning and causes and effect and best methods of restoring habitats.[175]

117. In May 2020, the Government provided an increase of approximately £11.3 million in Natural England's baseline funding for 2020–21 to accelerate the reform of protected site monitoring and other activities. Whilst Natural England welcomed this, Tony Juniper emphasised that it was

> only a one-off for one year, and that is not going to do the job. We need consistent investments over the years ahead.[176]

118. More recently, Defra has said that it will increase Natural England's budget for the 2021–22 financial year to £198 million, representing an overall increase of 47%.[177] Although more than double the £90.5 m allocated in 2019–20, Natural England's budget for 2021–22 is still less than the £265 million it received in 2008–09[178] and over £124 million less than the body had bid for as funding required to fulfil its statutory duties.[179]

119. Natural England had sought to achieve consistent investment through the three-year spending review which had been scheduled for the end of 2020. Natural England's bid for that spending review is set out below: it reflected the investment the body believed was required to deliver its statutory functions effectively and meet the goals of the 25 Year Environment Plan.

Table 2: Natural England's funding bid for the Comprehensive Spending Review[180]

	2021/22 £m	2022/23 £m	2023/24 £m
Resource	223	256	254
Capital	99	133	152
TOTAL	322	389	406
Relative to 1 April 2020 settlement for 2020/21 budget	+203	+270	+287

Source: Natural England (2020)

175 Letter from Chair of Natural England to Chair Correspondence (parliament.uk), 2 November 2020.
176 Q18
177 The Guardian, Natural England to get 47% funding increase amid 'green recovery' plans. accessed 20 May 2021
178 Natural England, Annual Report and Accounts 1 April 2008 to 31 March 2009. HC 756 (July 2009)
179 Letter from Chair of Natural England to the Chair of the Committee, 2 November 2020.
180 Letter from Chair of Natural England to the Chair of the Committee, 2 November 2020.

Our view

120. **To deliver the Government's environmental vision to improve the environment within a generation, arm's length bodies and departments need to have the funding to do so. Budget cuts to biodiversity expenditure over the last decade have hindered this.**

121. **Recommendation:** ***We recommend that the Government urgently review the funding allocated to bodies with responsibility for monitoring, protecting and increasing levels of biodiversity in England, consistent with its goals for nature recovery under the 25 Year Environment Plan. In the next Spending Review the Chancellor of the Exchequer must back the Government's ambition for nature recovery with a funding settlement for Natural England which properly reflects its statutory responsibilities and the tasks it is expected to perform.***

122. **As the Public Accounts Committee has recently observed, there is no single point of responsibility within government for monitoring overall expenditure on environmental goals, and the Government does not have a good understanding of the total costs required to deliver its environmental goals. It is difficult to determine how much of the funding announced by Ministers for these goals has so far been spent, and thus whether the Government's funding commitments will in fact be met.**

123. **Recommendation:** ***We support the recommendations of the Public Accounts Committee and the National Audit Office made in their work on Achieving government's long-term environmental goals. The Government must provide a comprehensive, consistent, and time-bound record of funding for the 25 Year Environment Plan. In its response to this report, the Government must set out in detail the funding committed to biodiversity since the announcement of the 25 Year Environment Plan; how much has been announced or otherwise promised to date; and how much has in fact been spent.***

124. **Between 2013–14 to 2019–20 Natural England's baseline funding reduced by 49 per cent. The body considers that it can no longer deliver its statutory duties to a good standard as a direct consequence of these cuts. The cuts have fallen disproportionately on Natural England's budget for monitoring and information provision.**

125. **The Government increased Natural England's baseline funding by £11.3 million in in 2020–21 and has committed to increasing this by a further £75 million. Whilst the funding increase is welcome, it does little to provide the consistent multi-year investment required for Natural England to deliver its duties and new responsibilities for nature recovery.**

126. **Recommendation:** ***In the next multi-annual spending review, we recommend that Natural England receive a materially greater contribution in annual funding, in line with its 2020 Comprehensive Spending Review bid.***

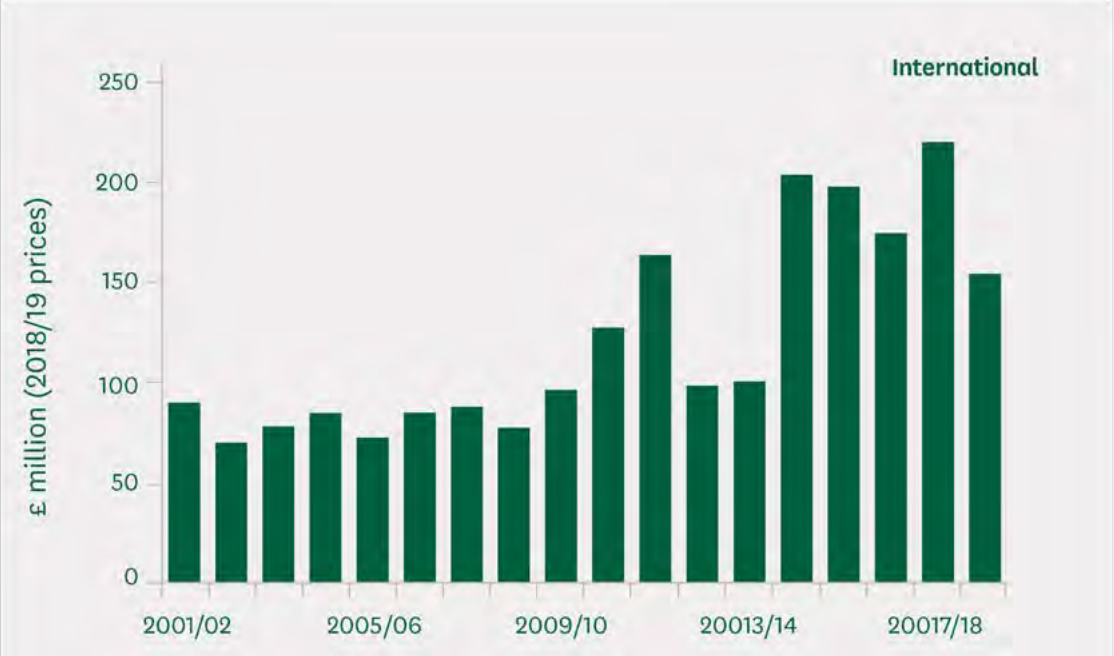
Public funding for international biodiversity

127. In 2018–19, UK public sector funding for international biodiversity totalled £154 million.[181] Funding for international biodiversity has increased by 52 per cent over the last five years but decreased by 30 per cent in 2018–19, the latest year for which data have been compiled. The JNCC observed that annual changes in this measure had been influenced by

181 JNCC, E2. Expenditure on UK and international biodiversity, accessed 3 June 2021

the irregular nature of contributions to the Global Environment Facility (GEF) and other Official Development Assistance (ODA) funding. The majority of the latest reduction is largely accounted for by a 50 per cent real-term decrease in ODA funding for forestry related projects in 2018–19.

Figure 9: UK public expenditure on international biodiversity, 2001–02 to 2018–19[182]



Source: JNCC (2020)

128. The UK has committed to providing £250 million to the GEF between 2018 and 2022.[183] The Government also committed to doubling the International Climate Fund and committing at least £3 billion of this fund on nature-based solutions (NbS) to climate change.[184] The Treasury and Defra have so far not provided a breakdown of how the UK will spend the £3 billion, for example through further contributions to the GEF or through Foreign, Commonwealth and Development Office (FCDO) projects. In September 2019 the Government announced a £220 million International Biodiversity Fund, including £90 million for the Darwin Initiative (a grants scheme that helps to protect the natural environment in developing countries), £30 million for the Illegal Wildlife Trade Challenge Fund and a new £100 million Biodiverse Landscapes Fund.[185]

182 JNCC, E2. Expenditure on UK and international biodiversity, accessed 3 June 2021
183 Defra (BIO0054)
184 "Prime Minister commits £3bn UK climate finance to supporting nature" , Prime Minister's Office Press Release, 11 January 2021
185 Defra (BIO0054)

Table 3: Funding announcements for overseas biodiversity projects in the 25 Year Environment Plan and its progress reports[186]

25 Year Environment Plan Goal	Funding announcements mentioned in the 25 Year Environment Plan 2018		Other funding announcements mentioned in the first progress update report (2019)		Other funding announcements mentioned in the second progress update report (2020)	
Overseas	£5.8 billion (2016–2020)	International Climate Finance to help developing countries mitigate and adapt to the impacts of climate change.	£69.4 million £250.0 million (2019–2024)	For the Commonwealth Clean Oceans Alliance, to help stop plastic waste from entering the oceans. Pledge to the Global Environment Facility to tackle major environmental challenges.	£30.0 million £10.0 million £11.6 billion (2021–2026) £500.0 million	For the Illegal Wildlife Trade Challenge Fund Uplift to Darwin Plus programme which supports environmental projects in UK Overseas Territories A doubling of the International Climate Fund. For the Blue Planet Fund to help eligible countries protect their marine resources.

Source: NAO (2020)

'Perverse subsidies' and the biodiversity funding gap

129. The increase in spending on international biodiversity is welcome. We nevertheless note the phenomenon highlighted by Professor Partha Dasgupta in his report on the Economics of Biodiversity: most governments pay people more to exploit nature than to protect it. Dasgupta calls these payments "perverse subsidies":[187] they reduce the price users pay for the global commons[188] from zero to negative figures.

130. Professor Dasgupta has acknowledged that all prevailing subsidies have a historical rationale—distributional justice, national food sufficiency, political pressure from powerful lobbies and so forth—which is why they are so difficult to remove.[189] Examples include subsidies to agriculture, water, fossil fuels and fisheries, as well as subsidies to inputs to production like energy and fertilisers. These subsidies further encourage exploitation of the biosphere. Government subsidies for exploiting nature are extensive: Professor Dasgupta cited that a conservative estimate is between US$4–6 trillion globally per year for the sectors mentioned above.[190] Dasgupta approximated that perverse

186 NAO, Achieving government's longterm environmental goals (2020)

187 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. 2021) (London: HM Treasury). p 43

188 Global commons are natural assets outside national jurisdiction such as the oceans, outer space and the Antarctic. In economics, common goods are rivalrous and non-excludable.

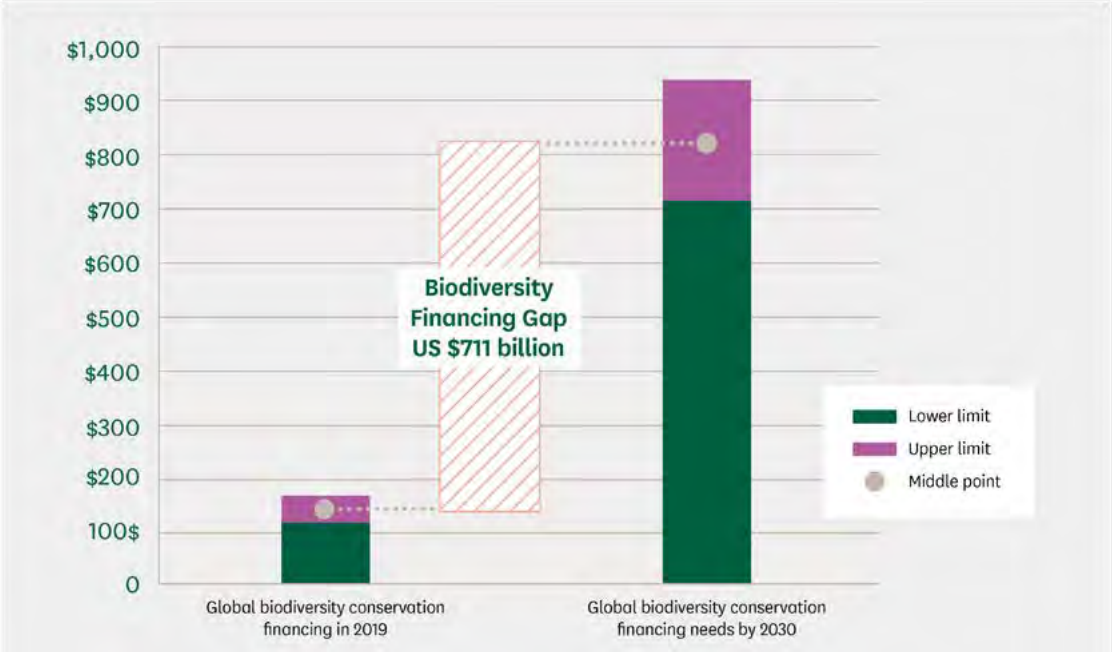
189 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 74

190 OECD, Reforming agricultural subsidies to support biodiversity in Switzerland (No. 8) (2017); Andres, L. et al., Doing More with Less: Smarter Subsidies for Water Supply and Sanitation,(2019) World Bank, Washington, DC; Coady, D., Parry, I., Le, N.-P., & Shang, B, Global fossil fuel subsidies remain large. An update based on country-level estimates. (No. 19/89). (2019) International Monetary Fund, Washington DC.

subsidies accounted for between 5 and 7 per cent of global GDP.[191] These figures dwarf the size of finance for conservation and restoration of the biosphere: domestic public finance for biodiversity-related activities was US$67.8 billion per year on average between 2015 and 2017.[192] Dasgupta recommended that perverse subsidies be removed and the money re-directed to finance programmes that benefit not only populations at large, but in particular the most vulnerable in society.

131. The Paulson Institute is an environmental and economic think tank, founded by former United States Secretary of the Treasury and chief executive of Goldman Sachs, Henry M. Paulson, Jr.[193] Analysis provided by the Paulson Institute has suggested that to reverse the decline in biodiversity by 2030, global expenditure on nature ought to increase by between US$722bn and US$967bn each year over the next ten years. That puts the biodiversity financing gap at an average of US$711bn per year.[194] The Paulson Institute estimated that half of this gap could be closed by the better deployment of subsidies away from harmful behaviours and towards outcomes that benefit nature: subsidy reform represents the single biggest opportunity to close the funding gap.[195]

Figure 10: Global biodiversity conservation financing compared to global biodiversity conservation needs (US$ billions)[196]



Source: Deutz et al (2020)

191 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 74; OECD, Biodiversity: Finance and the Economic and Business Case for Action. A report prepared by the OECD for the French G7 Presidency and the G7 Environment Ministers' Meeting, 5–6 May 2019 (2019)

192 OECD, A Comprehensive Overview of Global Biodiversity Finance. (2020)

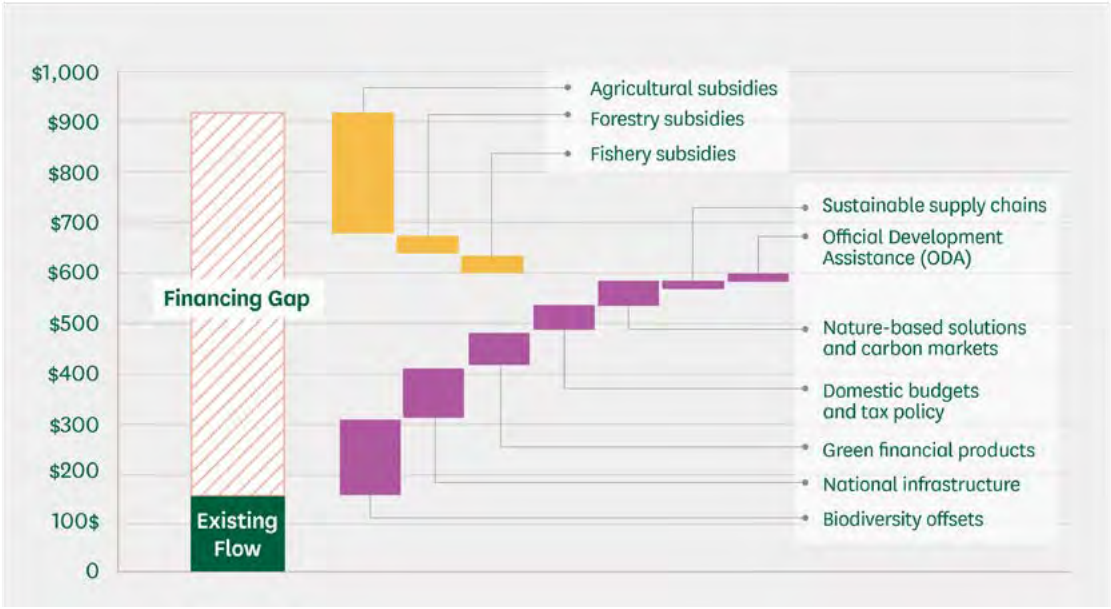
193 University of Chicago, 'Paulson Institute', accessed 8 June 2021; 'Paulson Institute', About us, accessed 8 June 2021.

194 Deutz, A., Heal, G. M., Niu, R., Swanson, E., Townshend, T., Zhu, L., Delmar, A., Meghji, A., Sethi, S. A., and Tobin-de la Puente, J. Financing Nature: Closing the global biodiversity financing gap. (2020) The Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability.

195 Ibid

196 Ibid

Figure 11: Estimate of growth in financing resulting from scaling up proposed mechanisms from the Paulson Institute by 2030 (in 2019 US$ billion per year)[197]



Source: Deutz et al (2020)

132. In May 2019, the focus of the G7 Environment Ministers' Meeting was on biodiversity. A report was prepared setting the economic and business case for the G7 and other countries to take urgent and ambitious action to halt and reverse global biodiversity loss.[198] One of the ten priority areas recommended by the report was to: "Identify, assess and reform subsidies harmful to biodiversity at the national level, and expand internationally comparable information on those subsidies, for example, through peer review." Similarly Aichi Biodiversity Target 3 aims to eliminate, phase out or reform all subsidies harmful to biodiversity.

133. Despite the UK's commitment to eliminate harmful subsidies to biodiversity, even the first step of identifying, assessing, and tracking these subsidies is not being done. We are not aware of any publicly available quantitative data on this type of subsidy in the UK economy.

Our view

134. **We welcome the funding announcements and increased public expenditure on international biodiversity, however international conservation funding is still greatly outstripped by subsidies which cheapen the exploitation of the natural environment. The Government cannot spend more exploiting the natural environment than conserving it if climate change and biodiversity are to be tackled in any meaningful way. Information on the extent of subsidies harmful to biodiversity is absent from the public domain, despite this information being necessary to achieve Aichi Biodiversity Target 3.**

197 Deutz, A., Heal, G. M., Niu, R., Swanson, E., Townshend, T., Zhu, L., Delmar, A., Meghji, A., Sethi, S. A., and Tobin-de la Puente, J. Financing Nature: Closing the global biodiversity financing gap. (2020) The Paulson Institute, The Nature Conservancy, and the Cornell Atkinson Center for Sustainability.

198 OECD, Biodiversity: Finance and the Economic and Business Case for Action. A report prepared by the OECD for the French G7 Presidency and the G7 Environment Ministers' Meeting, 5–6 May 2019 (2019)

135. **Recommendation:** ***We recommend the Government commission a review of the operation of 'perverse subsidies' in the UK economy. This must entail the identification, assessment and tracking of public expenditure harmful to biodiversity, and the publication of data on the extent of such subsidies. Once such subsidies have been identified, Ministers must act to readdress the balance, removing harmful subsidies and re-directing money to nature conservation and recovery.***

Domestic biodiversity policy and legislation

Misty sunrise on Ockham Common. Photo: Andrea Bayley

5 Domestic biodiversity policy and legislation

136. In this chapter we examine policies initiated by the Government to protect and enhance biodiversity. These include the 25 Year Environment Plan, policies on protected areas, biodiversity net gain, environmental land management schemes (ELMS), nature recovery networks and policies involving nature-based solutions.

The 25 Year Environment Plan

137. In January 2018, the Government published its 25 Year Environment Plan[199] (the Plan), setting out its intent to improve the natural environment within a generation. The Plan set ten overarching environmental goals, including goals to achieve thriving plants and wildlife, and using natural resources more sustainably. Under the Environment Bill, the Plan will become the Government's first 'Environmental Improvement Plan': such plans are to be required to be laid before Parliament as part of a cycle of environmental planning, monitoring and reporting.[200]

138. In each year since the publication of the Plan, the Government has published a progress report on how the government is achieving its environmental objectives.[201] Each progress report was scrutinised by the Natural Capital Committee (NCC). The Public Accounts Committee also examined the Plan as part of its inquiry into *Achieving government's long-term environment goals*.[202]

139. Defra published its latest annual progress report in June 2020. Of the 17 'headline' indicators reported against the ten environmental goals, less than half (seven) were reported as progressing, three were reported as deteriorating and the rest were reported as 'stable'.[203] The NCC's own assessment of the country's natural assets found that five out of seven natural asset groups were deteriorating, and no natural asset group was making progress in meeting existing targets and commitments.[204] The NCC concluded that the Government was not on course to achieve its objective to improve the environment within a generation.[205] The NCC strongly critiqued the Government's methods for analysing progress against the Plan and challenged the subsequent results.

140. The NCC emphasised three key problems with the Government's analysis of environmental progress:

199 HM Government, A Green Future: Our 25 Year Plan to Improve the Environment (2018)

200 The Secretary of State is required to prepare an EIP to cover a period of no less than 15 years and are applicable to England only. The Secretary of State must prepare annual reports on the implementation of the current EIP. The Office for Environmental Protection must prepare a progress report for each annual reporting period to be laid before Parliament. The Secretary of State must then respond to this report.

201 Defra, 25 Year Environment Plan: progress reports, accessed 2 June 2021

202 Public Accounts Committee Fortieth Report of Session 2019–21, Achieving government's long-term environmental goals, HC 927

203 Defra, 25 Year Plan Progress report (12 June 2020). A summary of the report is at Appendix 2.

204 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020)

205 Ibid, p 1

1. Absence of baselines

141. The Government's Outcome Indicator Framework (OIF) provides 66 indicators to describe environmental change related to the 10 goals in the 25 Year Environment Plan (YEP).[206] The NCC noted the OIF does not have an associated baseline, making it difficult if not impossible to provide empirical evidence of environmental progress.[207] This is reflected in the Government's 25 YEP Progress Report where the starting points for the data range from 1960 to 2017.[208] Where more recent datasets have been presented, they have often been compared to a starting point in the distant past, without any clear justification. This practice is capable of conveying a very different, and potentially misleading, assessment of progress.

142. A natural capital baseline is necessary for any robust assessment of progress against overall environmental objectives. The NCC strongly recommended that Defra ensure that the Government's planned Natural Capital and Ecosystem Assessment pilot, and any subsequent baseline exercise, focuses on measuring all natural capital assets across England—not just habitats.[209] This requires addressing the large data gaps in soil and the marine environment as a priority. To fill these data gaps, the NCC recommended incorporating a substantial citizen science component to measuring natural assets. The NCC recommended that the Treasury ensure the baseline assessment is properly funded at the next Spending Review.

143. This is not the first time Defra's lack of baselines and insufficient data coverage has been highlighted. In 2015 and again in 2019, the NAO found that Defra's metrics did not sufficiently cover nor align with Defra's environmental objectives.[210] In 2017 the NCC first set out that before making decisions, a starting point had to be set by understanding the baseline position of natural capital assets.[211] This point was reiterated in the NCC's fifth annual report in 2018,[212] in the sixth annual report in 2019[213] and in the seventh annual report in 2020.[214] In September 2019, on request of the previous Defra Secretary of State, Rt Hon Michael Gove MP, the NCC also provided detailed advice on a cost-effective approach to an environmental baseline census.[215]

144. Professor Kathy Willis, Professor of Biodiversity at the University of Oxford and a member of the NCC, told us how the Government could address the deficiency in baselines:

> We need to think about doing an environmental census. In the same way that we do a citizen census, we should be thinking about how we can take a broad approach. It doesn't have to be complicated, but what key assets do we

206 Defra, Outcome indicator framework for the 25 Year Environment Plan: 2021 update. (June 2020)
207 NCC, Interim response to the 25 Year Environment Plan Progress Report & advice on a green economic recovery. (July 2020) p 10
208 Ibid
209 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020) p 10
210 NAO, Environmental metrics: government's approach to monitoring the state of the natural environment (2019) pg. 8
211 Natural Capital Committee, How to do it: a natural capital workbook, version 1 (2017)
212 Natural Capital Committee, Annual Report 2018 Fifth report to the Economic Affairs Committee (2018)
213 Natural Capital Committee. Annual Report 2019 Sixth Report to the Economic Affairs Committee of the Cabinet (2019)
214 Natural Capital Committee (2020) State of Natural Capital Annual Report
215 NCC, Natural Capital Committee's advice on an environmental baseline census of natural capital stocks: an essential foundation for the government's 25 Year Environment Plan (September 2019)

> need to measure and at what spatial scale? Once a year or once every three years, we need to measure them each and every time so that we properly start to build up this dataset to look at what is happening with our trends.[216]

2. Lack of strategic linkage between the reporting framework and the 25 YEP goals

145. We have been made aware of multiple inconsistencies and ambiguities within the Progress Report.

- The NCC noted that while 16 different strategies, such as the Peat Strategy, were mentioned in the Progress Report, it was not clear whether these strategies represented part of a holistic, coordinated plan to deliver the aims of the Plan, or whether they would have been developed in any case.[217]
- The 40 'priority actions' mentioned in the 2019 Progress Report are not referenced or reported against in the 2020 report. Therefore, the NCC could not comment on recent progress against these 'priority actions.'
- The Progress Report does not measure how well the 25 YEP goals have been integrated into local delivery through Arm's Length Bodies.
- The future delivery mechanisms for the 25 YEP such as the ELMS and Local Nature Recovery Strategies (LNRS) are not obviously related to the indicators presented in the Progress Report.[218]

146. The NAO came to a similar conclusion, finding that the Plan lacked a clear, coherent set of objectives. The NAO found that the Plan contained a "complex mix of aspirations and policy commitments for action, with varying and often unclear timescale".[219] The NAO also noted that it was difficult to determine how the ambitions relate to pre-existing national, EU and international environmental targets: in October 2018, government agreed to publish an audit of this comparison "in due course", which it has yet to do.[220]

147. When the Environment Bill is enacted the Government intends that the Office for Environmental Protection (OEP) will be responsible for preparing progress reports on Environmental Improvement Plans; the first of which will be the 25 YEP. It will be the OEP's responsibility to set a reporting framework for the plan.

