



Natural Capital Committee

End of Term Report

To the Domestic and Economy
Implementation Committee of the Cabinet

November 2020



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Chair's message

The commitment *“to be the first generation to leave the natural environment of England in a better state than it inherited”* was made in the 2011 Natural Environment White Paper, ‘The Natural Choice’. The world’s first Natural Capital Committee (NCC) was then established in 2012 to *“advise the Government on the state of natural capital in England.”* Over the past nine years and over its two terms, the NCC has advised seven Defra Secretaries of State on natural capital and published extensive, high impact advice. The Committee’s work has transformed the nation’s understanding of the importance of natural capital for economic prosperity and human wellbeing, with natural capital principles fully entrenched into government policy, all while keeping within and delivering its Terms of Reference in full. The Committee’s greatest achievement is recommending a long-term, 25 Year Environment Plan (25 YEP) to protect and improve the environment. In 2018, the then Prime Minister launched the 25 YEP, following further advice from the NCC.

The 25 YEP is a huge achievement – however, the absence of progress since 2011 is more notable than the successes. The NCC was specifically requested to provide scrutiny of the 25 YEP annual Progress Reports, paving the way for the Office for Environmental Protection (OEP) to undertake this function in the future. The Committee’s assessment of government’s first two Progress Reports highlights the need for natural capital asset-based metrics and a comprehensive baseline census to effectively report on progress. In 2019, the Committee set out in its detailed advice to government how this should be conducted, and subsequently repeated on a five-year cycle. These building blocks are essential if the objectives of the 25 YEP are to be met.

This is a pivotal moment with the most significant environmental legislation in a generation passing through Parliament. The Environment Bill will place the 25 YEP on a statutory footing, establish long-term, legally binding targets for environmental improvement, and create an independent body – the OEP – to hold government to account on progress against its environmental objectives. The NCC has advised that the Environment Bill should go further by establishing a framework for statutory interim targets and replace the biodiversity net gain with environmental net gain. Only an environmental net gain approach in planning and development will ensure that aggregate natural capital is maintained and enhanced. Without these changes, there is a real danger that this once in a lifetime opportunity to legislate for improving England’s natural environment and realise the huge economic opportunities that this presents will be lost.

Let me conclude by thanking all of the members who have served on the NCC for the last nine years – and our secretariat – giving their time, energy and commitment generously and putting in effort far beyond what is required of them.

Professor Dieter Helm, Chairman





Executive summary

Nine years ago, the government published the 2011 White Paper, *The Natural Choice*, committing to the objective “to be the first generation to leave the environment in a better state than it inherited.”¹ To achieve this, the White Paper announced the establishment the world’s first Natural Capital Committee (NCC) to provide independent advice on the state of England’s natural capital.

Over its two terms (2012 to 2020) the NCC has delivered high impact, independent, cutting edge advice and recommendations through a raft of reports to government. The NCC’s advice has led directly to wide ranging and remarkable transformative changes in environmental policy across three key areas: i) the 25 Year Environment Plan and essential statutory framework; ii) design of a robust asset-based framework for measuring progress; and iii) embedded natural capital in policy decision making, as summarised below. All of this has been achieved by a small Committee working part time, while keeping firmly within and successfully meeting its Terms of Reference in full.

Impact of the NCC’s advice and recommendations

Proposed a game changing 25 Year Environment Plan to enhance the environment and underpinning statutory framework

1. The NCC’s single most important achievement was advising on both the creation and content of a long-term, 25 year plan for protecting and improving the environment.^{2,3} The former Prime Minister, Theresa May, subsequently launched the government’s 25 Year Environment Plan (YEP) in 2018.⁴ The 25 YEP is underpinned by the Committee’s ground breaking vision to secure a positive environmental legacy for future generations.

2. For the Plan to drive real environmental improvement, the Committee recommended that it should be placed on a meaningful statutory footing with legally binding targets, and that the government establishes an independent body responsible for overseeing the Plan’s implementation.⁵ Testament to the NCC’s advice, the Environment Bill, once it completes its passage through Parliament, will commit the government to set a number of legally binding environmental targets across four priority areas: i) air quality, ii) water, iii) biodiversity and iv) resource efficiency and waste reduction. It will also establish the Office of Environmental Protection (OEP), an independent body designed to hold government to account on meeting environmental targets.