3. Absence of quantitative targets and milestones against each 25 YEP goal

148. The NCC noted that the 25 YEP goals were not supported by clear, ambitious, quantified statutory targets and milestones. The ambiguity of the ten goals makes measuring progress against them difficult. The NCC believe only six commitments

216 Q49
217 NCC, Interim response to the 25 Year Environment Plan Progress Report & advice on a green economic recovery (July 2020) p. 12–14
218 NCC (2020) Interim response to the 25 Year Environment Plan Progress Report & advice on a green economic recovery. (July 2020)
219 NAO, Achieving government's longterm environmental goals (2020) p 8
220 Ibid

associated with the goals are specific enough to measure progress against.[221] The NCC also found that some commitments had been amended since the 2019 Progress report to be less ambitious and other commitments and targets were missing entirely. For example, the 2019 Progress Report committed to 'improving our approach to soil management: by 2030 we want all of England's soils to be managed sustainably … '. The 2020 Progress Report does not repeat or report on progress against this commitment.[222]

149. The NCC warned that the absence of statutory interim and long-term targets was likely to lead the 25 YEP to become merely aspirational.[223] The Environment Bill identifies four "priority" environmental areas (air quality, water, biodiversity, and resource efficiency and waste reduction), covering five of Government's environmental goals. The Bill would require the Government to set at least one new long-term target in each priority area by October 2022; but the Government has not set out how or whether long-term objectives will be set for the other five environmental goals. Together action against targets in the Environment Bill must constitute a "significant improvement" to the natural environment in England. The current significant improvement test for the targets is ultimately decided by the Secretary of State for Environment, Food and Rural Affairs. The NCC believed the test to be highly subjective and feared it could lead to perverse outcomes, for example improving part of the environment could be classed a significant improvement even while other natural assets may be declining.[224]

150. To address this, the NCC has recommended that an overall statutory duty to protect and improve the environment be included in the Environment Bill as a priority, with the Office for Environmental Protection (OEP) responsible for enforcement. The NCC also recommended the OEP's powers, budget and staffing reflect its responsibility to deliver a 25 YEP that is even more ambitious than the previous EU directive requirements.

Oversight of the 25 Year Environment Plan

151. The NCC published its final report in October 2020. This was the NCC's last assessment report before the body was dissolved in anticipation of the creation of the Office for Environmental Protection.[225] The OEP, initially to be established in interim, non-statutory form prior to enactment of the Environment Bill, will be responsible for monitoring and reporting on environmental improvement plans and targets. This Committee, the NAO, the Public Accounts Committee and the Environment Food and Rural Affairs Committee have previously highlighted the need for the OEP to have appropriate resources, strong leadership, and sufficient independence to provide effective scrutiny over environmental

221 NCC, Interim response to the 25 Year Environment Plan Progress Report & advice on a green economic recovery (July 2020) p. 31

222 NCC, Interim response to the 25 Year Environment Plan Progress Report & advice on a green economic recovery (July 2020) p 32

223 Ibid. p 33

224 Ibid. p 33

225 The Office for Environmental Protection has operated on an interim basis since January 2021, it will be fully established once the Environment Bill enters the statute book. The OEP will take on the environmental governance responsibilities previously undertaken by the European Environment Agency, European Commission and European Court of Justice in England and Northern Ireland.

performance.[226] The Public Accounts Committee has recently expressed concern over whether the OEP will be sufficiently independent and recommended that, like the Climate Change Committee, the Office for Environmental Protection should report to Parliament, rather than Ministers, as is currently planned, an issue first raised by this Committee in July 2018.[227]

Our view

152. **The Government is not on track to achieve its objective of improving the environment within a generation, and its 25 Year Environment Plan does not provide sufficient direction to change this. Despite repeated calls in the last five years by this Committee, the National Audit Office, the Public Accounts Committee and the Natural Capital Committee, the Government is yet to establish a baseline to measure progress against environmental goals. In the meantime, the UK's natural capital assets appear to be continuing to deteriorate.**

153. **Recommendation:** ***The Government must urgently establish a baseline for the Outcome Indicator Framework. Defra's planned Natural Capital and Ecosystem Assessment pilot, and any subsequent baseline exercise, must focus on measuring a clear set of representative natural capital assets across England. The Treasury should ensure the baseline assessment is properly funded at the next Spending Review.***

154. **At present there is no strategy to tie the reporting framework for the 25 Year Environment Plan to the ten 25 Year Environment Plan goals. Nor does the plan explain how it will be delivered by local government and arm's length bodies or how key environmental policies, like the Environmental Land Management Scheme, will seek to deliver on the Plan's goals. We look forward to the new monitoring and reporting cycle introduced by the Environment Bill and will be assessing whether it addresses previous issues with the reporting framework and delivers tangible improvements on the ground.**

155. **Recommendation:** ***In all future progress reports on the 25 Year Environment Plan, information provided should relate to the Plan's ten goals. Priority actions must be assessed year on year, as must local delivery of the plan through arm's length bodies. From 2022 onwards the Government should set out indicators for how the Environmental Land Management Scheme and Local Nature Recovery Strategies will be assessed to measure how these policies are delivering the aims of the Plan.***

156. **The 25 Year Environment Plan is not yet supported by clear, ambitious, quantified statutory targets and milestones. The Environment Bill will provide a statutory underpinning for five of the goals in the Plan, but government has not set long-term objectives for the other five plan areas or how its goals will be met. The current**

226 Environmental Audit Committee, Eighteenth Report of Session 2017–19 Pre-legislative scrutiny of the Draft Environment (Principles and Governance) Bill, HC 1951; NAO, Achieving government's longterm environmental goals (2020); Environment, Food and Rural Affairs Committee published its Fourteenth Report of Session 2017–19, Pre-legislative scrutiny of the Draft Environment (Principles and Governance) Bill (HC 1893); Public Accounts Committee Fortieth Report of Session 2019–21, Achieving government's long-term environmental goals, HC 927

227 Public Accounts Committee Fortieth Report of Session 2019–21, Achieving government's long-term environmental goals, HC 927; Environmental Audit Committee published its Eighth Report of Session 2017–19, The Government's 25 Year Plan for the Environment (HC 803)

significant improvement test for targets within the Environment Bill is ultimately decided by the Secretary of State. We agree with the Natural Capital Committee that the test is highly subjective.

157. **Recommendation:** ***The Government must address how it will set long-term objectives for all ten of the Plan's goals. As agreed to in 2018, the Government must publish how these goals and objectives relate to pre-existing national and international environmental targets. We reiterate our recommendation that the Office for Environmental Protection's powers, budget and staffing reflect its responsibility to monitor the Government's delivery of the 25 Year Environment Plan and its enforcement of environmental law.***

Protected areas

158. In September 2020 the Prime Minister committed to protecting 30% of the UK's land by 2030.[228] The UK was already leading the Global Ocean Alliance in support of a new global target of protecting at least 30% of the global ocean within Marine Protected Areas by 2030. This "30 by30" target would represent a trebling of the current CBD 10% marine protection target for 2020. Environmental stakeholders have questioned the meaningfulness of these targets for protected areas, when studies have found that less than half of all Marine Conservation Zones in English waters are achieving their objectives, and less than 40% of the UK's terrestrial protected areas are in favourable condition.[229]

159. In order to achieve the 30 by 30 target on land in England, the Government is seeking to place an additional 4 per cent of land under protection: existing National Parks, Areas of Outstanding Natural Beauty and other protected areas already comprise approximately 26 per cent of land in England.[230] The Government has committed to working with the devolved administrations to agree an approach across the UK.[231]

160. Environmental stakeholders have said this target will only be meaningful if there is more focus on the quality of protected areas. The RSPB said:

> The UK reports a 28% [protected area] coverage on land, but this includes landscape designations (National Parks, AONBs and NSAs) which are consistently failing to deliver for biodiversity across the UK. We estimate that only around 5% of the UK's land is both protected and effectively managed for nature. The picture in the marine environment is the same—with many MPAs poorly managed (if at all) for biodiversity.[232]

161. As part of the 25 Year Environment Plan, Defra commissioned a strategic assessment of the UK's system of protected areas, chaired by Julian Glover. The Glover Designated Landscapes Review found further structural issues associated with the UK's protected areas: the UK's system of landscape protection is fragmented, with 10 National Parks, which do not always work together effectively, and an entirely separate network of 34 less powerful Areas of Outstanding Natural Beauty (AONBs). It found that:

228 UK Government, Press release: PM commits to protect 30% of UK land in boost for biodiversity (2020)
229 JNCC, C1. Protected areas (2020)
230 UK Government, Press release: PM commits to protect 30% of UK land in boost for biodiversity (2020)
231 Ibid
232 RSPB (2020) A Lost Decade for Nature; RSPB (BIO0023)

> [AONBs] have different purposes from National Parks, vastly less money, but sometimes greater pressures; and yet cover areas that are more visited, sometimes more biodiverse and are just as beautiful. We believe this duplication wastes resources and diminishes ambition.[233]

162. It concluded that the title 'AONB' should be replaced under the less cumbersome 'National Landscapes' designation, which would also include National Parks. What are now AONBs should be strengthened, with increased funding, governance reform, new shared purposes with National Parks, and a greater voice on development. Its central proposal was to bring National Parks and AONBs together as part of one family of national landscapes, served by a shared National Landscapes Service (NLS) which will give them 'a bigger voice, bigger ambition and a new way of working to meet new challenges.'[234] The review also recommended a new financial model to serve these landscapes. The report found significant disparity in funding between National Parks and AONBs: of the £55.4 million received from Defra for 2019/20, the 10 National Parks received £48.7m and the 34 AONBs received £6.7m. In fact, the South Downs National Park alone received several million more on its own than all 34 AONBs combined. Glover found that this was in part due to the funding formula being outdated and overly complex. The report recommended reforming the financial model towards a multi-annual financial settlement with Defra, managed by a new National Landscapes Service, with a simplified funding formula and a streamlined governance process to access funds. Over a year and a half since its publication, there has still been no official Government response to the report.

163. On a global scale, the Dasgupta Review has demonstrated how integral better management of protected areas is in restoring the global biosphere. Dasgupta found that globally only 20% of Protected Areas are being managed well. He strongly argued for more investment in protected areas, noting the funds required are small: to protect 30% of the world's land and ocean and to manage the areas effectively by 2030 would require an average investment of US$140 billion annually, equivalent to only 0.16 per cent of global GDP and less than one-third of the global government subsidies currently supporting activities that damage nature.[235] Even the financial benefits alone from this conservation exceed the costs, but Dasgupta noted the wider benefits, including lowering the risk of infectious diseases. He highlighted estimates that the associated costs over a 10-year period of efforts to monitor and prevent disease spill over (which is exacerbated by wildlife trade and by loss and fragmentation of tropical forests) would represent just 2% of the estimated costs of COVID-19.[236] The report cautioned that it was far less expensive to conserve nature than to restore damaged or degraded resources.

Our view

164. **We welcome the Government's pledge to protect 30 per cent of the UK's land and seas by 2030, but simply designating areas as protected is not enough. The UK's protected areas are poorly managed. More focus must be given to preserving and enhancing the quality of protected areas. There are also significant differences in the treatment and status of Areas of Outstanding Natural Beauty compared to National Parks. Over a**

233 Defra, Landscapes review: Final Report, (September 2019)
234 Defra, Landscapes review: Final Report, (September 2019)
235 Waldron et al, Protecting 30% of the Planet for Nature: Costs, Benefits and Economic Implications, (2020)
236 Dobson et al, 'Ecology and Economics for Pandemic Prevention', Science, Vol. 369(6502), (2020) p 379–381.

year and half ago the Glover Review identified these issues and recommended actions to address them: as we consider this report, a full Government response to the Review is yet to be issued.

165. **Recommendation:** ***The Government should not count its wins early: protected areas should only be reckoned to contribute to the 30 by 30 pledge if they are effectively managed and improved. We recommend the Treasury ensure that all bodies involved in the monitoring of 30 per cent of the UK's land and seas receive funding allocations sufficient to allow comprehensive monitoring to be undertaken. We note it is far less expensive to conserve nature than to restore damaged or degraded resources and the costs involved are small compared to the financial and wider health and well-being benefits.***

166. ***The Government should provide a full response to the Glover Review before the 2021 summer recess.***

Biodiversity net gain

167. Biodiversity net gain (BNG) is one of the key biodiversity policies proposed in the Environment Bill. In summary, the policy involves a requirement for all new building developments to include a 10% net increase in biodiversity as part of the development process.[237] Gains will be mandatory through becoming a condition of planning permission and will be required to be maintained for at least 30 years. Gains will be measured using a biodiversity metric that has been developed by Defra. Priority would be given to delivering net gain on development sites over off-site locations.[238]

Box 3: Biodiversity net gain metric[239]

Defra's Biodiversity Metric 2.0 focuses on the habitats in the area of a proposed development rather than species present in that area. This is because habitats are considered a suitable proxy for a large number of species found in different habitat types, while being simpler to assess.

Under the metric compensation for habitat losses can be provided by creating new habitat; by restoring or enhancing existing habitats; or by accelerating how a habitat evolves.

The metric considers the area of land affected, the type of habitat and its condition. It also takes into account how easy and swiftly the habitat can be enhanced or replaced on site. It is generally not aimed at replacing one habitat with another.

The metric guidance makes clear that it does not take into account protected and locally important species and therefore "impacts on protected (e.g. SSSIs) and irreplaceable habitats are not adequately measured by this metric and will likely require separate consideration". The Government has announced that Natural England and Defra are collaborating to develop a third version of the metric.

Source: Natural England (2018)

237 Parliamentary Office of Science and Technology, Net gain Research Briefing,(October 2019)

238 Ibid

239 Natural England, Defra Biodiversity Metric - Introduction to the Proposed Updated Metric (BD2020–10). (November 2018); HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)

168. When developers are unable to mitigate loss or purchase biodiversity units locally, the Government would allow developers to purchase newly developed statutory compensation units. This follows the mitigation hierarchy principle (see box 4). These units will be created and managed by Natural England. The Government have recently announced that Nationally significant infrastructure projects (NSIPs) will be subject to the net gain requirement, previously NSIPs were exempt[240]

Box 4: Mitigation hierarchy[241]

The mitigation hierarchy is a set of guidelines meant to help development projects prepare for impacts and aim to achieve no net loss of biodiversity. It is commonly applied in Environmental Impact Assessments. The hierarchy follows avoidance, minimization, restoration and offsets in order to reduce development impacts and control any negative effects on the environment.

Source: POST (2019)

169. A series of key themes were consistently raised by witnesses on biodiversity net gain. These were:

- the need to move to environmental net gain;[242]
- the need to include Nationally Significant Infrastructure Projects under the policy and address other exemptions in the planning system;[243]
- extending net gain beyond 30 years;[244] and
- focusing on strengthening local authority capacity and enforcement mechanisms.[245]

170. There is disagreement amongst environmental stakeholders over whether to prioritise delivering net gain through on-site or off-site investment. These themes are examined in turn below.

Moving from Biodiversity Net Gain to Environmental Net Gain

171. In the 25 Year Environment Plan the Government announced it would embed the principle of "environmental net gain" in the planning system.[246] The existing approach within the National Planning Policy Framework (NPPF) of seeking biodiversity gains where possible would be strengthened and broadened to include wider natural capital benefits, such as flood protection, recreation and improved water and air quality. The

240 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
241 Parliamentary Office of Science and Technology, Net gain Research Briefing,(October 2019)
242 Natural Capital Committee (BIO0059); Chartered Institute of Ecology and Environmental Management (BIO0039); Association of Local Environmental Records Centres (BIO0041); Forestry Commission (BIO0055); Professor David Hill (Chairman at The Environment Bank Ltd) (BIO0007)
243 Wildlife and Countryside Link (BIO0014); National Trust (BIO0035); Natural England (BIO0058); National Biodiversity Network Trust (BIO0026)
244 Wildlife Trusts (BIO0015); RSPB (BIO0023); Law Society of Scotland (BIO0022)
245 Local Government Association (BIO0010); RSPB (BIO0023); Wildlife Trusts (BIO0015); Wildlife and Countryside Link (BIO0014)
246 HM Government, A Green Future: Our 25 Year Plan to Improve the Environment, (January 2018) p 32

NCC have argued that whilst the Government committed to environmental net gain for planning, subsequent Government action and policy documents have only focused on biodiversity net gain.[247]

172. The NCC were concerned that a focus on biodiversity net gain could lead to increased habitat fragmentation because it did not include a natural capital focus and did not consider the environment as an integrated system.[248] The Chartered Institute of Ecology and Environmental Management (CIEEM) supported this, emphasising that as the BNG metric uses habitats as a proxy for biodiversity value, other important elements such as species and ecosystem services are not accounted for.[249]

173. NCC member Professor Kathy Willis told us:

> There is a real muddle emerging here about habitats and focusing on habitats as if habitats provide ecosystem service flows. They do not. Habitats are not ecosystem services. Therefore, we need to look at the landscape and very much at what the overall drainage basin provides and the landscape provides rather than to look at habitat alone.[250]

Explaining what the effect would be if there were no switch to environmental net gain, Professor Willis said:

> We are going to end up with a patchwork if we are not careful. The tools that developers are being given to make decisions on this are qualitatively based … the tools are simply not fit for purpose.[251]

174. In its most recent analysis report, the NCC reiterated that whilst the 25 YEP committed to embed a 'net environmental gain' principle for development, this commitment was entirely missing from the 'next steps' section where biodiversity net gain was mentioned.[252] The NCC argued that failure to include net environmental gain risked undermining the government's current plans for a green recovery and allowed developers to focus entirely on biodiversity rather than treat the environment as a system. They argued a green covid-19 recovery provides an opportunity to fully embed environmental net gain principles.

175. When we asked the Secretary of State when Government would move to delivering net environmental gain, he suggested other policies dealt with other elements of the environment and that, for the sake of simplicity, biodiversity net gain would remain the requirement for developments:

> If you take the wider environmental space, there are other legal provisions that we have in place to deal with that.… We did not want to dilute the impact of [the biodiversity net gain requirement] by taking it wider and

247 NCC (2020) Final Response to the 25 Year Environment Plan Progress Report (October 2020); NAO, The Government's Environmental Metrics: Progress (2019)
248 NCC (2020) Final Response to the 25 Year Environment Plan Progress Report (October 2020)
249 Chartered Institute of Ecology and Environmental Management (BIO0039)
250 Q60
251 Q63
252 NCC, Final Response to the 25 Year Environment Plan Progress Report (October 2020)

> making it more complicated. I think people understand biodiversity, habitats and species, and that there is a direct correlation between that and new developments … .[253]

Nationally Significant Infrastructure Projects

176. The Government have announced that the biodiversity net gain policy will be extended so that Nationally Significant Infrastructure Projects will be subject to the net gain requirement.[254]

177. We observed a strong consensus from environmental groups,[255] developers[256] and engineering consultancies[257] that the policy needed to be extended in this way. The Government have said that a consultation on the extension of biodiversity net gain to include NSIPs will open later this year.[258]

The Planning White Paper

178. The Government published a Planning White Paper in August 2020. It proposed simplifying the planning system and changing the discretionary nature of planning decisions with a new rules-based system. The White Paper argues that:

> [Current] assessments of environmental impacts and viability add complexity and bureaucracy but do not necessarily lead to environmental improvements nor ensure sites are brought forward and delivered.[259]

179. The White Paper proposes streamlining the planning process and "will replace the entire corpus of plan-making law in England to achieve this."[260] The proposals simplify the role of Local Plans, to focus on identifying land under three categories:

- Growth areas suitable for substantial development, and where outline approval for development would be automatically secured for forms and types of development specified in the Plan;
- Renewal areas suitable for some development, such as 'gentle densification';
- Protected areas where development is restricted. Development proposals would still be possible in protected areas, but would come forward, as now, through planning applications being made to the local authority, and judged against policies set out in the National Planning Policy Framework.[261]

253 Q203
254 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
255 Defra, Net gain: Summary of responses and government response (2019); RSPB (BIO0023); The Wildlife Trusts (BIO0015); Wildlife and Countryside Link (BIO0014); WWF (BIO0047)
256 Balfour Beatty (BIO0061), Q91
257 Mott MacDonald (BIO0053)
258 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
259 DHCLG, Planning for the Future: White Paper, (August 2020)
260 DHCLG, Planning for the Future: White Paper, (August 2020) p 20
261 Ibid

180. Overall, this could halve the time it takes to secure planning permission on larger sites identified in plans.[262] NGOs have expressed concern that the Government's proposals threaten the development of the Nature Recovery Network and implementation of biodiversity net gain.

181. The Local Government Association said that it was at present unclear what implications the proposed reforms would have for net gain.[263] Philip Glanville, Member, Local Government Association's Environment, Economy, Housing and Transport Board, and Mayor of Hackney, told us:

> If anything, there is a withering role for planning authorities in terms of planning applications, the three zones that we talked about—assuming growth—that planning permission will be basically granted without having to go to committee and all of that process. I don't know when that local debate about where biodiversity net gain will actually take place. If it only happens afterwards, in some sort of building control regulatory function, I think we are going to miss out on a huge set of opportunities.[264]

182. Similarly, Wildlife and Countryside Link (Link) and the National Trust were concerned that new planning reforms could create further exemptions to biodiversity net gain. Link stated:

> The Planning White Paper risks weakening Biodiversity Net Gain further by extending the use of Development Consent Orders[265] to cover large-scale housebuilding, as well as infrastructure. This further exemption could lift whole new towns, and the infrastructure projects associated with them, out of the Biodiversity Net Gain system.[266]

Extending net gain beyond 30 years

183. Environmental stakeholders have also raised concerns that the Environment Bill is currently drafted so that gains have to be maintained for a 30-year minimum. Some gains may take over 30 years to be realised and as currently drafted the system could lead to overall losses. The Wildlife Trust is calling for biodiversity gain habitats to be secured and maintained in perpetuity to address this.[267]

Local authority capacity to deliver net gain

184. The biodiversity net gain policy is proposed to be implemented by "local decision makers" who would agree net gain plans with developers.[268] The majority of these local decision makers will be local authorities. The Government estimated that the cost to local government of implementing net gain will be £9.5m per year.[269]

262 Ibid
263 Local Government Association (BIO0010)
264 Q81
265 Development Consent Orders are exempt from Biodiversity Net Gain in the Environment Bill.
266 Wildlife and Countryside Link (BIO0014)
267 The Wildlife Trusts (BIO0015)
268 Defra, Biodiversity net gain: updating planning requirements, (2020)
269 Defra, Impact Assessment: Biodiversity net gain and local nature recovery strategies, (15 October 2019)

185. Philip Glanville summarised the issue around local planning authority capacity to deliver net gain:

> [Local authorities] have had 10 years of funding challenges. We face a significant funding gap as we go forward. Planning authorities have borne the brunt of that. Nearly 40% of funding loss is at planning authorities. That expertise around biodiversity, conservation, ecology has fallen away … two-thirds of authorities do not have an in-house capacity on this, so if local government should and needs to have that role, it also needs to be invested into.[270]

Philip Glanville's comments are supported by the CIEEM and the Association of Local Environmental Records Centres (ALERC) who both recommended that considerable investment in training and skills in ecology will be necessary for local authorities to implement BNG.

186. CIEEM also raised doubts over enforcement mechanisms and the will of the construction sector to realise net gain:

> Within the construction sector, there is little, if any, appetite to monitor successes of biodiversity mitigation (if actually delivered) due to a lack of enforcement. Baseline data collected pre-planning is generally not placed in the public domain so whilst there is a volume of data collected in locations and environments … this is not made available in a timeframe that could enable more efficient use, benefitting biodiversity and understanding outcomes.[271]

187. A lack of compliance monitoring, non-implementation of mitigation measures, and a failure to consider the cumulative effect of small losses of biodiversity at the landscape level have been highlighted as further challenges to implementing net gain.[272] For example, a 2013 study found that only 30% of mitigation measures are implemented, and hardly any monitoring commitments are made.[273]

The balance between on-site and off-site investment

188. The BNG policy prioritises the delivery of habitat on or near to the development site. There is disagreement amongst environmental stakeholders over whether the policy should favour on-site or off-site biodiversity investment.

189. In evidence, the Natural Capital Committee, Wildlife Trusts and National Trust agreed net gain should be delivered locally to preserve functioning ecosystem services and the benefits biodiversity provides to local communities.[274] The National Trust argued this would deliver some biodiversity improvement but may miss the core areas of the country with the greatest potential for biodiversity, such as protected landscapes.[275]

270 Q81
271 Chartered Institute of Ecology and Environmental Management (BIO0039)
272 Ibid
273 Chartered Institute of Ecology and Environmental Management (BIO0039)
274 Qq59–61and Q94
275 National Trust (BIO0035)

190. Professor David Hill, Chairman of the Environment Bank, which develops offset credits to sell to developers, said:

> there is a myth around this biodiversity within the boundary of a housing scheme. It is not biodiversity; it is great landscaping and planting and great place-making.[276]

Professor David Hill also said that locating BNG on-site cost approximately 18 times that of placing all the requirement off-site.[277]

191. A recent study has tried to assess what the biodiversity outcomes of the BNG policy will be, and the relative split between on-site and off-site investment.[278] It assessed BNG assessments in six early-adopter councils who are implementing mandatory No Net Loss or BNG requirements in advance of the policy coming into force. The study sample was associated with a 34 percent reduction in non-urban habitats, generally compensated by commitments to deliver smaller areas of higher-quality habitats years later in the development project cycle. The study noted a lack of governance risked these future gains not being realised. 95 percent of biodiversity units were delivered on or near to the development site, 4.5 percent of units were purchased off-site.[279] This contrasted to the Government's estimate of 25 percent of units being purchased off-site.[280] The study suggested the Government were therefore over-estimating the biodiversity unit market, and its ability to fund Local Nature Recovery Strategies. Given the results, the study recommended further debate over the balance between on-site and off-site investment.

Our view

192. **We welcome the Government's efforts to secure biodiversity gains in development: but the biodiversity net gain policy, in its current form, does not go far enough in contributing to the transformative change necessary to address biodiversity loss in the UK. A series of deficiencies with the policy have been identified over the course of this inquiry.**

193. **The Government has failed to define what it means by net environmental gain as set out in the 25 Year Environment Plan, as its ambition for future development. The failure to move towards a system of net environmental gain risks undermining the government's plans for a green recovery and allows developers to focus entirely on biodiversity, rather than treat the environment as a system. This could lead to severe habitat fragmentation.**

194. **We welcome the extension of the biodiversity net gain policy to include Nationally Significant Infrastructure Projects. We received overwhelming evidence in support of this and note the potential the policy now has to contribute to nature's recovery. We will be examining the implementation of the policy change as it progresses.**

276 Q145
277 Professor David Hill (Chairman at The Environment Bank Ltd) (BIO0007)
278 zu Ermgassen, Sophus et al., Exploring the ecological outcomes of mandatory Biodiversity Net Gain using evidence from early-adopter jurisdictions in England. Conservation Letters, (2021)
279 Ibid
280 Defra, Biodiversity net gain and local nature recovery strategies: Impact Assessment (2019)

195. **Nature recovery does not happen overnight and must be maintained and built upon for generations. The proposed 30 year minimum to maintain biodiversity net gains will achieve little in terms of delivering long-lasting nature recovery.**

196. **The Government's Planning White Paper could have implications on the delivery of the biodiversity net gain policy. We believe planning reforms should not weaken or undermine biodiversity protection.**

197. **Recommendation:** ***To allow the biodiversity net gain policy to fulfil its transformative potential within the UK's built environment we recommend that:***

- ***The Government should explain how and when it will move to embedding environmental net gain in the planning system, with clear actions and milestones provided to achieve this goal.***
- ***Mandatory gains should endure, rather than only being maintained for the stated 30 year minimum.***
- ***The Government should strengthen local authority capacity and enforcement mechanisms to deliver biodiversity net gain and developers should demonstrate their environmental performance and implementation of mitigation measures as part of good Environmental, Social and Corporate Governance.***
- ***The National Planning Policy Framework should be reviewed to ensure reforms strengthen biodiversity restoration and protection and any proposals which undermine biodiversity be addressed.***

Environmental Land Management Schemes

198. The UK has left the European Union and is therefore leaving the EU's Common Agricultural Policy (CAP). The Agriculture Act[281] sets the legal framework for a gradual switch over to a new system of Environmental Land Management Schemes (ELMS) to support farmers by providing public money for public goods—such as helping wildlife, planting woods to capture carbon and improving the soil. Through ELMS, farmers and other land managers will be paid for managing their land in a way that will deliver on the 25 Year Environment Plan goals.

199. Defra has proposed three new schemes that will reward environmental land management:

a) **The Sustainable Farming Incentive scheme** will pay farmers to manage their land in an environmentally sustainable way. The scheme is made up from a set of standards. Each standard is based on a feature like hedgerows or grassland, and contains a group of actions farmers need to do. Farmers are paid for doing the actions within the standards they choose.

b) **The Local Nature Recovery scheme** will pay for actions that support local nature recovery and meet local environmental priorities.

281 The Agriculture Bill 2019–21 (originally HC Bill 7) was published on 16 January 2020. It received Royal Assent on 11 November 2020, becoming the Agriculture Act 2020. The Act provides the legislative framework for replacement agricultural support schemes.

c) **The Landscape Recovery scheme** will support landscape and ecosystem recovery through long-term projects, such as: restoring wilder landscapes; large-scale tree planting and peatland and salt marsh restoration.[282]

200. We heard from Dr Ruth Little, Lecturer in Human Geography at the University of Sheffield, who is currently working on a joint research project analysing the prospects for agri-environmental governance. She said that a building block for establishing effective ELMS would be the co-design of policy with farmers and other land managers, like foresters, gamekeepers and landowners, so that policy reflects their needs and each felt they had a stake in the successful operation of the scheme.[283] She said that successful ELMS co-design that can enhance biodiversity should:

- take account of the existing motivations and priorities of landowners for productive landscapes and identify agronomic-environmental 'win-wins' to encourage early buy-in that could be built upon;
- reach out beyond the usual suspects to include harder to reach stakeholders in ELM;
- make provision for tailored farm-specific advice, farm visits, demonstration farms, and other knowledge-exchange activities that support the achievement of biodiversity goals.[284]

There are many types of land manager who might be harder-to-reach in the context of ELM. Reasons for this include a digital divide due to poor rural connectivity[285] (restricting engagement with online consultation exercises and digital-by-default agri-environment schemes).[286] Other reasons include lack of trust of Defra due to past experiences; excessive bureaucracy; lack of obvious benefits to engagement; and a lack of time.

201. Julian Glover, Chair of the Landscapes Review, and NFU member Caroline Knox, agreed with Dr Little that the ELMS system would only work if farmers felt part of the scheme,[287] and if it was not "so ambitious that it falls over in the face of its own demands".[288] Julian Glover noted that farmers were dropping out of agri-environment schemes because they were seen to be too complex. Caroline Knox supported Dr Little's recommendation of a simple starting point for ELMS that could get everybody engaged and then be added to.[289] She provided the example of a previous "entry level scheme" which had "enormous take up of about 75% of farmers because it was straightforward".[290] She told us that her farm still had corridors of enlarged hedges and field corners, left to nature, as a relic of the entry level scheme.

282 Defra, Environmental Land Management scheme: overview, (2021)
283 Dr Ruth Little (Lecturer in Human Geography at University of Sheffield); Dr David Christian Rose (Elizabeth Creak Associate Professor of Agricultural Innovation and Extension at University of Reading); Dr Judith Tsouvalis (Research Associate at University of Sheffield); Prof Charlotte Burns (Professor of Politics at University of Sheffield) (BIO0028)
284 Dr Ruth Little et al (BIO0028)
285 Environment, Food and Rural Affairs Committee, Seventeenth Report of Session 2017–19 An Update on Rural Connectivity, HC 2223
286 Dr Ruth Little et al (BIO0028)
287 Qq83–84
288 Q66
289 Q115
290 Q115

202. The Wildlife Trusts and the National Trust also highlighted the problems of having a simple, less ambitious environmental land management scheme. Craig Bennett, CEO of the Wildlife Trust told us that:

> [The Wildlife Trusts] get the sense that tier 1, being now called the sustainable farming incentive, will be much closer to the old-fashioned public money for subsidising food production and then thinking about nature recovery just in tiers 2 and 3.

203. The Wildlife Trust sees this as an issue because they believe it to promote a false dichotomy between food production and security on the one hand, and looking after nature on the other. Some have recommended an even more transformational approach to environmental land management. Professor Sir Ian Boyd, a former chief scientific advisor to Defra, recommended that ELMS be focused on paying farmers to store carbon, help prevent flooding and provide beautiful landscapes where people could increase their health and well-being.[291] When we asked the National Trust and the NFU whether we should be paying farmers in some parts of the country to turn farmland back into woodland, Caroline Knox of the NFU told us that it was not a question of "either-or": farmland could be used to produce food and still have "lots of space for trees and hedges".[292] She added that by producing food on an annual basis, farmers receive a steady income stream, whereas rewarding landowners for reforesting areas in perpetuity could displace tenant farmers from their income.[293] She said ELMS must also be carefully designed so it does not lead to the UK importing potentially high carbon food with greater risks to the environment.[294] Ben McCarthy of the National Trust said there was a balance to be struck between having productive farms in some landscapes and in other places seeing food production as a secondary output.[295]

Our view

204. **Effective Environmental Land Management Schemes will only be possible if farmers and land managers are brought into the process of policy design. This must include reaching out beyond the 'usual suspects' of big farming unions and environmental groups.**

205. **Recommendation:** ***To include harder-to-reach farmers and land managers, rural broadband connectivity must be addressed as a matter of urgency, as recommended by the Environment, Food and Rural Affairs Committee in 2019. Defra should also make provision for tailored, farm-specific advice, farm visits, demonstration farms, and other knowledge-sharing activities that support the achievement of biodiversity goals. Defra should identify 'win-wins' that deliver production and environmental benefits to encourage early buy-in from farmers to the scheme. The scheme should include sufficient flexibility to allow for alternative land-uses, such as using land for storing carbon, helping to prevent floods, and maintaining beautiful landscapes for people to enjoy and reconnect with nature. The introduction of ELMS should be used as an opportunity to***

291 The Guardian, Convert half of UK farmland to nature, urges top scientist, 31 December 2019
292 Q105
293 Q107
294 Qq108–109
295 Q105

encourage monitoring of on farm biodiversity, with funded audits of soil health, carbon sequestration and wildlife species prevalence forming a routine element of compliance and reporting.

Nature Recovery Networks

206. The 25 Year Environment Plan committed to establishing a national Nature Recovery Network creating 500,000 hectares of wildlife habitat. The Network is intended to link protected sites and landscapes, with urban green and blue infrastructure (i.e. parks and rivers, valleys and canals), based on the principles set out in the 2010 Lawton Report, for a "bigger, better, joined-up" space for nature.[296] Delivery options for the Network are being considered by Defra and work by Natural England is ongoing.

Figure 12: Nature Recovery Network[297]

Source: The Wildlife Trusts (2018)

207. To create the Nature Recovery Network, provisions are being introduced in the Environment Bill to require Local Nature Recovery Strategies (LRNS) to be produced covering the whole of England "with no gaps or overlaps". LRNS are intended to act as the spatial planning framework for the Nature Recovery Network, by bringing public, private and voluntary organisations together around a shared plan that will direct local action and investment for nature.[298] LRNS will be produced locally by appointed "relevant public bodies", supported by Government data and guidance. LRNS require authorities to set the biodiversity priorities for the area and provide a local habitat map. Local habitats, areas of potential biodiversity importance and sites for recovery or enhancement must

296 Lawton et al, Making space for Nature: A review of England's Wildlife Sites and Ecological Network (2010)
297 The Wildlife Trusts, Towards a wilder Britain - creating a nature recovery network to bring back wildlife to every neighbourhood (2018)
298 House of Commons Library, Commons Library analysis of the Environment Bill 2019–20 (2020)

be identified in the strategy. The Secretary of State will be required to publish a national habitat map for England, identifying national conservation sites and areas of particular importance for biodiversity.

208. The Government believes the LNRS will guide smooth and effective delivery of biodiversity net gain by helping developers and local authorities to best understand where development will have the least impact on biodiversity and where investment in new habitat creation or restoration will achieve best outcomes.[299] The Government's intention is for the LNRS to also be consistent with nature measures promoted by the ELMS—another source of funding for the Nature Recovery Network.

209. Over the course of this inquiry four key themes associated with delivery of the Nature Recovery Network were consistently raised by witnesses:

a) the need to address local authority resourcing;

b) how to move from local strategies to a national Nature Recovery Network;

c) the integration and prioritisation of nature recovery works within new planning reform; and

d) how to join-up the LRNS, biodiversity net gain, ELMS and the planning system into a cohesive policy approach.

Each theme is examined in turn below.

Local authority resourcing

210. The current drafting of the Environment Bill allows either local authorities or Natural England to be designated with the statutory duty to produce a nature recovery strategy.

211. There was widespread agreement amongst written evidence[300] that, given that local authorities will design and deliver most of the LNRS, they must be given greater resources to do so, including sufficient funding to enable the employment of local authority ecologists and to secure better access to ecological data. The National Trust stated that currently "many authorities lack the capacity, expertise and influence over land management to design and deliver LNRS."[301] The LGA highlighted that delivering LNRS was a new burden on authorities and must be funded accordingly with new money.[302]

212. Rt Hon Christopher Pincher MP, Minister for Housing, told us that the Ministry for Housing, Communities and Local Government was exploring a new planning fee infrastructure to fund the planning system in local authorities.[303] He noted that "local authorities have had the largest funding settlement increase in the last 10 years, a 4.5% increase, which equates to something like £2.2 billion."[304]

299 House of Commons Library, Commons Library analysis of the Environment Bill 2019–20 (2020)
300 National Trust (BIO0035); Local Government Association (BIO0010); Wildlife and Countryside Link (BIO0014); RSPB (BIO0023); WWF (BIO0047); Association of Local Environmental Records Centres (BIO0041)
301 National Trust (BIO0035)
302 Local Government Association (BIO0010)
303 Q207
304 Q207

Moving from Local Recovery Strategies to a National Nature Recovery Network

213. The NRN is mentioned in the 25 Year Environment Plan, but there are currently no duties or actionable plans in place to create it. NRNs are not mentioned on the face of the Environment Bill.[305] The explanatory notes to the Bill make clear that Local Nature Recovery Strategies are intended to provide a basis on which to build an NRN but the bill creates no duty to do so. The relationship between LNRS and the NRN is also ill-defined. There is no requirement on local authorities to link the Strategies into the NRN and other environmental plans, and no duty upon authorities to apply LNRSs to relevant areas of local activity.[306]

214. Defra and Natural England have published very limited detail of how they expect the NRN to work.[307] Wildlife and Countryside Link believed this must be rectified with a Government delivery plan setting out future investment and actions, specifying who is responsible for delivery and including specific targets, milestones, timescales, delivery mechanisms, and budgets.[308]

215. The Lawton Review, published in 2010, reviewed how England's wildlife and ecological network could be improved to help nature thrive in the face of climate change and other pressures. Its central conclusion was that to improve the ecological networks sites need to be "bigger, better and more joined up."[309] There was consensus amongst witnesses that to deliver Lawton's vision of "bigger, better, joined-up" space for nature,[310] co-ordination must be at a national scale. Professor Willis said:

> If you are talking about bigger, better and more joined up, you have to work out where the bigger bits are and how to join them up. You cannot do that on a county-by-county or farm-by-farm level. You need to start at the top. It is completely possible to do it.[311]

216. Craig Bennett, CEO of the Wildlife Trusts added:

> there is still confusion about how this is going to be delivered… We need the national perspective on this. We also need the local nature recovery strategies. We need to see those strengthened in the Environment Bill. We need to have specifically a duty to use these strategies. We need a requirement to take these local nature recovery strategies into account in the exercise of public functions by public bodies, including in the statutory planning system. We were concerned that in the Planning White Paper there was no mention of nature recovery strategies, which seems to be an odd omission.[312]

305 House of Commons Library, Commons Library analysis of the Environment Bill 2019–20 (2020)
306 Ibid
307 Defra & Natural England, Nature Recovery Network - Policy Paper (2020)
308 Wildlife and Countryside Link (BIO0014)
309 Lawton et al., Making Space for Nature: a review of England's wildlife sites and ecological network. Report to Defra. (2010)
310 Ibid
311 Q68
312 Q72

The Nature Recovery Network and planning reform

217. There is concern amongst environmental NGOs that the Government's Planning White Paper risks threatening the development of the NRN. The proposal includes categorisation of land into 'growth', 'renewal' and 'protected' zones.[313] Land categorised as 'growth' would automatically receive outline approval for development whereas development would be "restricted" in 'protected' zones. Development proposals would still be possible in protected areas, but would come forward, as now, through planning applications being made to the local authority, and judged against policies set out in the National Planning Policy Framework.

218. There is no mention of Nature Recovery Strategies in the Planning White Paper. Link and the National Trust argued that changes to the planning system should contribute to enhanced biodiversity, by integrating the planning system with LNRS to help achieve the Nature Recovery Network. For example Link suggested creating two dedicated zones for biodiversity—a Highly Protected Zone and a Nature Recovery Zone.[314] A Highly Protected Zone would cover currently protected sites, applying a legal presumption against development to further safeguard them. This is intended to reinforce the protection already afforded by site designations, instead of threatening it. A Nature Recovery Zone would apply planning permission in principle for environmental investments and discourage new hard infrastructure. This is intended to speed up planning permission for habitat creation, protect existing protected sites and allow areas of nature recovery to expand. Link believes Local Nature Recovery Strategies could designate these zones to be incorporated into local plans, giving LNRSs direct application in the planning system and enabling meaningful local coordination of the Nature Recovery Network.[315]

219. Similarly, Craig Bennett suggested adding a 'fourth zone' in the new planning system:

> we have proposed a new designation called wild belt, which could overlay other designations like national parks, AONBs and even SSSIs. It would be focused on taking land of low biodiversity value and putting it into nature's recovery and, critically, close to where people live.[316]

220. Christopher Pincher told us that Government did not want to demote the importance of biodiversity because of planning reforms[317] and that he would look at the proposition to create a fourth planning zone focused on protecting biodiversity.[318] He said that MHCLG was working closely with Defra to "bake in" biodiversity net gain proposals with planning reforms and local nature recovery strategies. He noted that LNRS mapped effectively to MHCLG's plans for spatial toolkits in the planning system.[319] Simon Gallagher, told us that MHCLG was working with Defra to develop the planning reform White Paper's proposals.[320]

313 HCLG, Planning for the Future (2020)
314 Wildlife and Countryside Link (BIO0014)
315 Ibid
316 Q57
317 Q208
318 Q209
319 Q208
320 Q208

Forming a coherent policy approach to biodiversity

221. The Government have proposed a host of new policies that will affect biodiversity. This includes: biodiversity net gain, Environmental Land Management Schemes, developing a Nature Recovery Network and Local Nature Recovery Strategies, and proposed planning reforms. Stakeholders have welcomed the 'significant increase in Government ambition for the environment'.[321] However a number of concerns have been raised about how the policies will work together;[322] whether delivery will be hampered by inadequate funding or insufficient monitoring;[323] and whether delivery will happen quickly enough.[324]

222. The NFU has raised concerns about complexity of the new policy landscape. It said the Government needs to communicate clearly how the Nature Recovery Network fits with various other measures such as net gain, Local Nature Recovery Strategies and ELMS.[325] The LGA warned that it was not clear how ELMS would interact with the new nature and biodiversity duties placed on local authorities through the Environment Bill. It argued that councils are well placed to make the links at a local level, provided they have the skills and resources.[326] The National Trust said that the objectives must be aligned and synergies maximised, whilst 'double counting' avoided, between ELMS and other policies and funding mechanisms such as Nature Recovery Network, Biodiversity Net Gain and the Nature Recovery and Nature for Climate Funds.[327]

223. RSPB and ALERC saw local nature recovery strategies as the way to link the Government's other environmental policies into a coherent, implementable strategy.[328] ALERC believe LNRS mapping of areas of existing and potential high value for biodiversity, natural capital investment and ecosystem service resilience, could provide the information needed for the planning system's new land classification proposal.[329] It could also provide the administrative and spatial basis for prioritising the delivery of funds from national mechanisms such as ELMS, net gain and the Climate for Nature Fund.[330]

224. The Secretary of State told us that he was conscious of the need to dovetail ELMS with LNRS and biodiversity net gain.[331] He said that with the biodiversity net gain policy, where it was not possible for developers to secure net gains on site, developers would make contributions to local authorities' local nature recovery strategies.[332] And he expressed a want to align the second tier of ELMS with LRNS and biodiversity net gain too.[333] Mr Eustice indicated that these synergies would be realised and evolve over time rather than being set out in a strategy paper.[334]

321 Wildlife and Countryside Link, The 25 Year Environment Plan: One year on A Wildlife and Countryside Link report
322 National Farmers' Union (BIO0036)
323 Local Government Association (BIO0010); National Trust (BIO0035)
324 Wildlife and Countryside Link, The 25 Year Environment Plan: One year on A Wildlife and Countryside Link report
325 National Farmers' Union (BIO0036)
326 Local Government Association (BIO0010); n
327 National Trust (BIO0035)
328 RSPB (BIO0023); Association of Local Environmental Records Centres (BIO0041)
329 Association of Local Environmental Records Centres (BIO0041)
330 Ibid
331 Qq211–213
332 Q211
333 Qq211–213
334 Qq212–213

Our view

225. **We welcome the Government's ambition to create a national Nature Recovery Network but believe far more detail is needed to translate this ambition into transformative action. The Nature Recovery Network (NRN) is contained in the 25 Year Environment Plan, but there are currently no duties or actionable plans in place to create it. The Government needs a co-ordinated approach to ensure all the local nature recovery strategies (LNRS) together cover the whole of England. This requires national oversight and strategy. Given local authorities will design and deliver most of the Local Nature Recovery Strategies (LNRS), they must be given greater resource to do so, including to employ local authority ecologists and having better access to ecological data. To realise this national vision the NRN also must be integrated and prioritised within the context of new planning reforms. And the Government needs to set out its thinking on how the host of proposed environmental and planning policies will come together into one cohesive strategy.**

226. **Recommendation:** ***To address these concerns we recommend that:***

a) ***Defra updates its Nature Recovery Network Policy Paper by the end of the year, explaining how LNRS will be co-ordinated into a national Nature Recovery Network and how local authorities should link LNRS to the NRN.***

b) ***Government should establish a Nature Recovery Zone category which would enable local authorities to choose to designate areas where planning permission would in principle be granted for environmental investments and discourage new hard infrastructure at scale. LNRS should designate these zones to be incorporated into local plans.***

c) ***LNRS should be used as the spatial planning tool to join up biodiversity net gain, ELMS and the planning system. LNRS could provide information for the planning system's new land zoning proposal and provide the basis for prioritising the delivery of funds from ELMS and net gain.***

d) ***The Nature Strategy should set out specifically how the Government proposes to link environmental and planning policies into one coherent policy approach designed to realise the 25 Year Environment Plan's goal to improve the environment within a generation.***

e) ***Amid concerns that some local authorities do not have the capacity to deliver Biodiversity Net Gain and Local Nature Recovery Strategies, we recommend that the Government makes a formal assessment of capacity of local authorities to undertake this work, with a view to ensuring that all local authorities have the capacity to meet these important obligations.***

Nature-based solutions to climate change

227. Nature-based solutions to climate change are often promoted as a way to link climate change and biodiversity action. In this section we examine the promise of nature-based solutions as well as challenges around their implementation and financing.

Defining Nature-based solutions to climate change

228. There is currently no agreed definition of nature-based solutions for the UK. The WWF recommended the UK adopt the International Union for Conservation of Nature (IUCN) definition for nature-based solutions:

> actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits.[335]

229. Under this definition, any actions taken by the UK Government to address climate change must provide a positive outcome for the protection and enhancement of biodiversity for it to be considered a nature-based solution for climate change. Professor Nathalie Seddon, Director of the Nature-based Solutions Initiative, an interdisciplinary programme of research, policy advice and education based at the University of Oxford, defined nature-based solutions (NbS) as actions that involve the protection, restoration or management of natural and semi-natural ecosystems; the sustainable management of working lands such as croplands or timberlands; or the creation of novel ecosystems in and around cities or across the wider landscape. She said that NbS are actions that support biodiversity and are designed and implemented with, by and for local communities.[336]

230. The Government has recently made extensive reference to nature-based solutions: they feature as one of the key themes for COP26, 18% of bilateral International Climate Finance (over $1bn) is going to programmes that support nature-based solutions and NbS is an important part of the Government's climate mitigation plans.[337] The JNCC told us that a common understanding of what was meant by the term across the science, policy and environmental communities would provide a foundation for UK project development and allow a more rigorous assessment of goal achievement.[338]

Tackling climate change and biodiversity loss together

231. There was overwhelming support in evidence that nature-based solutions provide a promising way to address jointly the challenges of biodiversity and climate change.[339] However implementation and design of NbS will be crucial to achieving this.

232. Professor Seddon estimated that in the UK, protecting natural ecosystems would secure 16,231 Mt CO_2e while the restoration of degraded peatlands and native woodland would provide additional climate change mitigation of 75–123 Mt CO_2e by 2030 and 278–

335 IUCN Nature-based solutions, accessed 11 June 2021
336 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
337 Defra (BIO0054)
338 JNCC (BIO0012)
339 All written evidence submitters saw investment in nature-based solutions as a way to simultaneously address climate change and biodiversity loss.

492 Mt CO_2e by 2050.[340] To put this in perspective, the Committee on Climate Change state that for the UK to meet its net zero target, emissions will need to fall by around 14 Mt CO_2e every year.[341] So nature-based solutions could substantially contribute to meeting UK's net zero goals.

233. A joint project between the University of Aberdeen, WWF-UK, RSPB and the University of Oxford identified nine priority areas for UK NbS that can deliver both climate and biodiversity benefits. The most significant contribution for cost-effective avoided emissions of CO_2 came from protecting existing woodlands, peatland, kelp forests, hedgerows, and grassland.[342] The RSPB supported these findings, also emphasising the importance of first preserving current ecosystems.[343] The RSPB recently conducted spatial work mapping the best places for the UK to address climate change and biodiversity loss—it found two thirds of carbon and nature rich landscapes were situated outside of protected nature sites.[344] It follows that policy to enhance biodiversity cannot focus solely on protected area conservation.