3. The Committee has successfully championed the need for three fundamental guiding principles for implementation of the 25 YEP: i) the polluter pays, ii) public money for public goods and iii) environmental net gain. Both public money for public goods and the polluter pays underpin the government’s landmark new environmental legislation: the Agriculture Bill and Environment Bill respectively.

1 HM Government, *The Natural Choice: securing the value of nature* (2011) <https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature>

2 NCC, *The state of natural capital: restoring our natural assets* (2014): <https://www.gov.uk/government/publications/natural-capital-committees-second-state-of-natural-capital-report>

3 NCC, *State of natural capital: protecting and improving natural capital for prosperity and wellbeing* (2015): <https://www.gov.uk/government/publications/natural-capital-committees-third-state-of-natural-capital-report>

4 HM Government, *A Green Future: Our 25 Year Plan to Improve the Environment* (2018) <https://www.gov.uk/government/publications/25-year-environment-plan>

5 NCC, *Natural Capital Committee’s Sixth Annual Report* (2019): <https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report>



Designed robust asset-based metrics and a comprehensive baseline for measuring changes in natural capital

4. The NCC's **ground breaking corporate natural capital accounting framework provides the first set of tools and methodology for organisations to take an asset based approach to natural capital accounting**, moving away from flows based accounting which can fail to address the unsustainable use of assets.
5. The NCC collaborated with the Office for National Statistics (ONS) and Defra to **develop the innovative methodology used in national accounts – resulting in the first ever set of UK national natural capital accounts** published by the ONS in 2020.⁶ The latest UK natural capital accounts estimate that, in 2016, the partial value of UK natural capital was around £958 billion.⁷ The Committee continues to advise the ONS on the development of these accounts.
6. The NCC fully developed advice to government on the concept of **a natural capital baseline census in 2019, emphasising that understanding the state of natural capital assets is fundamental for measuring progress against the 25 YEP/ other environmental policies**. The government responded to this recommendation in 2020 by announcing a Natural Capital and Ecosystem Assessment pilot.⁸ The Committee continues to advise the government on the need to ensure that all natural assets – not just habitats – are included in the pilot and any subsequent fully developed baseline exercise.
7. In its final year, the Committee **created a comprehensive framework for the OEP to measure progress against the 25 YEP** and applied this as part of its final response to the 2020 25 YEP Progress Report. This framework will lay the foundation for the OEP to swiftly and effectively undertake its 25 YEP scrutiny function once it is established in 2021.

Embedded natural capital in policy decision making through the Green Book, the How to do it workbook and proper valuation of ecosystem services

8. The NCC collaborated with the Treasury and Defra in 2018 to introduce a **natural capital framework into the Green Book**, the first update in 15 years. The Green Book guidance now recognises the importance of stocks of natural capital assets in the assessment of sustainability and strengthens the valuation of the environmental costs and benefits generated by policy and public spending.
9. The NCC **produced the highly influential How to do it workbook in 2017,⁹ a practical guide to use natural capital approaches in making decisions about the natural environment**. The Workbook has been used extensively by practitioners to help support the implementation of natural capital based approaches in place-based decision making.
10. The NCC's excellent 2018 guide **to economic valuation of ecosystem services¹⁰ made a significant contribution to improving access to non-market valuations** of environmental costs and benefits and natural capital decision support tools more generally.
11. The Committee highlighted for the first time the significant returns from public spending/investment in **natural capital, and how such investment can outstrip returns from spending elsewhere.¹¹** The NCC also emphasised **the importance of location when designing interventions, especially with regard to human wellbeing and health**. This advice has been incorporated across a range of policies, including the 25 YEP Pioneer Projects.