234. When thinking about how to invest in nature-based solutions that best deliver climate and biodiversity benefits, Professor Seddon said that:

> The key thing is that, globally and also in the UK, many ecosystems that are rich in biodiversity, in native biodiversity, are also very rich in carbon.[345]

She referenced a study produced by the UN World Conservation Monitoring Centre, which showed that when prioritising areas for conservation, accounting for biodiversity and carbon together could secure 95% of the biodiversity benefits and nearly 80% of the carbon stocks that could be obtained by prioritising either value alone.[346] Professor Seddon said this showed the need to take biodiversity and carbon into account when deciding where to prioritise environmental actions. Martin Harper, Director of Global Conservation at the RSPB added that:

> If we want an integrated response to the nature and climate emergency, it is up to public policymakers to set twin objectives from the outset.[347]

235. Martin Harper noted that the consequences of not taking this joint approach was made real by the 2020 Cumbria case, where the Forestry Commission had to admit that it made a mistake in consenting to a timber plantation on a peat bog.[348]

Managing trade-offs within nature-based solutions

236. When delivering nature-based solutions, trade-offs may need to be made between conservation and climate mitigation objectives, short and long-term gains, cost effectiveness and the relative benefits and disadvantages of current and proposed land-uses. The British Ecological Society have recommended that once opportunities and

340 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
341 Committee on Climate Change, Net Zero – The UK's contribution to stopping global warming (May 2019)
342 RSPB-WWF-Oxford-Aberdeen, Role of Nature in a UK NDC. (2020)
343 RSPB (BIO0023)
344 Ibid
345 Q162
346 Q162; UN WCMC, Research reveals benefits of joint action on climate and nature (2020)
347 Q163
348 BBC, Lake District peatland tree planting branded 'heart-breaking'. 17 November 2020.

the full range of potential benefits for NbS have been identified, the impact of proposed interventions should be assessed at landscape scale, to deliver a balanced mix of NbS to meet various needs.[349]

237. In evidence, several stakeholders recommended using the IUCN Global Standard for Nature-based Solutions to balance trade-offs.[350] The Standard provides a framework for designing and verifying NbS. It is designed to provide greater clarity and precision of what NbS entail and avoid inconsistent and ungrounded applications of the concept.[351] The Standard consists of 8 criteria and 28 indicators by which to assess NbS. Criterion 4 and Criterion 6 specifically address how to assess the economic viability and balance of trade-offs associated with NbS.[352]

238. Professor Seddon emphasised that the most important aspect of managing trade-offs was to ensure that it is done through a transparent, equitable, and inclusive stakeholder engagement process.[353] She said this was reflected in the IUCN indicators for criterion 6 (Box 5). It is also addressed by Criterion 5, which states that "NbS are based on inclusive, transparent and empowering governance processes".

Box 5: IUCN Global Standard for NbS: Criterion 6 on managing trade-offs

Criterion 6: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits

Trade-offs in land and natural resource management is inevitable. This IUCN Criterion requires that NbS proponents acknowledge these trade-offs and follow a fair, transparent and inclusive process to balance and manage them over both time and geographic space.

Indicators

- 6.1 The potential costs and benefits of associated trade-offs of the NbS intervention are explicitly acknowledged and inform safeguards and any appropriate corrective actions
- 6.2 The rights, usage of and access to land and resources, along with the responsibilities of different stakeholders, are acknowledged and respected
- 6.3 The established safeguards are periodically reviewed to ensure that mutually-agreed trade-off limits are respected and do not destabilise the entire NbS

Source: IUCN Global Standard for Nature-based Solutions

349 Stafford, et al. Nature-based Solutions for Climate Change in the UK: A Report by the British Ecological Society. London. (2021) p 143

350 Fauna & Flora International (BIO0040); WWF (BIO0047); Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)

351 IUCN, IUCN Global Standard for Nature-based Solutions. First edition (2020)

352 Criterion 4: NbS are economically viable; Criterion 6: NbS equitably balance trade-offs between achievement of their primary goal(s) and the continued provision of multiple benefits

353 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060); Q164

Nature-based solutions and decarbonising the economy

239. Whilst NbS can deliver both carbon and biodiversity benefits, Professor Seddon told us that:

> NbS must not be a seen as a substitute from the urgent task of decarbonising all sectors of the economy.[354]

240. As shown above, NbS can deliver a degree of climate mitigation but Professor Seddon emphasised that the UK could not meet its climate goals without shifting its economy away from greenhouse gas emitting activities and decarbonising the UK's energy system.[355] Given this, she recommended that

> investment in NbS through offsetting schemes should only be permitted if investors have ambitious and credible plans for both decarbonization and removing ecosystems loss and damage from their supply chains.[356]

'The right tree in the right place'

241. Trees draw CO_2 from the atmosphere through photosynthesis and store some of this carbon in wood and in the soil.[357] The Government has committed to create 30,000 hectares (ha) of woodland per year by 2025 in the UK. In May 2021 the Government published its England Trees Action Plan setting out how it intended England to contribute to this target.[358] It committed to trebling tree planting rates during the current parliament through £500 million from the Nature for Climate Fund. The Government believe this will deliver 7 000 ha of woodland per year by 2024. The Government stated its aim was to have 12% woodland cover in England by 2050. The Government have said funding will focus predominately on the establishment of native broadleaf woodlands.

242. The announcement of extra funding was welcomed by conservationists, but the target drew criticism for being a "rehash" of previously announced targets, that would leave devolved administrations having to do much of the work to achieve the UK-wide goal of 30, 000 ha.[359] The CCC recommended increasing woodland cover in the UK from 13% to a minimum of 17% by 2050, and ideally, to 19% to ensure the country achieves net zero carbon emissions.[360]

354 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
355 Q164
356 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
357 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021)
358 UK Government, The England Trees Action Plan 2021–2024 (May 2021)
359 Carbon Brief, Analysis: How will England's strategies for trees and peat help achieve net-zero by 2050?. (19 May 2021)
360 Committee on Climate Change, Net Zero The UK's contribution to stopping global warming (May 2019)

Table 4: Woodland area in the United Kingdom in 2020[361]

	Hectares (millions)	Per cent of land area
England	1.3	10%
Wales	0.3	15%
Scotland	1.5	19%
Northern Ireland	0.1	9%
UK	3.2	13%

Source: Forestry Commission (2020)

243. The overall emphasis on tree planting has been welcomed in written evidence submissions.[362] Creating new woodland is widely agreed to be necessary for the UK to meet its 2050 net zero target.[363] However, we heard concerns from witnesses that focusing solely on speed of carbon sequestration may result in monoculture plantations of fast-growing non-native species that deliver few other benefits.[364]

244. Professor Seddon cautioned that biodiversity loss could ensue if a large proportion of the government's tree-planting target continues to be met through commercial timber plantations using non-native species.[365] Apart from Scots pine, all commercial conifer species grown in the UK are non-native and were mostly introduced in recent centuries for timber production.[366] Conifers account for 51% of the UK's tree cover and 92% of timber harvested from woodlands in 2019, although the proportions differ between UK countries.[367] Professor Seddon cited that 8,000 ha of the 13,000 ha that were planted in 2018 were conifers.[368]

245. Commercial conifer species grow and sequester carbon more rapidly than native broadleaves but have a smaller total carbon stock long-term as mature woodland,[369] although commercial plantations are harvested often within 40 years.[370] Native and naturalised broadleaf species are also more valuable for biodiversity, water quality and reducing soil erosion.[371] For example, 25% of UK species of conservation concern rely on native trees as a habitat or as a food source.[372] The Climate Change Committee includes both types in their woodland creation scenarios, because of the different timescales of sequestration.[373] The British Ecological Society recommend growing the UK's commercial

361 Forestry Commission, Forestry Statistics 2020 Chapter 1: Woodland Area and Planting, (September 2020)
362 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060); RSPB (BIO0023); WWF (BIO0047); Woodland Trust (BIO0034)
363 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021); Climate Change Committee, The Sixth Carbon Budget - The UK's path to Net Zero (2020)
364 British Ecological Society (BIO0050); RSPB (BIO0023); Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
365 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
366 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021)
367 Ibid
368 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
369 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021); RSPB (BIO0023)
370 Forestry England, From tree to timber, accessed 9 June 2021
371 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021)
372 Webb, J. R. et al. Managing for species: Integrating the needs of England's priority species into habitat management. (2010)
373 Committee on Climate Change (2018). Land use: Reducing emissions and preparing for climate change. Committee on Climate Change.

forestry sector given it can reduce the demand for overseas timber products and the UK's international environmental footprint.[374] We will be looking at managing domestic timber demand in our inquiry into the *Sustainability of the built environment*.[375]

246. The amount of CO_2 taken up and other benefits or negative effects of woodland creation depend on where and how woodland is established, tree species present, site conditions and management.[376] To realise biodiversity and climate benefits some NGOs and academics are encouraging more native woodland creation, including through natural regeneration,[377] and avoiding tree-planting on semi-natural grassland and floodplain meadows.[378] Both Professor Seddon and RSPB strongly urge against tree-planting on deep peat as short-term carbon gains are significantly outweighed by loss from the soil and biodiversity decline.[379] Woodland opportunity mapping typically finds that growing trees on low-quality arable land and cultivated grassland has the maximum potential to increase biodiversity and soil carbon, and the least impact on agricultural production.[380]

247. To create woodlands that provide nature-based solutions to climate change with tangible biodiversity benefits, several witnesses[381] recommended the UK follow the IUCN global standard for nature-based solutions so woodland expansion would be guided "in the right way, in terms of right tree, right place."[382] In order to encourage woodland creation from land currently in agricultural production, the expected woodland creation grant scheme needs to fund not just establishment but also maintenance of woodland.

Protecting peat

248. Protecting peatland was regularly cited by witnesses as one of the most effective nature-based solutions that could secure climate and biodiversity benefits for the UK. The Climate Change Committee (CCC) estimated that emissions from peatlands were at 23 Mt CO_2e in 2017. To reach the UK's net zero goal the CCC recommended restoring at least 50% of upland peat and 25% of lowland peat, this would reduce peatland emissions by 5 MtCO_2e by 2050, while allowing food production to continue on the most productive land.

249. The CCC and many conservation charities are calling for a ban on rotational peat burning.[383] In January 2021, the Government announced it would bring forward legislation to prevent the burning of heather and other vegetation on protected blanket bog habitats. The Government stated that the new regulations will prevent the burning of any specified vegetation on areas of deep peat (over 40cm in depth) on a Site of Special Scientific Interest that is also a Special Area of Conservation or a Special Protection Area unless a licence has been granted or the land is steep or rocky. Written evidence submissions have said the

374 British Ecological Society (BIO0050)
375 Environmental Audit Committee, Sustainability of the built environment, accessed June 2021
376 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021);
377 Rewilding Britain, Reforesting Britain: Why natural regeneration should be our default approach to woodland expansion.(2020)
378 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
379 RSPB (BIO0023); Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
380 Parliamentary Office of Science and Technology, Woodland Creation. (January 2021)
381 RSPB (BIO0023); Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060); Chartered Institute of Ecology and Environmental Management (BIO0039); WWF (BIO0047)
382 Q165
383 National Trust (BIO0035); RSPB (BIO0023); Wildlife and Countryside Link (BIO0014); The Wildlife Trusts (BIO0015)

proposals do not go far enough.[384] The WWF, RSPB and academics from the University of Oxford and the University of Aberdeen recommend extending the proposed ban to include all depths of peat and organic soils.[385] Recent evidence shows that even planting on shallow peat or peaty soils can cause net losses of carbon.[386]

250. In May 2021 the Government published its England Peat Action Plan.[387] It states that the Government will " continue to protect our peat from fire by both phasing out managed burning and reducing the risk of wildfire." There are currently no intensions to extend the regulations announced in January on preventing burning on blanket bogs, but the Government stated it will keep under review the "the environmental and economic case for extending the approach to additional areas of blanket bog after assessing how the new regime works in practice." This has led to criticisms from conservation organisations that plans to restore damaged peatland are still too vague and lack urgency.[388]

251. The Government's headline announcement is a commitment to spend £50 million from the Nature for Climate Fund on restoring around 35,000 hectares of peatland by 2025. This announcement has drawn criticism from Link for lacking ambition; Link said 35 000 hectares was just 5% of England's total peat soils, and 1% of the UK total.[389] The CCC has recommended 50% of upland peat and 25% of lowland peat should be restored to achieve the net-zero target.[390]

252. The Government also announced they would consult on banning the sale of peat and peat containing products, including the use of peat in horticulture by the end of the parliament. The Government admitted that the voluntary approach, introduced in 2011 had not delivered. Environmental organisations have welcomed the proposed ban but criticised the timeline of the consultation as being too slow.[391] The CCC had previously recommended the ban come into force before 2023 and highlighted that peat-free alternatives for compost and bedding were already available.

384 RSPB (BIO0023); Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060); Harper, A comment on today's announcement from Defra to "ban" burning on blanket bog in England, accessed 7 May 2021

385 WWF & RSPB, The role of nature in a UK NDC, (November 2020)

386 Friggens et al. (2020) Tree planting in organic soils does not result in net carbon sequestration on decadal timescales. Glob. Change Biol. Vol 26, 5178–5188.

387 UK Government, England Peat Action Plan. (May 2021)

388 Edie (2021) Trees, peat and net-zero: UK to enshrine new nature goals in law. 18 May 2021

389 Ibid

390 Committee on Climate Change Land use: Policies for a Net Zero UK (January 2020).

391 Edie, Trees, peat and net-zero: UK to enshrine new nature goals in law. 18 May 202; Carbon Brief, Analysis: How will England's strategies for trees and peat help achieve net-zero by 2050?. 19 May 2021

Table 5: Key recommendations from the Climate Change Committee to deliver net-zero on land with peatlands[392]

Category	Recommendation	Date	Who is responsible
Upland peat restoration	• Ban rotational burning on peatlands. • • Mandate all peatland with a Site of Special Scientific Interest to be under restoration. • Mandate water companies to restore peatland under their ownership. • Public money to fund the carbon and non-carbon benefits of restoration. • In the longer-term, use of market mechanisms to pay for the carbon benefits.	In 2020 Before 2023 From 2021 From 2021 By mid-2020s	Defra and equivalent bodies in Scotland, Wales and Northern Ireland
Lowland peat restoration and sustainable management	• Ban peat extraction and its sale including of imports • Regulate that peat soils are not left bare. • Require internal drainage boards to maintain optimal water table levels. • Public funding for sustainable management practices, and restoration of low value land (e.g. grasslands). • Research to improve verification and, in the longer-term, use of market mechanisms to pay for carbon benefits.	Before 2023 From 2021 Before 2023 From 2021 By mid-2020s	Defra and equivalent bodies in Scotland, Wales and Northern Ireland

Source: Climate Change Committee (2018)

Financing nature-based solutions

253. In March 2020, the Government announced a £640 million Nature for Climate Fund, to support afforestation projects and peatland restoration in England.[393] This has been welcomed by environmental stakeholders. The RSPB outlined spending recommendations for the £640 million to meet existing Government targets and increase ambition for peat (table 6).[394]

392 Committee on Climate Change Land use: Policies for a Net Zero UK (January 2020).
393 Defra (BIO0054)
394 RSPB (BIO0023)

Table 6: RSPB proposed nature spending[395]

Habitat	Target (in hectares)	Number of Facilitators	Cost (£)/ hectare	Total Cost (£)	Annual emissions savings/ sequestration (tCO_2e)
Tree planting / woodland creation (without land purchase)	30,000	30	5525	165,750,000	321,300
Blanket bog restoration	70,000	70	865	60,620,000	312,900
Swamp and fen creation on lowland peatland (with land purchase)	10,000	10	30,045	300,450,000	352,300
Swamp and fen creation on lowland peatland (without land purchase)	5400	5	3045	16,443,000	190,242
Total	115,400	115	n/a	543,263,000	1,176,742

Source: RSPB (2020)

254. The RSPB also recommended that the Government underwrite the risk of investing in natural assets. The RSPB believe that this could catalyse market opportunities and leverage private investment in nature with the potential to create jobs.[396] Professor Seddon provided a list of ways NbS financing could be up-scaled including:

a) Providing tax incentives to "good investors" in NbS schemes (i.e. those with ambitious and credible pathways to net zero carbon and zero biodiversity loss in their supply chains);

b) Taxing carbon intensive sectors (aviation, fossil fuels);

c) Tapping into local investors who benefit from NbS e.g. green infrastructure;

d) Rewarding farmers and land managers who invest in low carbon solutions, better soil management, and biodiversity conservation.[397]

255. Similar initiatives were supported by the British Ecological Society (BES). They focused on the potential for ELMS to deliver NbS, but warned this would require careful design, implementation and monitoring.[398] This included establishing baseline environmental standards, enforced by regulation, so that only land management practices that went beyond these standards were rewarded. BES also said green tax breaks could provide an additional incentive for the adoption of NbS. Regardless of the finance mechanism, BES emphasised that legal mechanisms that ensured the longevity or, ideally, the permanence of the intervention were vital.

395 Ibid
396 Ibid
397 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)
398 British Ecological Society (BIO0050)

Our view

256. **We welcome the Government's focus for COP26 on nature-based solutions (NbS) and the increased investment provided by the Nature for Climate fund. Nature-based solutions could substantially contribute to meeting the UK's net zero goals but must not be seen as a substitute from the urgent task of decarbonising all sectors of the economy, and in particular, the UK's energy system. It's also essential that the Government follows best practice standards for Nature Based Solutions. This will ensure biodiversity benefits are delivered as part of NbS, and the trade-offs between cost effectiveness, long and short-term gains and securing different environmental benefits, can be managed through a transparent and inclusive process.**

257. **Protecting existing ecosystems, be that ancient woodland, peatlands, or kelp forests provides the most cost-effective and significant contribution to NbS in the UK. Given the majority of the UK's ecosystems lie outside of protected areas, more needs to be done to lock carbon and conserve biodiversity in these spaces.**

258. **Protection and restoration of peatlands have an important role to play in NbS. The Government's announced ban on rotational burning of peat in protected areas is welcome, as part of the transformational change necessary to meet biodiversity and net zero targets. We commend the consultation on banning the sale of peat products and believe the proposal should be brought in as soon as possible.**

259. **We welcome the Government's Trees Action Plan, and the intention to focus on planting broadleaf native species. The Government must not try to meet its tree planting target solely through commercial timber plantations using non-native species. A balance of tree planting is required to allow increased domestic commercial timber production to reduce reliance on imports. The appropriate mix of tree species will depend on site conditions. Creating woods with more native broadleaf tree species will provide greater biodiversity benefits, carbon stocks, more improved water quality and reduce soil erosion. These benefits can be scaled up through greater public and private investment in NbS.**

260. **Recommendation:** ***To realise the benefits of nature-based solutions to climate change, we recommend that:***

a) ***The UK adopt a clear definition of NbS and consider using the IUCN definition alongside the IUCN Global Standard for NbS.***

b) ***The Government prioritise protection and maintenance of the ecosystems we already have over the creation of new ecosystems. This must include greater efforts to preserve ecosystems found outside of protected areas.***

c) ***The proposed ban on the production and sale of horticultural peat be brought forward, as soon as possible before 2023.***

d) ***Tree planting should not occur on peat soils and floodplains would be better used for restoring floodplain meadows rather than afforestation projects.***

e) ***Tax incentives be given to investors in NbS schemes who have ambitious and credible net zero plans and are working to remove biodiversity loss from their supply chains.***

The economics of biodiversity

Short-eared owl. Photo: John Stembidge

6 The economics of biodiversity

261. In 2019, HM Treasury commissioned the Dasgupta Review, a global review on the economics of biodiversity. The Review aimed to assess the economic benefits of biodiversity globally, and the economic costs and risks of biodiversity loss; and identify actions that can enhance biodiversity and deliver economic prosperity. Given the global nature of the Review, it set out broad options for humanity to counter biodiversity loss. In this section, we explore what the UK Government should do to translate these broad recommendations into policy and practice. A brief summary of the Review is provided below.

262. The Review's central conclusion is that humanity's demands far exceed nature's capacity to supply the goods and services humanity relies on.[399] This has occurred because of the failure of economic systems and institutions to account for the true value of nature's contributions to people. To address this, the Review advocates recognition that economies are embedded in nature, rather than external to it, as standard economic models assume. Recognising the global economy is bounded by nature reshapes the understanding of what sustainable economic development is: depleting natural resources presents extreme risks to economies, health, and well-being. Given this, sustainable economic development requires rebalancing humanity's demands on nature with nature's supply. This will take transformational change. To achieve this change, Professor Dasgupta recommends three broad transitions:

a) Reduce our demands on nature, and increase nature's supply

b) Change our measures of economic success

c) Transform our institutions and systems

263. The following sub-sections address aspects of these transitions in more detail, focusing on how the UK Government can translate the Review's recommendations into actions and policy.

Consumption

264. Professor Dasgupta identified three key factors underlying demands on the biosphere: global GDP per person (or consumption), human population numbers, and the efficiency with which we convert the biosphere's goods and services into GDP (technological efficiency).[400] He noted that there were limits to which technological efficiency could be increased so attention must also be directed towards human population numbers, and consumption. This section explores how the UK can reduce consumption.

265. The Review calls for decision makers to introduce policies that explicitly challenge existing patterns of consumption by changing prices and behavioural norms. This could include introduced standards and certification schemes for sustainable commodities, introducing new taxes on unsustainable activity, and embedding environmental objectives across global supply chains.

399 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 11

400 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (April 2020) (London: HM Treasury). p 35

Environmental footprint measurements and consumption-based targets

266. Consumption (of food, timber, etc) is one of the biggest drivers of land conversion, biodiversity loss and carbon emissions at a global scale.[401] 50% of food consumed within the UK comes from overseas.[402] The 25 YEP makes reference to "leaving a lighter footprint" on the global environment, but does not identify any action to address the level of the UK's consumption.[403] The Environment Bill is also silent on the UK's global environmental footprint.

267. The lack of regard for consumption has lead WWF and the campaign charity Population Matters to find that the Government has sought to address the UK's environmental impact predominately through process, efficiency and technological changes.[404] They argue this will never address the "transformative" action IPBES, Professor Dasgupta and almost every other authoritative study into the global environment is calling for. WWF, RSPB and Population Matters recommend that the Government set a global environmental footprint target to address this deficiency.[405] The WWF suggest this could be included in the Environment Bill, alongside a legal due diligence obligation for UK businesses to assess the impact of their supply chains.

268. Environmental stakeholders are similarly calling for the 2030 Biodiversity Framework, due to be agreed at COP15, to include a global goal for countries to reduce their ecological footprint. If the UK were to adopt an ecological footprint target, it would be able to showcase world leading environmental legislation that could spur further adoption at COP15.

269. When asked about the UK setting an environmental footprint target, Secretary George Eustice said:

> there is a growing recognition that simply measuring emissions as a country isn't necessarily the right thing to target, and looking at a consumption-based measure probably does make more sense in the longer term… We have had some initial discussions with the Treasury. There is an openness in Government to move, over time, towards more of a consumption-based target, but we are not at the position yet where we would be able to do so with confidence that we have the right data going in to be able to measure it in that way.[406]

270. In 2018 the Government announced it would devise an indicator on "Overseas environmental impacts of UK consumption of key commodities" as part of the 25 YEP indicator framework. The indicator is still in development.[407]

401 JNCC (BIO0012)
402 JNCC (BIO0012)
403 WWF (BIO0047); Population Matters (BIO0033)
404 WWF (BIO0047); Population Matters (BIO0033)
405 WWF (BIO0047); Population Matters (BIO0033); RSPB (BIO0023)
406 Q182
407 Defra, Outcome Indicator Framework for the 25 Year Environment Plan: 2021 Update (June 2021)

Our view

271. **Tackling over-consumption of natural resources is essential to meet the Government's net zero goals and to reverse biodiversity loss. The first step in doing this is recognising the need to reduce the UK's overall consumption. We welcome indications that Ministers are starting to consider adopting a consumption-based measure of the UK's environmental impact.**

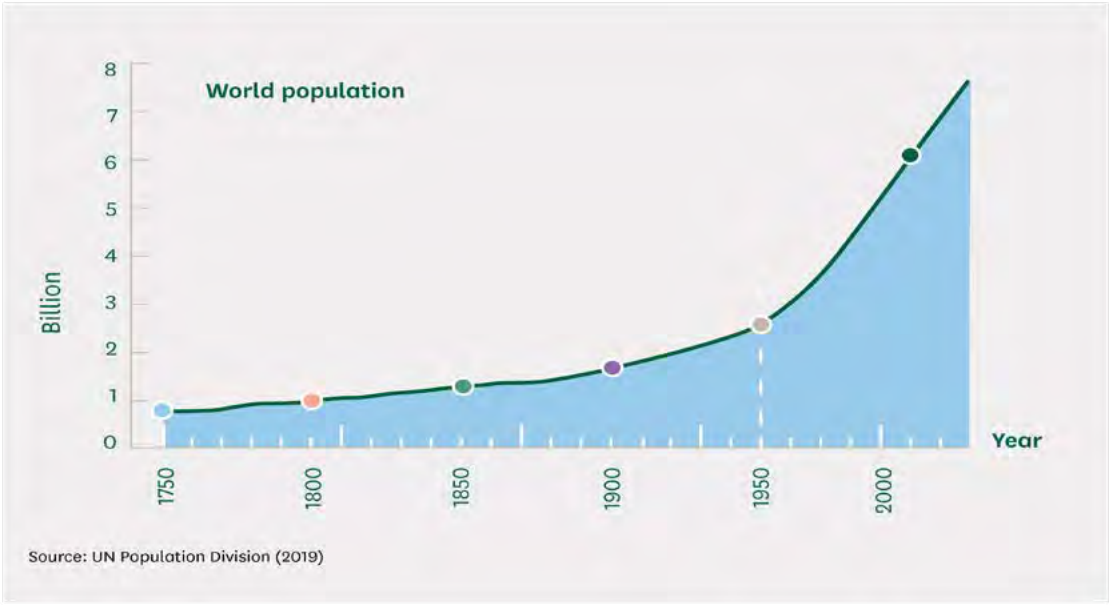
272. **Recommendation:** ***We recommend the Government start the process of setting an environmental footprint target by launching a consultation ahead of COP15 on how to model the overseas environmental impact of UK consumption. This could feed into Defra's work on international indicators within the Outcome Indicator Framework.***

273. ***The UK's relationship with international biodiversity loss will be explored in further detail in our second Biodiversity and Ecosystems report.***

Population

274. As mentioned, humanity's demands on the biosphere are also related to human population numbers.[408] The global population has trebled in size from approximately 2.5 billion in 1950 to around 7.7 billion in 2019[409] (see Figure 13). This has had a dramatic effect on the biosphere.[410]

Figure 13: World Population[411]



Source: UN Population Division (2019)

408 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2020) (London: HM Treasury). p 35

409 UN Population Division. World Population Prospects 2019 Highlights (2019)

410 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury)

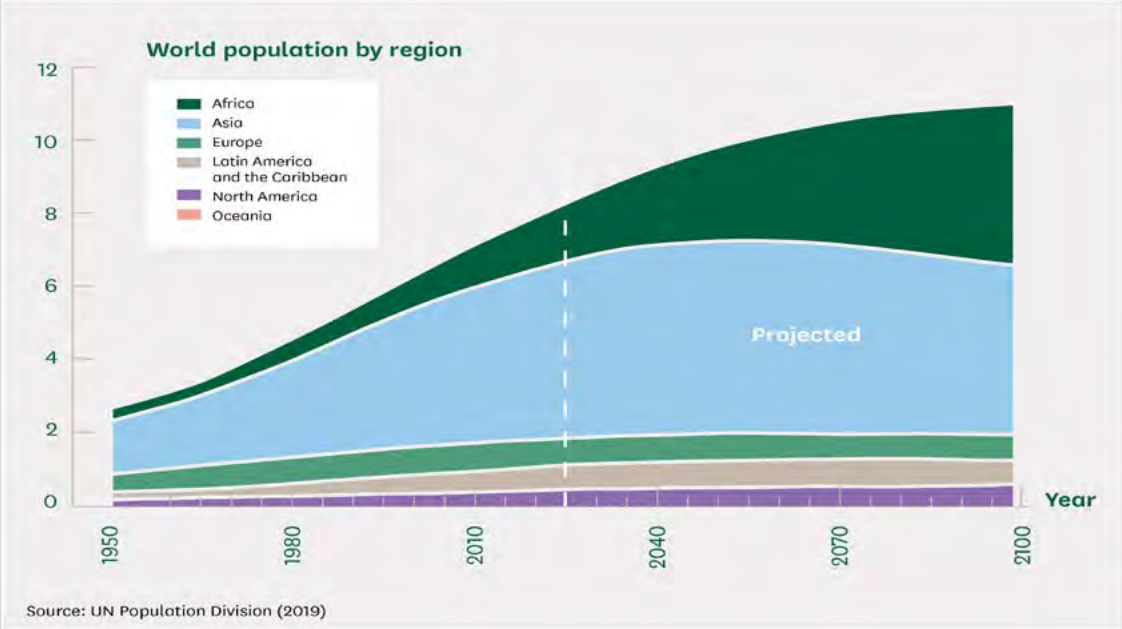
Chapter 4: Human Impact on the Biosphere.

411 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2020) (London: HM Treasury). P 30

275. The world's human population is expected to increase to 10.9 billion by 2100. More than three-quarters of the increase from today's 7.7 billion is expected to be in sub-Saharan Africa. Sub-Saharan Africa represents around 3% of the world economy.[412] So Professor Dasgupta firmly asserted that:

276. sub-Saharan Africa cannot remotely be held responsible for the global environmental problems we face today.[413]However, with the region's annual output set to rise, population and subsequent economic growth is likely to have severe adverse consequences on ecology.[414] Human impact is a function of the relationship between population, affluence and technology, and clearly the average person in the developed world has an impact far in excess of the average in poorer countries.

Figure 14: Total population by region with projections to 21004[415]



Source: UN Population Division (2019)

277. The Review made clear that, in addition to restructuring consumption and production patterns, voluntary measures to stem future population growth were necessary to stop humanity's ecological footprint exceeding the biosphere's regenerative capacity. Professor Dasgupta recommended this be addressed through two main methods:

a) Readdressing the significant under-investment in Overseas Development Assistance (ODA) directed at family planning. Professor Dasgupta stated 53 million women in sub-Saharan Africa reported that they wanted to stop or delay childbearing but were not using any modern method of contraception.[416] He observed that family planning was a neglected feature of public policy; only

412 UN Population Division, World Population Prospects 2019 Highlights (2019)

413 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2020) (London: HM Treasury). p 36

414 Barrett et al, 'Social dimensions of fertility behaviour and consumption patterns in 68 the Anthropocene', Proceedings of the National Academy of Sciences, vol 117/12 (2020)

415 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2020) (London: HM Treasury). p 31

416 UN Population Division. World Population Prospects 2019 Highlights (2019)

about 0.6% of overseas development assistance was allocated to it.[417] Professor Dasgupta noted that this was despite evidence that a dollar spent on family planning and reproductive health was more beneficial than a dollar spent on agricultural research, rotavirus vaccination, preschool education, trade facilitation, or even mosquito nets;[418]

b) Improving women's access to finance, information, and education. The Review showed giving women greater control over their lives could lift living standards and result in lower fertility rates—meaning less pressure on natural resources. A view shared by campaign charity Population Matters.[419]

UK Overseas Development Assistance for family planning and reproductive health care

278. Given Professor Dasgupta's emphasis of an under-investment in ODA for family planning, we examined the UK's record on spending in this area. Since 2020, the Government has made a series of announcements regarding its intention to reduce ODA for 2020/21[420] as well as overall (from 0.7% of Gross National Income to 0.5%).[421] The Government have said their intention is to return to 0.7% when the fiscal situation allows. Currently the Government funds a raft of programmes and organisations directed at increasing family planning and reproductive health care. This includes the Women's Integrated Sexual Health (WISH) Programme, funding for the UN's sexual and reproductive health agency (UNFPA), and for the Global Financing Facility (GFF) for Women, Children and Adolescents.[422]

279. In 2019, the Government spent £252 million on family planning projects and £151 million on reproductive healthcare projects.[423] Spending on family planning accounted for 18% of the UK's bilateral health spending in 2019.[424] The Government had made a series of pledges for future spending in this area. For example, in 2019 the Government committed to providing £600 million over 2020–2025 for women's sexual and reproductive health and rights.[425] £425 million of this was pledged to the UNFPA Supplies fund.[426]

280. In April, the UNFPA reported that the Government intended to cut 85% of its funding to the UNFPA Supplies fund.[427] The UNFPA said the UK had committed to £154 million for its projects this year but now will get around £23 million.[428] Possible funding cuts for

417 Grollman, 'Donor funding for family planning: levels and trends between 2003 and 2013', 574 Health Policy and Planning, vol 33 (2018) pp 574–82.
418 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 75
419 Population Matters (BIO0033)
420 Letter from Secretary of State Dominic Raab, dated 22 July 2020, to International Development Committee Chair Sarah Champion on ODA funding
421 HC Deb, 25 November 2020, col 830 & col 850 [Commons Chamber]
422 Donor Tracker UK – Global Health, accessed 16 Feb 2021
423 FCDO, National Statistics: Statistics on International Development: Final UK Aid Spend 2019 (March 2021)
424 Ibid
425 DFID Healthcare for everyone must prioritise women's sexual and reproductive health and rights, says UK at UN General Assembly (September 2019)
426 UNFPA United Kingdom commits £425 million to family planning, preventing millions of unintended pregnancies and hundreds of thousands of deaths worldwide (October 2020)
427 UN News, UK's 85% family planning aid cut will be devastating for women and girls says UNFPA, while UNAIDS also 'deeply regrets' cuts, 29 April 2021
428 Ibid

girl's education, the WISH Programme and bilateral aid to Africa were also discussed in an evidence session with the Secretary of State for Foreign, Commonwealth and Development Affairs and the House of Lords International Relations and Defence Committee.[429] The Government has not released figures for cuts to specific aid programmes but has said no area was immune to cuts. When questioned on the budget for sexual and reproductive healthcare, the Foreign Secretary, Rt Hon Dominic Raab MP, said:

> It is a very important area, and we want to try to preserve as much as we can. I do try to take a strategic view rather than just take 20% or whatever it may be off each programme, but we are not in a position yet to firm up on the precise numbers.[430]

The Government has said that the UK remains a world leader on international development; in 2020 the UK was the third biggest aid donor globally.[431]

Our view

281. **Professor Dasgupta has emphasised that family planning and sexual and reproductive healthcare is a neglected feature of public policy. The unmet demand for family planning is huge and addressing human population numbers is also key to reducing our demands on the biosphere. The UK needs to remain a global leader in supporting family planning and encouraging other countries to do the same. Announced cuts to the UK overseas development assistance threatens this. Given the Government's intension to take a strategic approach to cuts, and the disproportionate benefits of family planning and sexual and reproductive healthcare compared to other development initiatives, spending in this area needs to be prioritised.**

282. **Recommendation:** ***In response to this report, the Foreign, Commonwealth and Development Office should set out the extent to which the announced cuts to the UK's aid budget will affect overseas development assistance for family planning and reproductive healthcare. We recommend that ODA for family planning and reproductive healthcare be protected: at the very least the percentage allocated to both these areas should be equal or higher than 2019 levels.***

429 HL Select Committee on International Relations and Defence, Oral evidence: One-off evidence session with Dominic Raab MP, First Secretary of State and Secretary of State for Foreign, Commonwealth and Development Affairs. Tuesday 27 April 2021

430 Ibid Q3

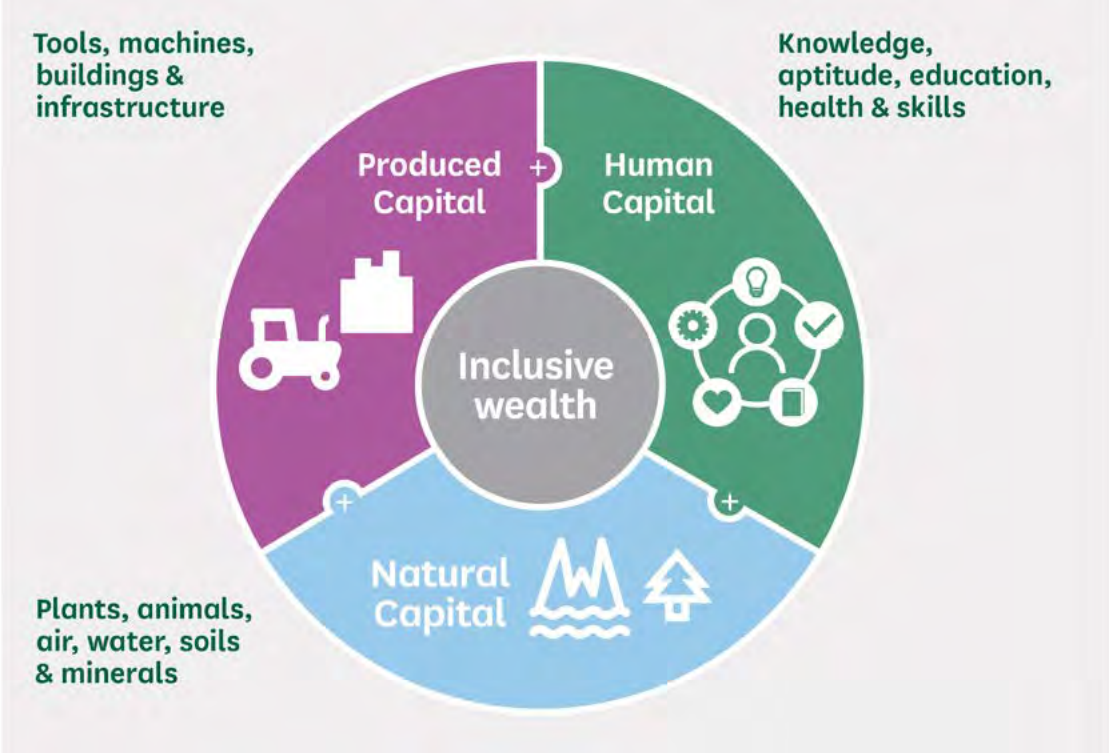
431 International Development Committee Oral evidence: Future of UK aid, HC 1141 Thursday 22 April 2021. Q134; BBC, Foreign aid: UK cuts its pledge to UN family planning by 85%, 29 April 2021

Changing measures of economic success

283. Standard economic models view economies as outside the biosphere.[432] For more than 70 years Gross Domestic Product (GDP) has been the primary measure of economic success. Professor Dasgupta stated GDP remains essential in short-run macroeconomics as a measure of economic activity, but it does not measure an economy's 'productive capacity'.[433] GDP ignores the depreciation of assets, including the natural environment. Therefore, Professor Dasgupta said a focus on GDP "encourages us to pursue unsustainable economic growth and development."[434] Similar criticisms of GDP have been made by academics and practitioners for many years.[435]

284. Instead of GDP, Professor Dasgupta recommended countries focus on maximising 'inclusive wealth'. Inclusive wealth is the value of an economy's portfolio of capital goods, this includes produced, human and (importantly) natural capital. A rise in inclusive wealth correlates with a rise in social well-being. Professor Dasgupta saw introducing natural capital into national accounting systems as a critical step in moving to measurements of inclusive wealth. This section examines the UK's progress in natural capital accounting and explores how the HM Treasury could move beyond GDP as the primary measure of economic success.

Figure 15: Inclusive wealth concept[436]



Source: Dasgupta (2019)

432 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2020) (London: HM Treasury). p 45

433 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) p 5

434 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Headline Messages, (2021) (London: HM Treasury). p 7

435 Brundtland, G. H. Report of the World Commission on Environment and Development: Our Common Future (1987 ; Jackson, Prosperity without Growth (2009); Fioramonti, L Gross Domestic Problem (2013)

436 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2020) (London: HM Treasury).

Natural capital accounting as a stepping-stone to inclusive wealth

285. Natural capital accounting involves estimating the value of 'natural capital'—the planet's stock of renewable and non-renewable natural resources, like plants, soils and minerals. A country's natural capital accounts would provide an accounting value of the entire stock of natural capital to which the economy has 'claim'.

286. Frameworks for natural capital accounting and assessment exist but are still in their infancy.[437] Significant design and measurement challenges remain, for example in measuring the worth of soils, water and air. However, Professor Dasgupta believed "this should not deter governments and businesses from supporting and embracing [natural capital accounting]."[438] Professor Dasgupta highlighted that when GDP was first used, it was criticised as imperfect too, but as it was used the measure was refined, he believed there was "no reason we cannot expect the same for natural capital accounts".[439]

UK progress on natural capital accounting and measures beyond GDP

287. In December 2012, the Office for National Statistics (ONS) and Defra launched a joint project to develop natural capital accounts for the UK and incorporate natural capital into the UK Environmental Accounts by 2020.[440] This has been achieved. The Natural Capital Accounts tables were published as part of the Environmental Satellite Account within the UK's National Accounts for the first time in 2020.[441] To date, there are natural capital accounts for several broad habitats, including for woodland and freshwater. The ONS said development work was continuing to improve the methods and range of ecosystem services being estimated.

288. The ONS compile the core UK national accounts in line with internationally agreed guidance and standards set by the UN's System of National Accounts (SNA). This ensures international comparability and quality of national accounts, but the SNA does not currently allow direct incorporation of environmental accounts into core national accounts. Hence why the UK environmental accounts remain separate. The ONS told us they are involved in discussions to revise the SNA, and international guidance does not restrict the ONS developing "experimental alternatives separate to the more traditional accounts." Professor Dasgupta recommended international players collaborate to standardise data and modelling approaches for natural capital accounting and increase investment in ecosystem assessment.

289. Inspired by the Dasgupta Review, the ONS is developing experimental 'Inclusive Wealth' measures, that look to include natural and other 'missing capitals'. They are also exploring how to capture other aspects of economic activity that fall outside GDP, such as household production. The ONS aim to compile more unified estimates of different capital stocks (human, produced and natural capital) to help inform decision-making. HM Treasury have recently announced it will provide further funding to the ONS to improve its natural capital estimates and maximise their policy relevance.[442] In response

437 Institute and Faculty of Actuaries (BIO0068)
438 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Headline Messages, (2021) (London: HM Treasury). p 7 (paraphrase)
439 Dasgupta, The Economics of Biodiversity Review Launch Event (February 2021)
440 ONS, UK Natural Capital: interim review and revised 2020 roadmap (2018)
441 ONS, UK National Accounts, The Blue Book: 2020 (October 2020)
442 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)

to the Dasgupta Review the Government have said that it " recognises that GDP has its limitations and should not be seen as an all-encompassing measure of welfare–something it was never designed to be."[443]

Encouraging international institutions to incorporate natural capital

290. Professor Dasgupta also recommended "incorporating natural capital accounts in macroeconomic surveillance",[444] such as the International Monetary Fund surveillance activities which involve monitoring the economic and financial policies of its 190 member countries to identify risks to stability and recommend policy adjustments. The IMF is funded by contributions (or quotas) from its member states and the size of the quota determines the voting power each member has within the Fund.[445] The UK is the fifth largest contributor to the IMF,[446] sits on the Executive Board and has the fourth greatest share of eligible Fund votes, equal with France.[447] The UK could leverage its position in the IMF to encourage incorporation of natural capital accounts in surveillance activities.

291. Rt Hon Lord Goldsmith, Minister for Pacific and the Environment, suggested a similar action, in regard to other global funds to which the UK is a major donor:

> even though we are one of the biggest donors to the multilateral system, we have not flexed our muscles as much as I think we should. As major contributors to the World Bank development fund, for example, should we not be doing more to use that leverage to require the World Bank to align its portfolio with nature and with Paris? My view is that we can be much more robust than perhaps we have been in recent years. That does not require us to put in more money.[448]

292. In response to the Dasgupta Review the Government is calling on Multilateral Development Banks to mainstream nature across their operations, and to formalise these commitments by way of a joint statement.[449]

Criticisms of the Natural Capital approach

293. The Natural Capital approach has long been criticised by some environmental campaigners who argue that any attempt to "put a price on nature" simply increases the likelihood of it being monetized and degraded.[450]

294. One point of contention is that natural capital approaches seem to imply a degree of substitutability both within natural capital and between natural capital and man-made

443 Ibid p 20
444 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 74
445 IMF, Quota Reform (2016), accessed 19 Feb 2021
446 UK Data Service, IMF, accessed 19 Feb 2021
447 IMF, IMF Executive Directors and Voting Power , accessed June 14 2021
448 Q196
449 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
450 Aled Jones, CUSP - Monetising nature: a metaphor too far?, July 14 2018 ; The Guardian, The UK government wants to put a price on nature – but that will destroy it, 15 May 2018

capital. Substitutability implies that habitat restoration in one place can offset destruction in another. This is contested; the Oxford Smith School of Enterprise and the Environment found that most substitutability estimates do not stand up to careful econometric scrutiny.[451]

295. Katie Kedward, an economist at UCL's Institute for Innovation and Public Purpose, has said the natural capital approach relies on the idea of 'efficient markets' as the main mechanism to preserve the environment. She argued this was problematic because markets are poorly suited to capturing the non-linear tipping points, feedback loops, and web of connections that characterise ecology. She adds that such financialisation also effectively removed the rights of nature to exist on its own terms.

296. Professor Dasgupta acknowledged that natural capital accounting cannot capture the entire value of nature. He noted:

> Nature should be protected and promoted even when valued solely for its uses to us, but we would have even stronger reasons to protect and promote it if we were to acknowledge that it has intrinsic value.[452]

Our view

297. **Economic models that do not value nature and ecosystems cannot address climate change and biodiversity loss. GDP is a well-established measure of economic activity, but as Professor Dasgupta has highlighted, by itself it is not an adequate way to assesses the UK's economy. GDP does not account for the depreciation of the natural environment. We are encouraged by the innovative work of the ONS to develop measures and frameworks beyond GDP.**

298. **Recommendation:** ***The Government should detail how it intends to move beyond GDP as the primary measure of economic activity, towards a concept of inclusive wealth, which includes consideration of the UK's produced, human, and natural capital.***

299. **Further work is needed on the natural capital accounting and assessment methodology, but this should not stop the Government and businesses using natural capital accounting now. Accounting for natural capital in some way, is better than ignoring it completely because the system is not yet perfect. As a world leader in the development of natural capital accounts, the UK has an important role to play in promoting this practice international.**

300. **Recommendation:** ***The UK should work with countries at COP15, COP26 and through the G7 to construct an internationally agreed way to integrate natural capital accounts into core national accounts. This aligns with two of the Government's COP26 presidency goals: finance and collaboration. The UK should also use its leverage within the IMF, to call for the incorporation of natural capital accounts in macroeconomic surveillance undertaken by IMF.***

451 Cohen et al, Is Natural Capital really substitutable? Institute for New Economic Thinking, Oxford Martin School (2018)

452 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 78

301. **The Committee acknowledges that currently natural capital approaches cannot capture intrinsic values of nature, but they do serve as a first stepping-stone to valuing the natural environment in existing economic models.**

Economic decision-making

302. To address biodiversity loss and climate change, nature needs to factor into economic decision-making, in the same way infrastructure or skills does. Just as Professor Dasgupta found GDP to be an inappropriate way to measure economic success, he also found GDP to be "wholly unsuitable for appraising investment projects and identifying sustainable development." Instead, Professor Dasgupta recommended appraisal of investment projects be based on whether a project increases 'inclusive wealth'. This section examines the Government's record of integrating nature and climate concerns into decision-making and explores how this can be improved.

Government appraisal of projects and policies: the Green Book

303. The Green Book is the guidance issued by HM Treasury on how to appraise policies, programmes and investment projects. In November 2020 the Green Book was updated with the aim to give a more comprehensive picture of cost and benefits of proposals, including non-monetisable, non-economic impacts.[453] The updates aimed to reorientate the appraisal process to deliver the Government's strategic policy ambitions better, like net zero and the levelling up agenda. Guidance on appraising environmental impacts was also re-visited. New guidance is currently being developed on the valuation of wellbeing, and the valuation of biodiversity.

304. During an evidence session with the Public Accounts Committee, representatives from the Treasury and BEIS confirmed updates to the Green Book will not mean there is a blanket net zero mandate for all major investments.[454] The Treasury told us departments "should be considering" carbon emissions and environmental impacts when appraising projects and policies, but this does not always happen on a consistent basis.[455] This was in part due to a lack of science capability (following reductions in funding between 2010 and 2015). PAC concluded that Defra and HM Treasury do not yet understand the total costs required to meet long-term environmental goals. And that environmental impacts were still not being taken into account in spending decisions. Conservation NGOs cite the Government's £27.4 billion road-building programme, its continuing freeze on fuel duty and the lack of green conditions on the new super deduction tax break, as evidence of this.[456] The Treasury recognised a lot more work was needed to factor the environment fully into the spending review process.[457] HM Treasury have said it will be joining the Paris Collaborative–an OECD-led initiative which aims to explore best practice on tools to assess the alignment of national expenditure and revenue processes with climate and other environmental goals.[458]

453 The Construction Index, National Infrastructure Strategy: The Green Book Review, 26 November 2020
454 Public Accounts Committee, Oral evidence: Achieving Net Zero, HC 935
455 Q246
456 The Guardian, Rishi Sunak urged to end hostility to green spending or miss net zero target, 20 April 2021; The Ecologist, Sunak's fossil fuel super tax break, 8 March 2021
457 Q246
458 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)

Better integration of nature into economic decision-making

305. The Dasgupta Review and subsequent responses to it have offered ways to integrate nature better into economic decision-making. This includes: reviewing the fiscal framework; conducting net zero and nature stress tests; and using the Net Present Value to appraise investment projects. These options are examined in turn.

Reviewing the fiscal framework

306. The Government is in the process of reviewing the fiscal framework.[459] The fiscal framework includes the fiscal rules, independent fiscal institutions, and budgetary processes, including spending and taxation that shape fiscal policy making at the national level. The fiscal rules currently focus on managing the budget, public sector investment and debt.[460] The review provides the opportunity to construct an economic strategy focused on delivering long-term societal well-being, sustainability, and economic resilience.

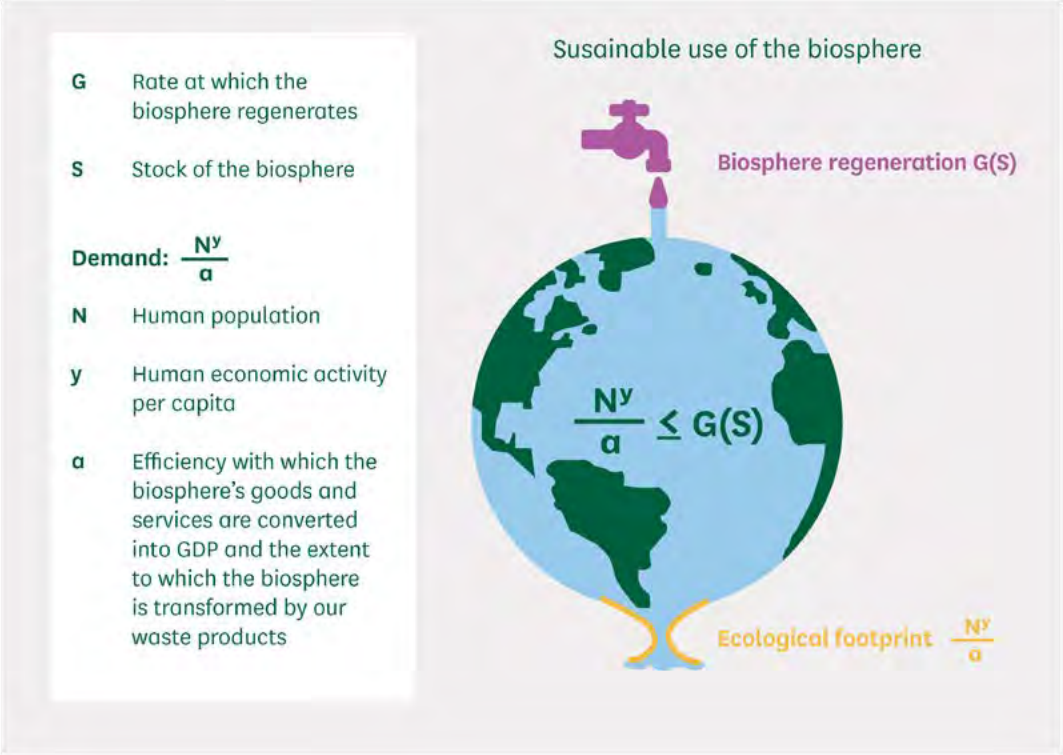
307. The WWF recommended the Government introduce a new sustainability and resilience-oriented fiscal policy goal (or rule), so UK public spending and tax policies would be refocused towards building a strong and resilient economy in the medium to long term.[461] In this way, the WWF believed the UK could harness fiscal policy to help address major future risks to the UK (including climate change and biodiversity loss related risks such as flooding, drought and soil erosion).