6 ONS, *UK Natural Capital: interim review and revised 2020 roadmap* (2018): <https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/uknaturalcapitalinterimreviewandrevised2020roadmap>

7 ONS, *UK natural capital accounts: 2019* (2019): <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalaccounts/2019>

8 Defra, *George Eustice speech on environmental recovery* 20 July (2020): <https://www.gov.uk/government/speeches/george-eustice-speech-on-environmental-recovery-20-july-2020>

9 NCC, *How to do it: a natural capital workbook* (2017): <https://www.gov.uk/government/groups/natural-capital-committee>

10 NCC, *Economic valuation and its applications in natural capital management and the Government's 25 Year Environment Plan* (2018): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/608850/ncc-natural-capital-valuation.pdf

11 Eftec, *The Economic Case for Investment in Natural Capital in England* (2015) <https://www.gov.uk/government/publications/natural-capital-committee-research-investing-in-natural-capital>

12. The Committee emphasised the **critical role of nature based interventions (NBI) for attaining net zero greenhouse gas (GHG) emissions by 2050** in its highly influential 2020 advice paper.¹² The NCC developed this further, demonstrating how the UK can show global leadership by championing the role of a natural capital framework/NBI at the two major 2021 international climate and biodiversity conferences (COP26 and CBD COP).

The impact of the Committee’s advice has been transformative with a natural capital approach firmly entrenched into government policy. If the government is to meet its ambitious vision to leave the environment in a better state for the next generation and meet the objectives of the 25 YEP, then there is much more to do. In this context, the NCC’s recommendations – many of these reiterated from previous Committee reports – are summarised below:

Recommendations

The 25 YEP and essential statutory framework

- The **25 YEP and all future Environmental Improvement Plans (EIP) should require legally binding interim targets which are clearly linked to the legally binding long-term targets.** Without statutory interim targets, it is likely that the ten 25 YEP goals and future EIPs will become aspirational and risk long-term targets being missed because, for example, the government may prioritise other short-term public expenditure items.
- The NCC does not consider **the OEP being accountable to government to be a credible position;** the OEP should be accountable to Parliament. Other similar regulatory bodies, such as the Office for National Statistics (ONS) or the Audit Commission are accountable to Parliament. The OEP should be fully independent from the organisations it is responsible for; its budget and appointments should be decided by Parliament.
- The NCC notes that all **Ministers of the Crown will have to ensure ‘due regard’ to the five environmental principles. The wording of the clause should be strengthened to ‘act in accordance with’ before the Environment Bill is re-introduced into Parliament.**

- The NCC **advises that government should replace biodiversity net gain in the Environment Bill with environmental net gain.** Only an environmental net gain approach which applies to all development covered by the Town and Country Planning system, all nationally significant infrastructure projects and the marine environment will ensure that aggregate natural capital is maintained and enhanced.
- The NCC **advises that public funding for agriculture should be focused on the delivery of environmental public goods,** and explicitly not on the subsidy of profits through the private production of food. There should be no presumption that historic levels of funding or the current distribution of these are correct; in some cases they might need to rise, in others fall.
- The NCC advises that if current evidence is not sufficient to support a **legally binding target for soils through the Environment Bill legislative framework,** 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.**

Natural capital asset based framework for measuring environmental progress

- The NCC **advises that Defra should ensure that the proposed natural capital and ecosystem assessment pilot, and any subsequent fully developed** baseline exercise focuses on identifying and measuring the extent and condition of **all natural capital assets** across England, as per the NCC’s detailed advice – not just habitats – and should incorporate a substantial citizen science component. The baseline assessment should be repeated every five years to enable a periodic understanding of the trends in England’s natural capital assets. The Treasury should ensure that the baseline assessment is **properly funded at the next Spending Review – there are huge economic opportunities to be realised from understanding the state of England’s natural assets.** The OEP will be unable to carry out its 25 YEP scrutiny function effectively without a natural capital asset baseline.

¹² NCC, Natural Capital Committee advice on reaching net zero by 2050: nature based interventions (2020); <https://www.gov.uk/government/publications/a-natural-capital-approach-to-attaining-net-zero-nature-based-interventions>

- The development of **corporate natural capital accounts is fundamental for securing the government's environmental objectives.**

These accounts enable natural assets to be measured in the context of company profits, providing a powerful 'self-interest' incentive for organisations/corporate investors to maintain and enhance natural assets. Without such an incentive, it is unlikely that any substantial environmental improvement will be achieved.

Defra should urgently take forward the corporate accounts template developed by the NCC, working with the Department for Business, Energy and Industrial Strategy (BEIS) to encourage private sector production of corporate natural capital accounts which require provisions to be made for the maintenance of natural capital, notably by engaging with the Taskforce for Nature-related Financial Disclosures initiative/accounting bodies to consider future revisions to accounting standards to include natural capital.