308. The Institute and Faculty of Actuaries recommended that Professor Dasgupta's impact inequality formula ($Ny/\alpha < G(S)$), which assesses whether we are over-exploiting nature beyond its capacity to regenerate, be put at the heart of the Government's economic objectives and setting of financial regulatory framework.[462] The Institute recommended that "at a minimum, regulators should have regard to retaining economic activity within sustainable resource limits. "[463]

459 The Terms of Reference for the Review are here, pages 22 to 24
460 Fiscal rules are here, on page 21.
461 WWF,WWF UK RESPONSE TO THE DASGUPTA REVIEW (2021)
462 Institute and Faculty of Actuaries (BIO0068)
463 Institute and Faculty of Actuaries (BIO0068)

Box 7: Professor Dasgupta's Impact Inequality formula[464]

The Review calls humanity's impact on the biosphere per unit of time the global ecological footprint and has developed a formula to evaluate this. G(s) represents the supply of nature. Ny/a represents the demands humanity puts on nature. The supply of nature is made up of the stock of natural capital that already exists (S) and the rate at which the biosphere regenerates (G). The demand humanity puts on nature result from human population numbers (N), per capita human consumption (y) and the efficiency with which the biosphere's goods and services are converted into GDP and transformed into waste (a). For economic development to be sustainable Professor Dasgupta argues the demands humanity puts on nature must match nature's ability to meet these demands.



Source: Dasgupta (2021)

Net zero and nature stress tests

309. Many submissions advocated judging spending and infrastructure decisions against a form of sustainability test. The WWF recommended that the new fiscal framework should include a 'Net Zero Test', to ensure that spending packages are aligned with the Paris Agreement.[465] This would involve assessing the emissions impacts of tax and spending decisions to ensure that on aggregate their impacts are aligned with achieving the UK's Carbon Budget.

464 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) p 118
465 WWF, WWF UK RESPONSE TO THE DASGUPTA REVIEW (2021)

310. The Bank of England's Insurance Stress Test for 2019 included an exploratory exercise into climate change stress testing.[466] The Bank plans to develop this further over the course of this year. The Institute and Faculty of Actuaries recommended a similar approach could be adopted to develop stress tests for biodiversity loss.[467]

311. We asked the Treasury whether the 2021 Budget would be stress tested against net zero and nature goals. Kemi Badenoch MP, the Exchequer Secretary to the Treasury, said the Treasury "do not have a way of saying an investment is good for net zero or not good for net zero,"[468] but work was on-going to develop ways to assess the climate and biodiversity impact of policies, including through the Treasury's Net Zero Review and its response to the Dasgupta Review.[469] In March 2021 the Government published its draft policy statement on the Environmental Principles. As set out in the Environment Bill, Ministers will have to take due regard of the policy statement when making policy, to minimise or avoid environmental harm. The Environment Bill (as drafted) exempts HM Treasury from being bound by these principles by exempting taxation, spending and resource decisions from their application. When conducting pre-legislative scrutiny of the Environment Bill, the Environmental Audit Committee in the 2017 Parliament recommended that general taxation and spending should not be omitted from the principles, since many environmental measures depend on changes to the tax system. The Government have recently announced its intention to consult on proposals for reforming the Better Regulation Framework, to consider how environmental impacts can be best taken into account in the formation of regulatory policy.[470]

Evaluating the net present value of infrastructure projects

312. Professor Dasgupta recommends that the appraisal of investment projects be based on whether projects increase 'inclusive wealth'. Professor Dasgupta said this be estimated using a formula to calculate the Net Present Value (NPV) of the flow of net social benefits a project brings. Dasgupta emphasises this concept is not new, and is already in use:

> Economists have long advocated that the criterion for project appraisal should be the net present value (NPV) of the flow of social benefits. The idea is to measure the flow of benefits, net of costs, in terms of the accounting values of the flow of goods and services. The procedure then involves summing the flow of net benefits, discounted at social discount rates… It is entirely satisfying that a criterion long in use in social cost-benefit analysis matches the requirement that policy analysis should be conducted in terms of the effect of policies on inclusive wealth.[471]

466 Bank of England, Climate Change, accessed 22 June 2021
467 Institute and Faculty of Actuaries (BIO0068)
468 Q255
469 Qq242–246
470 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
471 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury). p 66

313. Professor Dasgupta added that if the NPV of a project was positive, the project would increase intergenerational well-being. The Treasury told us that any proposed changes to the appraisal process would have to meet the high standards Government has for policy review, and the Treasury's response to Professor Dasgupta's recommendations would not be rushed.[472]

314. Social discount rates (SDRs) are used to put a present value on costs and benefits that will occur later.[473] In response to the Dasgupta Review, RSPB with Vivid Economics, Green Alliance and Link, have recommended reviewing the appropriateness of the current social discount rate to ensure that it is being used in a manner that helps to rebuild natural capital over time.[474] As with climate change, the social discount rate is crucial for working out how much today's society should invest in trying to limit the impacts of biodiversity loss into the future. The Treasury told us there could be a case for lowering the discount rate on environmental benefits; consultation was ongoing in this area and would conclude this year.[475]

Box 8: Road building—a case study on the importance of considering environmental impacts

The Government has committed to spending £27.4 billion between 2020 and 2025 in England's 'largest-ever' road-building programme. Environmental organisations have raised concerns that the road building programme is incompatible with the Government's goals on nature recovery.[476] They argue that new roads will further accelerate the loss of biodiversity by severing and further fragmenting habitats. The extra traffic generated by roads will further stimulate more car-dependent housing and out of town retail parks and business parks.[477]

Britain currently has 247,000 miles of road. It is one of the most road-dense regions in the world, with over 80% of land falling within half a mile of a road.[478] Professor Dasgupta told us fragmentation was one of the fastest ways of destroying biodiversity;[479] it can reduce biodiversity by up to 75%.[480] This is because ecological processes are non-linear, so halving an ecosystem reduces the productivities of the two halves by more than half. Professor Dasgupta warned policymakers needed to be very careful in making policy decisions that fragmented habitats. Julian Glover, Chair of the Landscapes Review, told us road authorities and Network Rail needed to recognise their role in creating the national nature recovery network.[481]

Our view

315. **At present, the impact of Government policies and projects on nature is not adequately factored into spending decisions. As a result, the Government is not on track to meet its nature recovery goals. On aggregate, HM Treasury and other departments spending decisions must support not undermine the realisation of the Government's environmental goals and legal commitments. The Treasury has tried to**

472 Qq259–260
473 LSE Grantham Institute, What are social discount rates? (2018)
474 RSPB et al Transitioning to a Nature-positive Economy by 2030: Implementing the Dasgupta Review on the economics of biodiversity (2021)
475 Q262
476 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060); Edie, Green groups outraged as government presses on with £27.4bn roads plan , 24 August 2020
477 ENDS report, Government's road strategy threatens net zero target, 13 July 2020
478 The Guardian,) 'We've covered huge swathes of the UK in tarmac': how roads affect birds, 1 September 2020
479 Q133
480 Haddad et al., Habitat fragmentation and its lasting impact on Earth's ecosystems. (2015) Science Advances
481 Q7

prioritise the environment better in spending decisions through updating its Green Book guidance on evaluating projects. Through the Treasury's Net Zero Review, its continuing response to the Dasgupta Review and new guidance on the valuation of biodiversity, the Treasury aims to integrate climate and environmental considerations further into spending decisions. At present, departments are not doing this consistently and environmental considerations are not embedded in the spending review process. The Government's £27 billion road-building programme is an example of the type of policy decision likely to conflict with goals on nature recovery. Contrary to this Committee's recommendations, when making policy on spending, taxation and the allocation of resources, Ministers do not have to apply the Environmental Principles. To achieve the transformational change necessary to address biodiversity loss, nature must be considered to ensure the best balance in policy-and decision making. Failure to do so will mean we continue to over-exploit nature, to the detriment of the natural world and ourselves.

316. **Recommendation:** ***We support the recommendation of the Public Accounts Committee that the Treasury's next Comprehensive Spending Review should set out how the full value of environmental impacts has been taken into account, and the impact of spending decisions on meeting government's long-term environmental goals. To achieve this, every department needs to account for the costs and benefits to nature when appraising projects and policies. We reiterate the recommendation of the 2017–19 Committee that general taxation and spending should not be exempt from the Environmental Principles.***

317. **The Government has the opportunity to create a fiscal framework focused on delivering well-being, sustainability and economic stability. The current fiscal rules focus on managing the budget, public sector investment and debt. There is scope to extend this so balancing our demands on nature with nature's capacity to meet these demands, becomes central to government's economic objectives. This can help to deliver a stable economy in the long-term which is resilient to nature-related financial risks. The Treasury has not stress tested the 2021 Budget and 2020 Spending Review against net zero or nature goals. Without sustainability tests on spending decisions, we risk moving further away from realising environmental targets.**

318. **Recommendation:** ***The Government should include a Net Zero test of the 2021 Budget in its Net Zero Review. Net Zero tests should be refined for future fiscal events to assess the climate impacts of taxation, spending and resource decisions. The Government should develop nature tests to ensure spending packages are aligned with the Post-2020 Biodiversity Framework. A new fiscal rule should be added to the fiscal framework which focuses on balancing our demands on nature with nature's supply.***

Financial institutions and systems

319. Professor Dasgupta concluded that "our global collective failure to achieve sustainability has its roots in our institutions. Many of the institutions we have built have proved to be wholly unfit to curb our excesses; worse, they have helped to enlarge the gap".[482] Thus the final broad transition he advocated for was the transformation of institutions and systems—in particular, finance and education systems. This section considers how the UK can contribute to transforming financial institutions.

The existing financial system

320. The Dasgupta Review argued that the existing financial system was fundamentally tilted against nature, with financial flows devoted to enhancing our water, air, soil and other assets dwarfed by subsidies and other investments that exploit those assets.[483] This was explored in a previous section "Perverse subsides and the biodiversity funding gap".

321. To transform the existing financial system, Professor Dasgupta recommended shifts in national government, business and financial institution arrangements and new supra-national institutional arrangements, directed at enhancing our stock of natural assets and encourage sustainable consumption and production activities.[484] To do this requires replicating and building upon the successes of integrating climate-related risks into the financial system.

Creating the narrative to protect the environment

322. The Institute and Faculty of Actuaries (IFoA) said central to creating a financial regulatory framework that integrates biodiversity risks, will be the creation of a narrative that policy responses to stem biodiversity loss are inevitable and imminent.[485] They explained that asset owners and fiduciaries more actively managed climate risks, when the portfolio risks that would inevitably come with governments' climate change policies, were forecasted. The Institute noted compared with climate change, the primacy for government action to address biodiversity loss was not yet apparent. They recommended building a parallel narrative around the policy response to the risks of biodiversity loss and thus its financial market impacts, to help engage investors in the management of biodiversity risks.[486]

Understanding the economic and financial impacts of biodiversity risks

323. The Government previously announced that by 2022 all listed companies and large asset owners would be expected to make climate risk disclosures in line with the recommendations of the Task Force on Climate-related Financial Disclosures (TCFD). As businesses are taking up the call for climate-related financial disclosures, several

482 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury).p76
483 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Abridged Version, (2021) (London: HM Treasury).p 76–78
484 Ibid
485 Institute and Faculty of Actuaries (BIO0068)
486 Institute and Faculty of Actuaries (BIO0068)

submissions called for nature-related financial disclosures to become mainstream too.[487] Professor Dasgupta argued this would allow the management and mitigation of risks and uncertainty resulting for humanity's unsustainable engagement with nature. However, UCL's Institute for Innovation and Public Purpose has questioned whether market-led initiatives alone are capable of mobilising sufficient capital for nature restoration and managing the financial risks associated with biodiversity loss.[488] The Institute highlighted that the complex dynamics of biodiversity loss, the difficulty in monetising conservation projects, and the disputes that can arise over ecosystem property rights, makes biodiversity ill-suited to market-based approaches.

324. An initiative to establish a Taskforce on Nature-related Financial Disclosure (TNFD) was announced in July 2020 by a coalition of partners. It is supported by financial institutions, and governments including the UK. The TNFD will be tasked with delivering a framework to guide nature-related financial disclosure by the end of 2022.[489] RSPB, Wildlife & Countryside Link and the Green Alliance are calling on the UK Government to commit to legislate for mandatory disclosure of nature-related impacts by businesses, including the financial sector, as soon as the TNFD and taxonomies are ready.[490] The Institute and Faculty of Actuaries (IfoA) also recommended the Prudential Regulation Authority (PRA), the Financial Reporting Council, and the Financial Conduct Authority (FCA) to raise awareness, provide guidance and mainstream these requirements.[491] In 2019, the PRA published a supervisory statement which outlined their expectations for how their regulated firms should manage climate-related risks. The IfoA noted this had been helpful in engaging firms on these risks, and a similar approach could be adopted to encourage management of nature-related financial risks.[492] The Bank of England could support better understanding of risks through conducting biodiversity loss stress testing exercises, in a similar fashion to exploratory exercises done for climate change.[493]

325. Alongside disclosure of nature-related financial risks, Professor Hill recommended that all businesses, institutions, and public sector organisations be required to undertake "corporate natural capital accounting".[494] This would involve measuring the impact operations have on natural capital in order to reduce these impacts and those of their supply chain. By major fund managers collectively demanding natural capital accounting by listed companies, attributing investment risk to companies unwilling to participate and directly linking companies' value to their interactions with nature, Professor Hill believed investment will switch to companies accounting for their natural impacts and more companies will undertake natural capital accounting. The JNCC also recommended a natural capital approach to unlock private sector investment in nature.[495]

487 Professor David Hill (Chairman at The Environment Bank Ltd) (BIO0007); Institute and Faculty of Actuaries (BIO0068); Bright Blue (BIO0006)
488 UCL INSTITUTE FOR INNOVATION AND PUBLIC PURPOSE (BIO0018)
489 WWF, Taskforce on Nature-related Financial Disclosure (TNFD) (August 2020)
490 RSPB et al., Transitioning to a Nature-positive Economy by 2030 Implementing the Dasgupta Review on the economics of biodiversity (2021)
491 Institute and Faculty of Actuaries (BIO0068)
492 Institute and Faculty of Actuaries (BIO0068)
493 Bank of England Climate Change, accessed 17 May 2021]
494 Professor David Hill (Chairman at The Environment Bank Ltd) (BIO0007)
495 JNCC (BIO0012)

Using fiduciary duties to combat short-termist approaches

326. Professor Dasgupta recognised that the short-termism of financial actors constrained investment in nature.[496] There is a mismatch between the time horizons which financial actors plan and act in, which is not more than a few years, versus the long- and non-linear-time horizons through which nature reacts. To address this Professor Dasgupta recommended financial regulators and supervisors change their own assessment horizons and use their regulatory powers. He suggested that integrating the protection of biodiversity with the fiduciary duties of institutional investors and asset managers would be a way to ensure their investment policies account for natural capital.[497]

327. The Institute and Faculty for Actuaries (IfoA) has identified barriers to implementing this in the UK. The Institute explained that the Law Commission's narrow interpretation of fiduciary duty and artificial distinction between financial and non-financial factors created barriers to integrating climate and biodiversity risks into fiduciary duties.[498] The Law Commission said non-financial factors can be taken into account where trustees have good reason to think that scheme members share the concern, and where there is no risk of significant financial detriment to the fund.[499] The IfoA explained that this "two-step process creates barriers and complexity, leading fiduciaries to believe they do not need to consider these risks."[500] The IfoA also noted that the Law Commission created a false dichotomy between financial and non-financial factors, stating that in the long run many typically attributed non-financial factors within environmental, social and governance frameworks can be considered to be a financial factor. The IfoA recommended reviewing the Law Commission's conclusions to help address current barriers to integrating nature into fiduciary duties.

Our view

328. **Financial systems need to recognise the value of preserving biodiversity. The transformation the financial system has undergone to integrate climate-related financial risks should be used as a roadmap to do the same for biodiversity. The interconnected, complex, and non-linear nature of biodiversity risks makes it difficult to model. But the outsized and extreme financial impact of exceeding ecosystem tipping points, makes work to integrate nature risks all the more pressing. We welcome the Government championing the work of the taskforce on nature-related financial disclosures (TNFD). To accelerate this work, the Government needs to play its part in creating the narrative that robust and imminent policy responses to biodiversity are coming, this can help initiate the management of biodiversity risks within the finance sector.**

496 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) 17.2 Uncertainty and Short-Termism

497 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. Interim report. (2021) (London: HM Treasury).p 77

498 Institute and Faculty of Actuaries (BIO0068)

499 Law Commission, Fiduciary Duties of Investment Intermediaries. (2014) HC 368

500 Institute and Faculty of Actuaries (BIO0068)

329. **Recommendation:** ***To provide the signals needed for the financial system to manage biodiversity risks, we recommend that:***

a) ***The Government commit to legislate for mandatory disclosure of nature-related financial risks once the TNFD framework is ready.***

b) ***The Government explore how a corporate natural capital accounting system could be set-up to require organisations to measure the impact of operations on natural capital.***

c) ***The Bank of England conduct an exploratory exercise into stress testing biodiversity loss.***

d) ***The Government should also ensure the National Infrastructure Bank has a mandate for net zero and includes a focus on nature and biodiversity for investment in its objectives.***

e) ***The Government commission a review into the Law Commission's 2014 report on the Fiduciary Duties of Investment Intermediaries, given the developments in the understanding of climate and nature-related risks since the report's publication.***

Education and biodiversity

Northern gannet. Photo: Philip Hayman

7 Education and biodiversity

330. Even if economic models, policy decisions and businesses operations are realigned to fully account for nature, Professor Dasgupta concluded this would not be enough to reverse biodiversity loss.[501] Humanity's relationship with nature has evolved with its increasing detachment from it. Throughout this inquiry, we have heard that education is central to mending this relationship, valuing nature and ultimately being able to preserve it.[502]

A nature deficit for young people

331. In 2012 the National Trust warned that children's physical and mental health was at risk because of a lack of connection with green spaces.[503] In 2019, the Landscapes Review found that 18% of children living in the most deprived areas never visit the natural environment; 20% fewer Visibly Minority Ethnic (VME) children visit green spaces than white, middle-class children; and just 6–7% of children go on a school visit to the countryside.[504]

332. The report pointed to evidence that spending time in nature can lower blood pressure, increase cardiovascular health and improve mood. Professor Dasgupta also believed re-connecting young people with nature was crucial to fostering an empowered citizenry who could exert pressure on international organisations, governments, businesses and regional authorities to act to address biodiversity loss.[505] He argued education on natural history could help counter "the shifting baseline",[506] whereby societies progressively redefine themselves as inhabitants of an emptying world and believe that what is apparent is how it is and how it will continue to be. The problem this causes is that ambition is limited to what is necessary to preserve an already depleted world, instead of looking to restore it to what it once was.

How to re-connect young people with nature

333. Professor Dasgupta recommended education on nature stretch from early years to university, with all universities mandating students to attend a basic course in ecology. Several witnesses have supported a new GCSE in Natural History, that would cover skills in observing, naming and recording nature.[507] This was originally proposed by Mary Colwell in 2012.[508] It is hoped this would foster a new generation of ecologists. Tony Juniper told us that:

501 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) 21.3.4 Education
502 Q15; Q17; Q25; Q122; Q137
503 National Trust, Natural Childhood report (2012)
504 Defra, Landscapes review: Final Report (September 2019)
505 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury) 21.3.4 Education
506 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
507 Q15; Q17; Q137
508 Curlewmedia, Campaign to introduce a GCSE in Natural History., accessed 19 May 2021

> Over time, there has been a drift away from looking at nature and towards theoretical biology and ecology. Some of these are hugely important disciplines, but at the same time they are beginning to erode the skills base that has been there for a very long time.[509]

334. Witnesses believed a GCSE in Natural History would extend formal education opportunities, help address ecology skills gaps, and allow greater access to nature for children. Dr Doug Allan, principal cameraman for several David Attenborough wildlife documentaries added that this needed to include "more money towards being able to take kids out of school into the wilderness".[510] This supports the Landscapes Review's recommendation for every child to experience "a night under the stars in a national landscape".[511] Bright Blue, a conservative think tank, similarly recommend every state secondary school should plant and name an area of trees to support the government's afforestation targets.[512] The Government has committed to planting 30, 000 hectares of trees, per year by 2025.

335. A key pillar of the 25 Year Environment Plan is to connect young people with nature. To help achieve this in January 2019 £10 million of funding was made available by the Department of Education to deliver the Children and Nature Programme.[513] The Programme sought to support children, especially those from disadvantaged backgrounds, to have better access to natural environments by delivering greener school grounds, facilitating more school visits to green spaces, and providing better access to care farming services and community forests and woodlands. The Department for Education has recently established a Sustainability and Climate Change Unit to co-ordinate and drive activity on environment and climate change education.[514]

336. In 2016 Natural England commissioned a study into learning outside the classroom in the natural environment.[515] 92% of pupils said they enjoyed their outdoor lessons more and 90% expressed feeling happier and healthier. The project also found a positive impact on teachers' motivation, wellbeing and job satisfaction. Ofsted also reported improved outcomes for students learning in an outside environment, including better achievement, standards, motivation, personal development and behaviour.[516] A barrier to these visits was the heavy reliance on parent and carer contributions to meet the cost of trips.

337. Despite efforts to re-connect young people with nature, since 2013–14 there has been a decline in the proportion of children spending time outside without adults present.[517] More recently, the covid-19 pandemic has impacted children's access to nature. Six in ten children interviewed as part of the Government's People and Nature Survey reported to have spent less time outdoors since the start of the pandemic.[518] Half (48%) of children said being worried about catching or spreading coronavirus had stopped them from spending more time outside.

509 Q15
510 Q17
511 Defra, Landscapes review: Final Report (September 2019)
512 Bright Blue (BIO0006)
513 Defra Gove kicks off Year of Green Action, 31 January 2019
514 HM Treasury, The Economics of Biodiversity: The Dasgupta Review Government response, CP 466 (June 2021)
515 Natural England, Natural Connections Demonstration Project, 2012- 2016: Final Report (2016)
516 Ofsted, Learning outside the classroom - How far should you go? (2008)
517 Natural England, Monitor of Engagement with the Natural Environment - Children and Young People report (2019)
518 Natural England, The People and Nature Survey for England: Children's survey (Experimental Statistics) (2020)

Biodiversity education in the workplace

338. To mend our relationship with nature, Professor Dasgupta's call for education extends beyond schools, to adults, workplaces, and organisations, all of whom Professor Dasgupta argued need to recognise their role in the economics of biodiversity.[519] His entire Review puts forward the argument that finance ministries need to recognise the value of nature and start accounting for it.

339. From a workplace perspective, the Institute and Faculty of Actuaries recommended setting up a biodiversity risk education charter, similar to the Green Finance Education Charter.[520] The Charter was developed by the Department of Business, Energy and Industrial Strategy (BEIS), HM Treasury and the Green Finance Institute as a tool for focusing collaboration between government and industry. By signing the charter Chartered and professional bodies commit to integrate green finance and sustainability into their core curricula, new qualifications, and the continued professional development of their members. The Institute told us that the Green Finance Charter had:

> galvanised professions within the financial sector, including bankers, insurers, financial analysts, accountants and actuaries, to become better educated, and more aware, of climate related risks and the ways in which they can be managed.[521]

The Government could replicate this effort to promote education on biodiversity risks.

340. In response to the Dasgupta Review the Government have said it is looking to extend nature-related considerations into professional development programmes within the Civil Service.[522] This includes incorporating the economics of biodiversity into the expected skills for the Government Economic Service.

Our view

341. **For biodiversity to be protected, it has to be appreciated and valued. But our increasing detachment from nature stops many of us knowing and directly experiencing it. This starts at a young age; children are spending less and less time outdoors. Children from disadvantaged backgrounds and ethnic minorities have particularly low access to green spaces. Education is a crucial lever to address this and mend our relationship with nature. The Government's Children and Nature Programme went some way in increasing access opportunities, but the impact of the coronavirus has meant even fewer children have had access to nature this year. To address this a transformation in the education system is needed towards one where children from an early age to adulthood are encouraged to experience, celebrate, and learn about nature. Governments, businesses, and organisations also need to recognise the value of nature; this again starts with education.**

519 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury)
520 Institute and Faculty of Actuaries (BIO0068)
521 Institute and Faculty of Actuaries (BIO0068)
522 Dasgupta, P., The Economics of Biodiversity: The Dasgupta Review. (2021) (London: HM Treasury)

342. **Recommendation:** ***To increase education on biodiversity we:***

a) ***Support the establishment of a Natural History GCSE;***

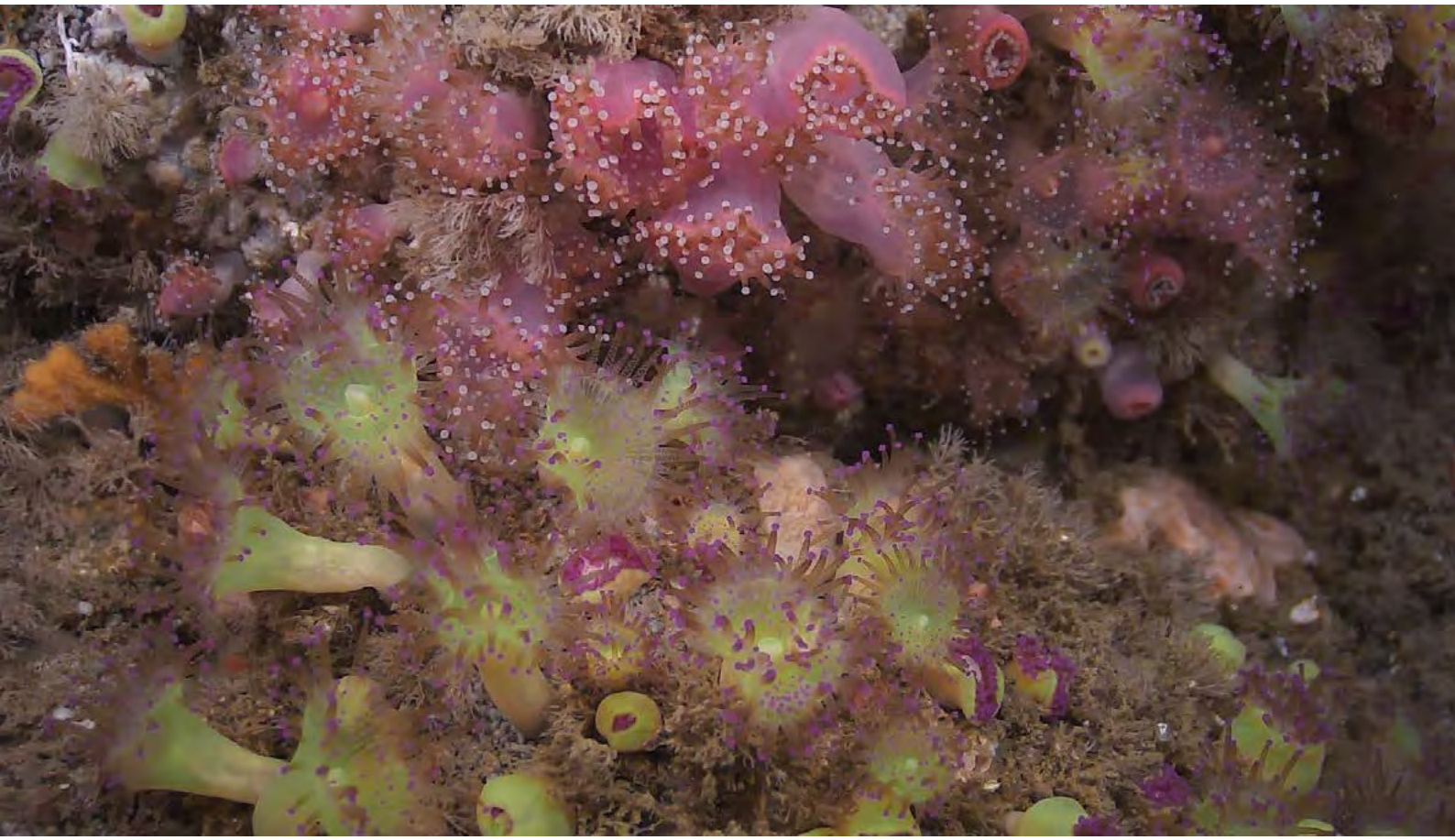
b) ***Recommend the Department for Education re-evaluate the opportunities for nature visits and teaching outside, as part of its support to schools recovering from the education impacts of covid-19;***

c) ***Recommend the Department for Education and Defra work together to get school children involved in the Government's afforestation project;***

d) ***Recommend Government emphasise its leadership in increasing knowledge and recognition of the importance and value of nature by requiring every Permanent Secretary across Government and every civil servant and Minister in the HM Treasury to undertake a basic ecology briefing as part of mandatory induction;***

e) ***Recommend the Government explore setting up a biodiversity education charter to increase knowledge of biodiversity risk within the finance sector.***

Conclusions and recommendations



Jewel anemones. Photo: Jon Copley

Conclusions and recommendations

The state of biodiversity

1. The Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services' call for transformative change provides a yardstick against which action to address biodiversity loss should be measured. The global response to biodiversity loss has so far been inadequate. Piecemeal conservation efforts, and increases in the efficiency of production, cannot tackle the wholesale deterioration of the natural environment the world is now experiencing. Fundamental changes in the production and consumption of natural resources must be made. Without urgent, substantial action, ecosystem tipping points will be exceeded and the global biosphere will be left beyond repair. (Paragraph 37)

2. *We recommend that the UK Government play a leadership role in addressing global biodiversity loss by demonstrating what 'transformative action' to address biodiversity loss in an advanced industrialised economy looks like. This should entail the production of credible plans, which include measures to phase out economic incentives which threaten conservation and restoration, with a view to meeting the 2030 Biodiversity Framework, once agreed, and the development of robust means to ensure that these plans are owned and implemented across Government. Assessments of the potential impact of Government actions on biodiversity loss must be introduced for all Government departments.* (Paragraph 38)

3. The UK has established a sophisticated public policy mechanism to tackle the effects of climate change by driving sustained long-term reductions in harmful emissions. This comprises legally binding interim and long-term targets authorised by Parliament, and an independent Climate Change Committee to advise Parliament and Ministers on the actions required to ensure such targets are met. (Paragraph 58)

4. No such system yet exists to restore the UK's greatly depleted natural environment. It is thus unsurprising that the UK failed to achieve at least 14 of the Aichi Biodiversity Targets, and the Government is not on track to achieve its goal to provide the next generation with a better natural environment. (Paragraph 59)

5. We welcome the Government's announcement of a 'State of Nature' target on species abundance for 2030. This goes some way in providing a legal mechanism to achieve nature goals, but for this to translate into urgent, transformative action, the target must capture other aspects of biodiversity and include interim targets. (Paragraph 60)

6. *We recommend that the Government introduce, preferably via the Environment Bill currently before Parliament, a mechanism for statutory interim targets to ensure that its proposed species abundance target is met to halt the decline of nature by 2030. We further recommend that the scope of the proposed 2030 target be extended to encompass legally binding outcome measures on species distribution, extinction risk, habitat extent and condition: it must also reinstate the expired target for Sites of Special Scientific Interest.* (Paragraph 61)

7. *We recommend that the Government introduce mechanisms to ensure that each Government department and non-departmental public body is required, by their policies and actions, to contribute to reaching the targets set out above. The Office for Environmental Protection should be responsible for ensuring their enforcement.* (Paragraph 62)

8. Invasive species contribute significantly to the decline in biodiversity levels in Great Britain. By its own admission, the Government has failed to prevent the arrival and continued spread of damaging invasive species. None of our predecessors' recommendations on tackling invasive species—on funding, setting up an inspectorate, and creating a 'nature volunteer force'—were adopted by Ministers: yet the incidence of invasive species, tree pests and diseases continues to increase. (Paragraph 67)

9. Invasive species continue to cost the economy £1.8 billion per year. It is significantly cheaper to prevent invasive species from establishing, rather than tackling them once they are established. (Paragraph 68)

10. *We strongly recommend that Ministers urgently review the recommendations of the Committee's report on Invasive Species made in October 2019 and implement them without further delay. This includes increasing the proportion of biosecurity funding directed at countering invasive species to at least £3 million a year.* (Paragraph 69)

Measuring biodiversity

11. Public expenditure on measures to promote biodiversity has been cut in real terms over recent years. As a result, levels of monitoring have been scaled back, and the capacity for assessing the state of protected areas and vulnerable species nationally has been reduced. Government bodies do not have enough skilled ecologists to provide comprehensive expert monitoring, and these bodies are over-reliant on the voluntary sector to fill the gaps which arise. Currently, local authorities do not have enough in-house ecologists to provide the monitoring which is expected to underpin the Government's policy on biodiversity net gain. (Paragraph 80)

12. *We recommend that Ministers make a material increase in levels of investment in training and skills for chartered ecology and associated disciplines. This ought to form an element of the Government's promised investment in Green Jobs.* (Paragraph 81)

13. The relationship between environmental monitoring and remedial action is far too weak. This must change. Data on biodiversity levels must inform decision-making in Government far more substantially than at present. (Paragraph 82)

14. *We recommend a formal mechanism be established to review and act on the information provided in the Environmental Accounts.* (Paragraph 83)

15. *The Government's new species abundance target for 2030 provides a potential mechanism for the measurement of progress on addressing biodiversity loss, and a driver for consequent actions. We recommend that once the target is established, regular, formal reviews of progress against the target should be required to be made, to feed into decision-making at senior levels in all Government departments. Ministers*

should also report regularly to Parliament on projected and current performance against the target and associated biodiversity outcome measurements on species distribution, extinction risk, habitat extent and condition. (Paragraph 84)

16. The efficient management of data relevant to assessing levels of biodiversity is made difficult due to the sheer variety of data systems used to monitor UK biodiversity. (Paragraph 85)

17. *We recommend that the Government implement a preferred approach to data management and monitoring, to strengthen a consistent evidence base on the UK's natural capital. The Government should also make greater use of earth observation data as a cost-effective means of filling gaps in the data obtained from terrestrial monitoring.* (Paragraph 86)

18. If Marine Protected Areas continue to be poorly managed and monitored, with little enforcement of their protected status, there is a risk that the Government will have established a network of 'paper parks'. According to monitoring data, the condition of MPAs is much the same as our predecessors observed in 2019: this must call into question the effectiveness of the Government's approach to managing biodiversity in the UK's territorial waters. (Paragraph 96)

19. *We reiterate the conclusions and recommendations of our predecessor Committee's 2019 inquiry into Sustainable Seas.* (Paragraph 97)

    - *Ministers must urgently set out a timetable to put management plans and monitoring in place for all MPAs.*
    - *Different categories of destructive bottom trawling should be banned or restricted in all MPAs, and more MPAs should be established as 'no-take' zones with benefits for the local fishing industry and for marine biodiversity.*
    - *MPAs established by the Blue Belt programme need to meet international best practice guideless, set by the International Union for Conservation of Nature for designation.*
    - *MPAs need to be monitored to deter illegal activity and to establish if species and habitats are recovering, to inform future designations and adaptive management decisions.*
    - *The Government should make better use of data from automatic identification systems installed in vessels operating in MPAs to understand the activity in these areas; the operators of vessels with these systems installed ought to be under an obligation to keep the systems active when in areas requiring monitoring.*
    - *The Government should establish a fully integrated monitoring and surveillance regime for satellite tracking of illegal, unreported and unregulated fishing in UK territorial waters.* (Paragraph 97)

20. Healthy soils are essential to biodiversity; and yet the data and indicators to measure soil health do not exist to the degree required to ensure effective monitoring. Without credible arrangements for monitoring and measuring soil health, the

Government will not meet the soil health commitments made in its own 25 Year Environment Plan. The Government must therefore urgently address this large data gap. (Paragraph 104)

21. *We support the recommendations of the Natural Capital Committee that the development of soil indicators should be fast-tracked; that a shadow target for soil health should be established urgently; and that a legally-binding target for soil health ought to be established as soon as monitoring data allows. Healthy soils should be a priority outcome for the Environmental Land Management Schemes, so as to encourage farmers to adopt beneficial agri-environmental practices.* (Paragraph 105)

Funding biodiversity

22. To deliver the Government's environmental vision to improve the environment within a generation, arm's length bodies and departments need to have the funding to do so. Budget cuts to biodiversity expenditure over the last decade have hindered this. (Paragraph 120)

23. *We recommend that the Government urgently review the funding allocated to bodies with responsibility for monitoring, protecting and increasing levels of biodiversity in England, consistent with its goals for nature recovery under the 25 Year Environment Plan. In the next Spending Review the Chancellor of the Exchequer must back the Government's ambition for nature recovery with a funding settlement for Natural England which properly reflects its statutory responsibilities and the tasks it is expected to perform.* (Paragraph 121)

24. As the Public Accounts Committee has recently observed, there is no single point of responsibility within government for monitoring overall expenditure on environmental goals, and the Government does not have a good understanding of the total costs required to deliver its environmental goals. It is difficult to determine how much of the funding announced by Ministers for these goals has so far been spent, and thus whether the Government's funding commitments will in fact be met. (Paragraph 122)

25. *We support the recommendations of the Public Accounts Committee and the National Audit Office made in their work on Achieving government's long-term environmental goals. The Government must provide a comprehensive, consistent, and time-bound record of funding for the 25 Year Environment Plan. In its response to this report, the Government must set out in detail the funding committed to biodiversity since the announcement of the 25 Year Environment Plan; how much has been announced or otherwise promised to date; and how much has in fact been spent.* (Paragraph 123)

26. Between 2013–14 to 2019–20 Natural England's baseline funding reduced by 49 per cent. The body considers that it can no longer deliver its statutory duties to a good standard as a direct consequence of these cuts. The cuts have fallen disproportionately on Natural England's budget for monitoring and information provision. (Paragraph 124)

27. The Government increased Natural England's baseline funding by £11.3 million in in 2020–21 and has committed to increasing this by a further £75 million. Whilst

the funding increase is welcome, it does little to provide the consistent multi-year investment required for Natural England to deliver its duties and new responsibilities for nature recovery. (Paragraph 125)

28. *In the next multi-annual spending review, we recommend that Natural England receive a materially greater contribution in annual funding, in line with its 2020 Comprehensive Spending Review bid.* (Paragraph 126)

29. We welcome the funding announcements and increased public expenditure on international biodiversity, however international conservation funding is still greatly outstripped by subsidies which cheapen the exploitation of the natural environment. The Government cannot spend more exploiting the natural environment than conserving it if climate change and biodiversity are to be tackled in any meaningful way. Information on the extent of subsidies harmful to biodiversity is absent from the public domain, despite this information being necessary to achieve Aichi Biodiversity Target 3. (Paragraph 134)

30. *We recommend the Government commission a review of the operation of 'perverse subsidies' in the UK economy. This must entail the identification, assessment and tracking of public expenditure harmful to biodiversity, and the publication of data on the extent of such subsidies. Once such subsidies have been identified, Ministers must act to readdress the balance, removing harmful subsidies and re-directing money to nature conservation and recovery.* (Paragraph 135)

Domestic biodiversity policy and legislation

31. The Government is not on track to achieve its objective of improving the environment within a generation, and its 25 Year Environment Plan does not provide sufficient direction to change this. Despite repeated calls in the last five years by this Committee, the National Audit Office, the Public Accounts Committee and the Natural Capital Committee, the Government is yet to establish a baseline to measure progress against environmental goals. In the meantime, the UK's natural capital assets appear to be continuing to deteriorate. (Paragraph 152)

32. *The Government must urgently establish a baseline for the Outcome Indicator Framework. Defra's planned Natural Capital and Ecosystem Assessment pilot, and any subsequent baseline exercise, must focus on measuring a clear set of representative natural capital assets across England. The Treasury should ensure the baseline assessment is properly funded at the next Spending Review.* (Paragraph 153)

33. At present there is no strategy to tie the reporting framework for the 25 Year Environment Plan to the ten 25 Year Environment Plan goals. Nor does the plan explain how it will be delivered by local government and arm's length bodies or how key environmental policies, like the Environmental Land Management Scheme, will seek to deliver on the Plan's goals. We look forward to the new monitoring and reporting cycle introduced by the Environment Bill and will be assessing whether it addresses previous issues with the reporting framework and delivers tangible improvements on the ground. (Paragraph 154)

34. *In all future progress reports on the 25 Year Environment Plan, information provided should relate to the Plan's ten goals. Priority actions must be assessed year on year, as must local delivery of the plan through arm's length bodies. From 2022 onwards the Government should set out indicators for how the Environmental Land Management Scheme and Local Nature Recovery Strategies will be assessed to measure how these policies are delivering the aims of the Plan.* (Paragraph 155)

35. The 25 Year Environment Plan is not yet supported by clear, ambitious, quantified statutory targets and milestones. The Environment Bill will provide a statutory underpinning for five of the goals in the Plan, but government has not set long-term objectives for the other five plan areas or how its goals will be met. The current significant improvement test for targets within the Environment Bill is ultimately decided by the Secretary of State. We agree with the Natural Capital Committee that the test is highly subjective. (Paragraph 156)

36. *The Government must address how it will set long-term objectives for all ten of the Plan's goals. As agreed to in 2018, the Government must publish how these goals and objectives relate to pre-existing national and international environmental targets. We reiterate our recommendation that the Office for Environmental Protection's powers, budget and staffing reflect its responsibility to monitor the Government's delivery of the 25 Year Environment Plan and its enforcement of environmental law.* (Paragraph 157)

37. We welcome the Government's pledge to protect 30 per cent of the UK's land and seas by 2030, but simply designating areas as protected is not enough. The UK's protected areas are poorly managed. More focus must be given to preserving and enhancing the quality of protected areas. There are also significant differences in the treatment and status of Areas of Outstanding Natural Beauty compared to National Parks. Over a year and half ago the Glover Review identified these issues and recommended actions to address them: as we consider this report, a full Government response to the Review is yet to be issued. (Paragraph 164)

38. *The Government should not count its wins early: protected areas should only be reckoned to contribute to the 30 by 30 pledge if they are effectively managed and improved. We recommend the Treasury ensure that all bodies involved in the monitoring of 30 per cent of the UK's land and seas receive funding allocations sufficient to allow comprehensive monitoring to be undertaken. We note it is far less expensive to conserve nature than to restore damaged or degraded resources and the costs involved are small compared to the financial and wider health and well-being benefits.* (Paragraph 165)

39. *The Government should provide a full response to the Glover Review before the 2021 summer recess.* (Paragraph 166)

40. We welcome the Government's efforts to secure biodiversity gains in development: but the biodiversity net gain policy, in its current form, does not go far enough in contributing to the transformative change necessary to address biodiversity loss in the UK. A series of deficiencies with the policy have been identified over the course of this inquiry. (Paragraph 192)

41. The Government has failed to define what it means by net environmental gain as set out in the 25 Year Environment Plan, as its ambition for future development. The

failure to move towards a system of net environmental gain risks undermining the government's plans for a green recovery and allows developers to focus entirely on biodiversity, rather than treat the environment as a system. This could lead to severe habitat fragmentation. (Paragraph 193)

42. We welcome the extension of the biodiversity net gain policy to include Nationally Significant Infrastructure Projects. We received overwhelming evidence in support of this and note the potential the policy now has to contribute to nature's recovery. We will be examining the implementation of the policy change as it progresses. (Paragraph 194)

43. Nature recovery does not happen overnight and must be maintained and built upon for generations. The proposed 30 year minimum to maintain biodiversity net gains will achieve little in terms of delivering long-lasting nature recovery. (Paragraph 195)

44. The Government's Planning White Paper could have implications on the delivery of the biodiversity net gain policy. We believe planning reforms should not weaken or undermine biodiversity protection. (Paragraph 196)

45. *To allow the biodiversity net gain policy to fulfil its transformative potential within the UK's built environment we recommend that:*

- *The Government should explain how and when it will move to embedding environmental net gain in the planning system, with clear actions and milestones provided to achieve this goal.*
- *Mandatory gains should endure, rather than only being maintained for the stated 30 year minimum.*
- *The Government should strengthen local authority capacity and enforcement mechanisms to deliver biodiversity net gain and developers should demonstrate their environmental performance and implementation of mitigation measures as part of good Environmental, Social and Corporate Governance.*
- *The National Planning Policy Framework should be reviewed to ensure reforms strengthen biodiversity restoration and protection and any proposals which undermine biodiversity be addressed.* (Paragraph 197)

46. Effective Environmental Land Management Schemes will only be possible if farmers and land managers are brought into the process of policy design. This must include reaching out beyond the 'usual suspects' of big farming unions and environmental groups. (Paragraph 204)

47. *To include harder-to-reach farmers and land managers, rural broadband connectivity must be addressed as a matter of urgency, as recommended by the Environment, Food and Rural Affairs Committee in 2019. Defra should also make provision for tailored, farm-specific advice, farm visits, demonstration farms, and other knowledge-sharing activities that support the achievement of biodiversity goals. Defra should identify 'win-wins' that deliver production and environmental benefits to encourage early buy-in from farmers to the scheme. The scheme should include sufficient flexibility to allow for alternative land-uses, such as using land for storing carbon, helping to prevent floods, and maintaining beautiful landscapes for people to enjoy and reconnect with*

nature. The introduction of ELMS should be used as an opportunity to encourage monitoring of on farm biodiversity, with funded audits of soil health, carbon sequestration and wildlife species prevalence forming a routine element of compliance and reporting. (Paragraph 205)

48. We welcome the Government's ambition to create a national Nature Recovery Network but believe far more detail is needed to translate this ambition into transformative action. The Nature Recovery Network (NRN) is contained in the 25 Year Environment Plan, but there are currently no duties or actionable plans in place to create it. The Government needs a co-ordinated approach to ensure all the local nature recovery strategies (LNRS) together cover the whole of England. This requires national oversight and strategy. Given local authorities will design and deliver most of the Local Nature Recovery Strategies (LNRS), they must be given greater resource to do so, including to employ local authority ecologists and having better access to ecological data. To realise this national vision the NRN also must be integrated and prioritised within the context of new planning reforms. And the Government needs to set out its thinking on how the host of proposed environmental and planning policies will come together into one cohesive strategy. (Paragraph 225)

49. *To address these concerns we recommend that:*

    a) Defra *updates its Nature Recovery Network Policy Paper by the end of the year, explaining how LNRS will be co-ordinated into a national Nature Recovery Network and how local authorities should link LNRS to the NRN.*

    b) *Government should establish a Nature Recovery Zone category which would enable local authorities to choose to designate areas where planning permission would in principle be granted for environmental investments and discourage new hard infrastructure at scale. LNRS should designate these zones to be incorporated into local plans.*

    c) *LNRS should be used as the spatial planning tool to join up biodiversity net gain, ELMS and the planning system. LNRS could provide information for the planning system's new land zoning proposal and provide the basis for prioritising the delivery of funds from ELMS and net gain.*

    d) *The Nature Strategy should set out specifically how the Government proposes to link environmental and planning policies into one coherent policy approach designed to realise the 25 Year Environment Plan's goal to improve the environment within a generation.*

    e) *Amid concerns that some local authorities do not have the capacity to deliver Biodiversity Net Gain and Local Nature Recovery Strategies, we recommend that the Government makes a formal assessment of capacity of local authorities to undertake this work, with a view to ensuring that all local authorities have the capacity to meet these important obligations.* (Paragraph 226)

50. We welcome the Government's focus for COP26 on nature-based solutions (NbS) and the increased investment provided by the Nature for Climate fund. Nature-based solutions could substantially contribute to meeting the UK's net zero goals

but must not be seen as a substitute from the urgent task of decarbonising all sectors of the economy, and in particular, the UK's energy system. It's also essential that the Government follows best practice standards for Nature Based Solutions. This will ensure biodiversity benefits are delivered as part of NbS, and the trade-offs between cost effectiveness, long and short-term gains and securing different environmental benefits, can be managed through a transparent and inclusive process. (Paragraph 256)

51. Protecting existing ecosystems, be that ancient woodland, peatlands, or kelp forests provides the most cost-effective and significant contribution to NbS in the UK. Given the majority of the UK's ecosystems lie outside of protected areas, more needs to be done to lock carbon and conserve biodiversity in these spaces. (Paragraph 257)

52. Protection and restoration of peatlands have an important role to play in NbS. The Government's announced ban on rotational burning of peat in protected areas is welcome, as part of the transformational change necessary to meet biodiversity and net zero targets. We commend the consultation on banning the sale of peat products and believe the proposal should be brought in as soon as possible. (Paragraph 258)

53. We welcome the Government's Trees Action Plan, and the intention to focus on planting broadleaf native species. The Government must not try to meet its tree planting target solely through commercial timber plantations using non-native species. A balance of tree planting is required to allow increased domestic commercial timber production to reduce reliance on imports. The appropriate mix of tree species will depend on site conditions. Creating woods with more native broadleaf tree species will provide greater biodiversity benefits, carbon stocks, more improved water quality and reduce soil erosion. These benefits can be scaled up through greater public and private investment in NbS. (Paragraph 259)

54. *To realise the benefits of nature-based solutions to climate change, we recommend that:*

    a) *The UK adopt a clear definition of NbS and consider using the IUCN definition alongside the IUCN Global Standard for NbS.*

    b) *The Government prioritise protection and maintenance of the ecosystems we already have over the creation of new ecosystems. This must include greater efforts to preserve ecosystems found outside of protected areas.*

    c) *The proposed ban on the production and sale of horticultural peat be brought forward, as soon as possible before 2023.*

    d) Tree planting should not occur on peat soils and floodplains would be better used for restoring floodplain meadows rather than afforestation projects.

    e) *Tax incentives be given to investors in NbS schemes who have ambitious and credible net zero plans and are working to remove biodiversity loss from their supply chains.* (Paragraph 260)

The economics of biodiversity

55. Tackling over-consumption of natural resources is essential to meet the Government's net zero goals and to reverse biodiversity loss. The first step in doing this is recognising the need to reduce the UK's overall consumption. We welcome indications that Ministers are starting to consider adopting a consumption-based measure of the UK's environmental impact. (Paragraph 271)

56. *We recommend the Government start the process of setting an environmental footprint target by launching a consultation ahead of COP15 on how to model the overseas environmental impact of UK consumption. This could feed into Defra's work on international indicators within the Outcome Indicator Framework.* (Paragraph 272)

57. Professor Dasgupta has emphasised that family planning and sexual and reproductive healthcare is a neglected feature of public policy. The unmet demand for family planning is huge and addressing human population numbers is also key to reducing our demands on the biosphere. The UK needs to remain a global leader in supporting family planning and encouraging other countries to do the same. Announced cuts to the UK overseas development assistance threatens this. Given the Government's intension to take a strategic approach to cuts, and the disproportionate benefits of family planning and sexual and reproductive healthcare compared to other development initiatives, spending in this area needs to be prioritised. (Paragraph 281)

58. *In response to this report, the Foreign, Commonwealth and Development Office should set out the extent to which the announced cuts to the UK's aid budget will affect overseas development assistance for family planning and reproductive healthcare. We recommend that ODA for family planning and reproductive healthcare be protected: at the very least the percentage allocated to both these areas should be equal or higher than 2019 levels.* (Paragraph 282)

59. Economic models that do not value nature and ecosystems cannot address climate change and biodiversity loss. GDP is a well-established measure of economic activity, but as Professor Dasgupta has highlighted, by itself it is not an adequate way to assesses the UK's economy. GDP does not account for the depreciation of the natural environment. We are encouraged by the innovative work of the ONS to develop measures and frameworks beyond GDP. (Paragraph 297)

60. *The Government should detail how it intends to move beyond GDP as the primary measure of economic activity, towards a concept of inclusive wealth, which includes consideration of the UK's produced, human, and natural capital.* (Paragraph 298)

61. Further work is needed on the natural capital accounting and assessment methodology, but this should not stop the Government and businesses using natural capital accounting now. Accounting for natural capital in some way, is better than ignoring it completely because the system is not yet perfect. As a world leader in the development of natural capital accounts, the UK has an important role to play in promoting this practice international. (Paragraph 299)

62. *The UK should work with countries at COP15, COP26 and through the G7 to construct an internationally agreed way to integrate natural capital accounts into core national*

accounts. This aligns with two of the Government's COP26 presidency goals: finance and collaboration. The UK should also use its leverage within the IMF, to call for the incorporation of natural capital accounts in macroeconomic surveillance undertaken by IMF. (Paragraph 300)

63. The Committee acknowledges that currently natural capital approaches cannot capture intrinsic values of nature, but they do serve as a first stepping-stone to valuing the natural environment in existing economic models. (Paragraph 301)

64. At present, the impact of Government policies and projects on nature is not adequately factored into spending decisions. As a result, the Government is not on track to meet its nature recovery goals. On aggregate, HM Treasury and other departments spending decisions must support not undermine the realisation of the Government's environmental goals and legal commitments. The Treasury has tried to prioritise the environment better in spending decisions through updating its Green Book guidance on evaluating projects. Through the Treasury's Net Zero Review, its continuing response to the Dasgupta Review and new guidance on the valuation of biodiversity, the Treasury aims to integrate climate and environmental considerations further into spending decisions. At present, departments are not doing this consistently and environmental considerations are not embedded in the spending review process. The Government's £27 billion road-building programme is an example of the type of policy decision likely to conflict with goals on nature recovery. Contrary to this Committee's recommendations, when making policy on spending, taxation and the allocation of resources, Ministers do not have to apply the Environmental Principles. To achieve the transformational change necessary to address biodiversity loss, nature must be considered to ensure the best balance in policy-and decision making. Failure to do so will mean we continue to over-exploit nature, to the detriment of the natural world and ourselves. (Paragraph 315)

65. *We support the recommendation of the Public Accounts Committee that the Treasury's next Comprehensive Spending Review should set out how the full value of environmental impacts has been taken into account, and the impact of spending decisions on meeting government's long-term environmental goals. To achieve this, every department needs to account for the costs and benefits to nature when appraising projects and policies. We reiterate the recommendation of the 2017–19 Committee that general taxation and spending should not be exempt from the Environmental Principles.* (Paragraph 316)

66. The Government has the opportunity to create a fiscal framework focused on delivering well-being, sustainability and economic stability. The current fiscal rules focus on managing the budget, public sector investment and debt. There is scope to extend this so balancing our demands on nature with nature's capacity to meet these demands, becomes central to government's economic objectives. This can help to deliver a stable economy in the long-term which is resilient to nature-related financial risks. The Treasury has not stress tested the 2021 Budget and 2020 Spending Review against net zero or nature goals. Without sustainability tests on spending decisions, we risk moving further away from realising environmental targets. (Paragraph 317)

67. *The Government should include a Net Zero test of the 2021 Budget in its Net Zero Review. Net Zero tests should be refined for future fiscal events to assess the climate impacts of taxation, spending and resource decisions. The Government should develop nature tests to ensure spending packages are aligned with the Post-2020 Biodiversity Framework. A new fiscal rule should be added to the fiscal framework which focuses on balancing our demands on nature with nature's supply.* (Paragraph 318)

68. Financial systems need to recognise the value of preserving biodiversity. The transformation the financial system has undergone to integrate climate-related financial risks should be used as a roadmap to do the same for biodiversity. The interconnected, complex, and non-linear nature of biodiversity risks makes it difficult to model. But the outsized and extreme financial impact of exceeding ecosystem tipping points, makes work to integrate nature risks all the more pressing. We welcome the Government championing the work of the taskforce on nature-related financial disclosures (TNFD). To accelerate this work, the Government needs to play its part in creating the narrative that robust and imminent policy responses to biodiversity are coming, this can help initiate the management of biodiversity risks within the finance sector. (Paragraph 328)

69. *To provide the signals needed for the financial system to manage biodiversity risks, we recommend that:*

    a) *The Government commit to legislate for mandatory disclosure of nature-related financial risks once the TNFD framework is ready.*

    b) *The Government explore how a corporate natural capital accounting system could be set-up to require organisations to measure the impact of operations on natural capital.*

    c) *The Bank of England conduct an exploratory exercise into stress testing biodiversity loss.*

    d) *The Government should also ensure the National Infrastructure Bank has a mandate for net zero and includes a focus on nature and biodiversity for investment in its objectives.*

    e) *The Government commission a review into the Law Commission's 2014 report on the Fiduciary Duties of Investment Intermediaries, given the developments in the understanding of climate and nature-related risks since the report's publication.* (Paragraph 329)

Education and biodiversity

70. For biodiversity to be protected, it has to be appreciated and valued. But our increasing detachment from nature stops many of us knowing and directly experiencing it. This starts at a young age; children are spending less and less time outdoors. Children from disadvantaged backgrounds and ethnic minorities have particularly low access to green spaces. Education is a crucial lever to address this and mend our relationship with nature. The Government's Children and Nature Programme went some way in increasing access opportunities, but the impact of the coronavirus has meant even fewer children have had access to nature this year. To address this

a transformation in the education system is needed towards one where children from an early age to adulthood are encouraged to experience, celebrate, and learn about nature. Governments, businesses, and organisations also need to recognise the value of nature; this again starts with education. (Paragraph 341)

71. *To increase education on biodiversity we:*

a) *Support the establishment of a Natural History GCSE*;

b) *Recommend the Department for Education re-evaluate the opportunities for nature visits and teaching outside, as part of its support to schools recovering from the education impacts of covid-19*;

c) *Recommend the Department for Education and Defra work together to get school children involved in the Government's afforestation project*;

d) *Recommend Government emphasise its leadership in increasing knowledge and recognition of the importance and value of nature by requiring every Permanent Secretary across Government and every civil servant and Minister in the HM Treasury to undertake a basic ecology briefing as part of mandatory induction*;

e) *Recommend the Government explore setting up a biodiversity education charter to increase knowledge of biodiversity risk within the finance sector.* (Paragraph 342)

Appendices

Frog peeking out of watering can. Photo: Tony Bond

Appendix 1: Aichi biodiversity targets[523]

Strategic Goal A: Address the underlying causes of biodiversity loss by mainstreaming biodiversity across government and society
Target 1: By 2020, at the latest, people are aware of the values of biodiversity and the steps they can take to conserve and use it sustainably.
Target 2: By 2020, at the latest, biodiversity values have been integrated into national and local development and poverty reduction strategies and planning processes and are being incorporated into national accounting, as appropriate, and reporting systems.
Target 3: By 2020, at the latest, incentives, including subsidies, harmful to biodiversity are eliminated, phased out or reformed in order to minimize or avoid negative impacts, and positive incentives for the conservation and sustainable use of biodiversity are developed and applied, consistent and in harmony with the Convention and other relevant international obligations, taking into account national socio economic conditions.
Target 4: By 2020, at the latest, Governments, business and stakeholders at all levels have taken steps to achieve or have implemented plans for sustainable production and consumption and have kept the impacts of use of natural resources well within safe ecological limits.
Strategic Goal B: Reduce the direct pressures on biodiversity and promote sustainable use by mainstreaming biodiversity across government and society
Target 5: By 2020, the rate of loss of all natural habitats, including forests, is at least halved and where feasible brought close to zero, and degradation and fragmentation is significantly reduced.
Target 6: By 2020 all fish and invertebrate stocks and aquatic plants are managed and harvested sustainably, legally and applying ecosystem based approaches, so that overfishing is avoided, recovery plans and measures are in place for all depleted species, fisheries have no significant adverse impacts on threatened species and vulnerable ecosystems and the impacts of fisheries on stocks, species and ecosystems are within safe ecological limits.
Target 7: By 2020 areas under agriculture, aquaculture and forestry are managed sustainably, ensuring conservation of biodiversity.
Target 8: By 2020, pollution, including from excess nutrients, has been brought to levels that are not detrimental to ecosystem function and biodiversity.
Target 9: By 2020, invasive alien species and pathways are identified and prioritized, priority species are controlled or eradicated, and measures are in place to manage pathways to prevent their introduction and establishment.
Target 10: By 2015, the multiple anthropogenic pressures on coral reefs, and other vulnerable ecosystems impacted by climate change or ocean acidification are minimized, so as to maintain their integrity and functioning.

523 CBD Secretariat (2020) Aichi Biodiversity Targets

Strategic Goal C: To improve the status of biodiversity by safeguarding ecosystems, species and genetic diversity

Target 11: By 2020, at least 17 per cent of terrestrial and inland water, and 10 per cent of coastal and marine areas, especially areas of particular importance for biodiversity and ecosystem services, are conserved through effectively and equitably managed, ecologically representative and well connected systems of protected areas and other effective area-based conservation measures, and integrated into the wider landscapes and seascapes.

Target 12: By 2020 the extinction of known threatened species has been prevented and their conservation status, particularly of those most in decline, has been improved and sustained.

Target 13: By 2020, the genetic diversity of cultivated plants and farmed and domesticated animals and of wild relatives, including other socio-economically as well as culturally valuable species, is maintained, and strategies have been developed and implemented for minimizing genetic erosion and safeguarding their genetic diversity.

Strategic Goal D: Enhance the benefits to all from biodiversity and ecosystem services

Target 14: By 2020, ecosystems that provide essential services, including services related to water, and contribute to health, livelihoods and well-being, are restored and safeguarded, taking into account the needs of women, indigenous and local communities, and the poor and vulnerable.

Target 15: By 2020, ecosystem resilience and the contribution of biodiversity to carbon stocks has been enhanced, through conservation and restoration, including restoration of at least 15 per cent of degraded ecosystems, thereby contributing to climate change mitigation and adaptation and to combating desertification.

Target 16: By 2015, the Nagoya Protocol on Access to Genetic Resources and the Fair and Equitable Sharing of Benefits Arising from their Utilization is in force and operational, consistent with national legislation.

Strategic Goal E: Enhance implementation through participatory planning, knowledge management and capacity building

Target 17: By 2015 each Party has developed, adopted as a policy instrument, and has commenced implementing an effective, participatory and updated national biodiversity strategy and action plan.

Target 18: By 2020, the traditional knowledge, innovations and practices of indigenous and local communities relevant for the conservation and sustainable use of biodiversity, and their customary use of biological resources, are respected, subject to national legislation and relevant international obligations, and fully integrated and reflected in the implementation of the Convention with the full and effective participation of indigenous and local communities, at all relevant levels.

Target 19: By 2020, knowledge, the science base and technologies relating to biodiversity, its values, functioning, status and trends, and the consequences of its loss, are improved, widely shared and transferred, and applied.

Target 20: By 2020, at the latest, the mobilization of financial resources for effectively implementing the Strategic Plan for Biodiversity 2011-2020 from all sources, and in accordance with the consolidated and agreed process in the Strategy for Resource Mobilization, should increase substantially from the current levels. This target will be subject to changes contingent to resource needs assessments to be developed and reported by Parties.

Appendix 2: 25 Year Environment Plan Overall Assessment against progress[524]

CLEAN AIR

Outcome indicator	What are we assessing?	Status
Emissions of five key air pollutants	Changes in the emissions of five of the most damaging air pollutants, which have harmful impacts on human health and the environment.	→
Concentrations of fine particulate matter in the air	A measure of the level of long-term exposure of people to harmful airborne fine particulate matter	↓
Roadside nitrogen dioxide concentration	Changes in average roadside concentrations of nitrogen dioxide. The highest concentrations are often found at roadside locations as road vehicles are a big source of this pollutant.	↓

CLEAN AND PLENTIFUL WATER

Outcome indicator	What are we assessing?	Status
State of the water environment	The percentage of river bodies which meet the 'good ecological status' standard.	→
Condition of bathing waters	The percentage of designated bathing waters meeting conditions sufficient to minimise the risk of harm to bathers from pollution.	→

THRIVING PLANTS AND WILDLIFE

Outcome indicator	What are we assessing?	Status
Extent and condition of protected sites	The hectares of protected sites and the current condition of one type of protected sites (Sites of Special Scientific Interest) based on a common standard.	→
Area of woodland creation in England	Change in the area of broadleaved and conifer woodland in England.	↑
Abundance and distribution of priority species in the UK	Changes in the relative abundance of priority species and changes in distribution of priority species (i.e. changes in the number of one kilometre grid squares in which species are recorded in any given year). Priority species are those which are of principal importance for the	↓

524 HM Government (2020) 25 Year Environment Plan Progress Report April 2019 to March 2020. 11 June 2020

USING RESOURCES FROM NATURE MORE SUSTAINABLY AND EFFICIENTLY

Outcome indicator	What are we assessing?	Status
Raw material consumption	Trends in per capita raw material consumption and resource productivity in England, which help us to understand how efficiently raw materials are being used.	→
The percentage of fish stocks fished at or below levels of maximum sustainable yield	Changes in the proportion of commercial fish and shellfish stocks that are within safe biological limits and fished sustainably.	↑

ENHANCED BEAUTY, HERITAGE AND ENGAGEMENT WITH THE NATURAL ENVIRONMENT

Outcome indicator	What are we assessing?	Status
Engagement with the natural environment	The frequency of visits to natural spaces by adults in England	↑

MITIGATING AND ADAPTING TO CLIMATE CHANGE

Outcome indicator	What are we assessing?	Status
Emissions of greenhouse gases from natural resources	Changes in greenhouse gas emissions from natural resources such as the forestry, agriculture and waste sectors.	↓ This indicator represents all sectors within Defra's scope. The overall downward trend does not apply to each individual sector, it is a combined attribution. For example, emissions from agriculture and waste have remained relatively stagnant in recent years.
Carbon footprint and consumer buying choices	England's carbon footprint, including greenhouse gases emitted directly by households, from the goods and services produced in England and consumed here, and emissions embedded in imports.	↓

MINIMISING WASTE

Outcome indicator	What are we assessing?	Status
Residual waste arising by type and sector	How much waste is incinerated and landfilled in England rather than recycled or reused.	→
Municipal waste recycling rates	Trends in household waste and waste from household recycling rates.	→

ENHANCING BIOSECURITY

Outcome indicator	What are we assessing?	Status
Abatement of the number of invasive non-native species entering and establishing against a baseline	The change in number of invasive non-native species established across or along 10% or more of the land area or coastline of Great Britain.	↑
The number of additional tree pests and diseases becoming established in England	The additional tree pests and diseases formally considered as becoming 'established' by the UK Plant Health Risk Group within a rolling 10-year period.	↑

KEY

- ↓ Downward short-term trend, positive outcome
- ↓ Downward short-term trend, negative outcome
- → Stable short-term trend, stable situation
- ↑ Upward short-term trend, positive outcome
- ↑ Upward short-term trend, negative outcome

The arrows show simply whether the trend has recently increased or decreased, and the colour coding reflects whether that is a positive or negative outcome for the environmental goal.

Formal minutes

Wednesday 23 June 2021

Members present:

Philip Dunne, in the Chair

Duncan Baker	Caroline Lucas
Barry Gardiner	Cherilyn Mackrory
Robert Goodwill	Jerome Mayhew
James Gray	Dr Matthew Offord
Helen Hayes	Claudia Webbe

Draft Report (*Biodiversity in the UK: bloom or bust?*), proposed by the Chair, brought up and read.

Paragraphs 1 to 259 read and agreed to.

Paragraph 260 read.

Amendment proposed, in line 4, after "targets." to insert "The government's commitment to reviewing the environmental and economic case for extending the ban to additional areas of blanket bog should commence without delay and operate transparently, to demonstrate that the UK's approach to peatland protection is comprehensive and consistent, including as host of the COP26 climate summit.".—(*Caroline Lucas.*)

Question put, That the Amendment be made.

The Committee divided.

Ayes, 4	Noes, 6
Barry Gardiner	Duncan Baker
Helen Hayes	Robert Goodwill
Caroline Lucas	James Gray
Claudia Webbe	Cherilyn Mackrory
	Jerome Mayhew
	Dr Matthew Offord

Question accordingly negatived.

Paragraph agreed to.

Paragraphs 261 to 342 agreed to.

Summary agreed to.

Papers were appended to the Report as Appendices 1 and 2.

Resolved, That the Report be the First Report of the Committee to the House.

Ordered, That the Chair make the Report to the House.

Ordered, That embargoed copies of the Report be made available, in accordance with the provisions of Standing Order No. 134.

[Adjourned till Wednesday 30 June at 2.00 p.m.

Witnesses

The following witnesses gave evidence. Transcripts can be viewed on the inquiry publications page of the Committee's website.

Thursday 22 October 2020

Tony Juniper, Chair, Natural England; **Andy Purvis**, Lead Author of the IPBES Global Assessment of Biodiversity and Ecosystem Services, IPBES, Research Leader in Life Sciences, Natural History Museum; **Anne Larigauderie**, Executive Secretary, IPBES; **Doug Allan**, Filmmaker, Planet Earth and Blue Planet series — Q1–25

Braulio Ferreira de Souza Dias, Former Executive Secretary, UN Convention on Biological Diversity, Chairman, Global Council of Birdlife International, Vice Chairman, Board of Trustees of Biodiversity International; **Kate Norgrove**, Executive Director for Campaigns and Advocacy, WWF; **Elisa Morgera**, Professor of Global Environmental Law, Strathclyde University Law School — Q26–46

Thursday 12 November 2020

Professor Kathy Willis, Professor of Biodiversity, Department of Zoology, University of Oxford, Member, Natural Capital Committee; **Julian Glover**, Chair, Landscape Review and former Associate Editor, London Evening Standard; **Craig Bennett**, Chief Executive, Wildlife Trusts; **Dr Ruth Little**, Lecturer, University of Sheffield — Q47–79

Mayor Philip Glanville, Member, Local Government Association's Environment, Economy, Housing and Transport Board; **Kari Sprostranova**, Health, Safety, Environment and Sustainability Director, Balfour Beatty; **Caroline Knox**, Member, National Farmers' Union Environment Forum; **Ben McCarthy**, Head of Nature Conservation and Restoration Ecology, National Trust — Q80–117

Wednesday 9 December 2020

Professor Sir Partha Dasgupta, Frank Ramsey Professor Emeritus, University of Cambridge, Lead, HMT Economics of Biodiversity Review — Q118–138

Professor David Hill, Chairman, Environment Bank; **Mihai Coroi**, Ecology Technical Principal, Mott MacDonald; **David Webster**, Director of Sustainability & External Affairs, Associated British Foods UK Grocery — Q139–159

Nathalie Seddon, Professor of Biodiversity, University of Oxford, Founder, Nature-based Solutions Initiative, Department of Zoology, University of Oxford; **Martin Harper**, Director of Global Conservation, Royal Society for the Protection of Birds (RSPB) — Q160–168

Wednesday 13 January 2021

Rt Hon George Eustice MP, Secretary of State, Department for Environment, Food and Rural Affairs; **The Right Hon. the Lord Goldsmith of Richmond Park**, Minister for Pacific and the Environment, Department for Environment, Food and Rural Affairs; **Rt Hon Christopher Pincher MP**, Minister for Housing, Ministry of Housing, Communities and Local Government; **Cheryl Case**, Deputy Director for International Environmental Negotiations, Department for Environment, Food and Rural Affairs; **Simon Gallagher**, Director of Planning, Ministry of Housing, Communities and Local Government; **Richard Pullen**, Head of National Biodiversity Policy, Department for Environment, Food and Rural Affairs — Q169–216

Wednesday 24 February 2021

Professor Sir Partha Dasgupta, Frank Ramsey Professor Emeritus, University of Cambridge, Lead, HMT Economics of Biodiversity Review Q217–237

Thursday 4 March 2021

Kemi Badenoch MP, Exchequer Secretary, HM Treasury, Parliamentary Under Secretary of State (Minister for Equalities), Government Equalities Office; **Steve Field**, Director for Climate, Environment and Energy, HM Treasury Q238–285

Published written evidence

The following written evidence was received and can be viewed on the inquiry publications page of the Committee's website.

BIO numbers are generated by the evidence processing system and so may not be complete.

1 Associated British Foods (BIO0063)

2 Association of Local Environmental Records Centres (BIO0041)

3 Balfour Beatty (BIO0061)

4 Bright Blue (BIO0006)

5 British Ecological Society (BIO0050)

6 British Trust For Ornithology (BTO) (BIO0030)

7 Bruford, Professor Michael (Professor of Biodiversity, Cardiff University); and Ogden, Professor Rob (Head of Conservation Genetics, University of Edinburgh) (BIO0008)

8 Buglife - The Invertebrate Conservation Trust (BIO0024)

9 CLA (BIO0052)

10 Centre for Biodiversity and Environment Research, University College London (BIO0019)

11 Chartered Institute of Ecology and Environmental Management (BIO0039)

12 Clark, Linda (BIO0066)

13 Collins, Mrs Carol (BIO0043)

14 Crampton, Nicholas (BIO0002)

15 Defra (BIO0054)

16 Fauna & Flora International (BIO0040)

17 Forestry Commission (BIO0055)

18 Game & Wildlife Conservation Trust (BIO0038)

19 Great British Oceans (BIO0013)

20 Hathersage Rewilding Group, Hope Valley Climate Action (BIO0044)

21 Hill, Professor David (Chairman, The Environment Bank Ltd) (BIO0007)

22 Holroyd, Mr Steve (BIO0045)

23 Horton, Mr Jamie (Parliamentary Affairs Officer, Biomass UK) (BIO0056)

24 Institute and Faculty of Actuaries (BIO0068)

25 Islington Swifts Group (BIO0046)

26 JNCC (BIO0012)

27 Law Society of Scotland (BIO0022)

28 Linking Environment And Farming (LEAF) (BIO0020)

29 Little, Dr Ruth (Lecturer in Human Geography , University of Sheffield); Rose, Dr David Christian (Elizabeth Creak Associate Professor of Agricultural Innovation and Extension, University of Reading); Tsouvalis, Dr Judith (Research Associate, University of Sheffield); and Burns, Prof Charlotte (Professor of Politics, University of Sheffield) (BIO0028)

30 Local Government Association (BIO0010)

31 Microbiology Society (BIO0011)

32 Mineral Products Association (BIO0004)

33 Mott MacDonald (BIO0053)

34 National Biodiversity Network Trust (BIO0026)

35 National Farmers' Union (BIO0036)

36 National Trust (BIO0035)

37 Natural Capital Committee (BIO0059)

38 Natural England (BIO0027), (BIO0057), (BIO0058)

39 Natural Resources Defense Council (NRDC); Biofuelwatch; Southern Environmental Law Center; FERN; and Dogwood Alliance (BIO0016)

40 Nature-based Solutions Initiative, Department of Zoology, University of Oxford (BIO0060)

41 Office for National Statistics (BIO0069)

42 One Ocean Hub (BIO0062)

43 On the EDGE Conservation (BIO0029)

44 People and Nature (BIO0021)

45 Population Matters (BIO0032), (BIO0033)

46 RSPB (BIO0023)

47 Romsey and District Society Natural Environment Committee (BIO0003)

48 Salisbury and Wilton Swifts (BIO0049)

49 Summers, Mr. William (BIO0001)

50 Taylor, Rosalind (BIO0042)

51 Tesco Stores Ltd (BIO0031)

52 Thames Water (BIO0048)

53 The Pew Charitable Trusts (BIO0037)

54 The Wildlife Trusts (BIO0015), (BIO0065)

55 The Wildlife Trusts; and Wildlife and Countryside Link (BIO0067)

56 UCL Institute for Innovation and Public Purpose (BIO0018)

57 Unilever (BIO0064)

58 WWF (BIO0047)

59 Wildlife and Countryside Link (BIO0014)

60 Wimbledon Swifts Group (BIO0051)

61 Woodland Trust (BIO0034)

62 Yorkshire Integrated Catchment Solutions Programme (iCASP) (BIO0017)

63 Yorkshire Water (BIO0025)

List of Reports from the Committee during the current Parliament

All publications from the Committee are available on the publications page of the Committee's website.

Session 2021–22

Number	Title	Reference
1st Special	Energy efficiency of existing homes: Government Response to the Committee's Fourth Report of Session 2019–21	HC 135

Session 2019–21

Number	Title	Reference
1st	Electronic Waste and the Circular Economy	HC 220
2nd	Pre-appointment hearing for the Chair-Designate of the Office for Environmental Protection (OEP)	HC 1042
3rd	Growing back better: putting nature and net zero at the heart of the economic recovery	HC 347
4th	Energy Efficiency of Existing Homes	HC 346