- A full **set of national accounts for the extent and condition of natural assets is needed which will enable the state of these assets,** as well as the values derived from them, to be recorded and reported on a more detailed level, which is relevant for decision making and policy development. These so called 'bottom-up' accounts can be aided by a natural capital baseline assessment and should enable further refinement of the 'wealth accounts'. The NCC advises that the **next iteration of the ONS national accounts should work towards/ include a national balance sheet of the value of natural assets, estimates of the depreciation of those assets (where this occurs) and a redefinition of the way in which income and savings are measured in national accounts.**

Further embedding natural capital into public and private decision making

- The government should **consider how the OEP could work in collaboration with the Regulatory Policy Committee (RPC) to assess how well the Green Book natural capital guidance has been considered in policy impact assessments. The RPC should 'Red Flag' impact assessments that will result in significant losses of natural capital.**
- All publicly funded **infrastructure projects and programmes, infrastructure providers and public bodies should be required to invest in maintaining and enhancing natural capital. Such projects should also have a net environment gain requirement placed upon them.** The NCC recommends that all infrastructure projects should take full account of natural capital by including it in the project appraisal process as per the Green Book guidelines.



Background to the Natural Capital Committee

The NCC was established in May 2012 following the government White Paper, *The Natural Choice*, which announced “we will establish an independent Natural Capital Committee to advise the Government on the state of natural capital in England”.

The NCC reported to the Economic Affairs Committee of the Cabinet (EAC) from 2012 to 2019; from 2019 to 2020 it reported to the EU Exit, Economy and Trade Committee of the Cabinet; and in 2020 it reported to the Domestic and Economy Implementation Committee of the Cabinet.

As of 2020, the NCC comprised of a Chair, Professor Dieter Helm and six members: Professor Melanie Austen, Professor Ian Bateman, Professor Chris Collins, Professor Paul Leinster, Professor Colin Mayer, and Professor Kathy Willis.

Over the two terms, a total of 12 dedicated members have served on the Committee, including:

- Professor Giles Atkinson,
- Professor Diane Coyle,
- Professor Rosie Hails,
- Kerry ten Kate,
- Professor Georgina Mace and
- Robin Smale.

Each member has made exceptional contributions to the Committee over the past nine years, often putting in time and effort above and beyond what is required of them. The Committee is supported by a secretariat based in the Department of Environment, Food and Rural Affairs headed by Maniv Pathak with Elias Scheuermann, Rebecca McIlhiney, Jake Harvey, James Farr, Felix Clarke, Jessica McGreevy, Jennifer Clements and Andy Canning-Trigg.

Table 1 2020 Committee Members and biographies

NCC Member

Profile



Professor Dieter Helm CBE (Chair)

Dieter is an economist specialising in utilities, infrastructure, regulation and the environment, and concentrating on the energy, water, communications and transport sectors primarily in Britain and Europe. He is a Professor at Oxford University, a Fellow of New College, Oxford.



Professor Melanie Austen

Melanie is Professor of Ocean and Society at the University of Plymouth. For the last 20 years, she has been leading national and international collaborative and interdisciplinary marine research projects that support sustainable marine policy, environmental management, communities and their wellbeing and industry. She is a member of the Joint Nature Conservation Committee (JNCC), was the first Chief Scientific Advisor to the UK's Marine Management Organisation (MMO), is an Honorary Professor at the University of Exeter medical school, and a member of several Expert Advisory Groups.



Professor Ian Bateman OBE

Ian is Professor of Environmental Economics and a Director of the Land, Environment, Economics and Policy Institute (LEEP) at the University of Exeter. His research interests focus on ensuring sustainable wellbeing through the integration of natural and social science knowledge within economic analysis, public and private sector decision making and policy. Particular interests lie in the fields of quantitative analysis, integrated modelling and the valuation of non-market benefits and costs.



Professor Chris Collins

Chris is Chair of Environmental Chemistry at the University of Reading. He is the Natural Environment Research Council Soils Coordinator and chairs Defra's Hazardous Substances Advisory Committee, providing expert advice to the UK government on how to protect the environment and human health via the environment from chemicals. His research focuses on determining the factors controlling exposure of biota to environmental pollution and the role of soil organic carbon in modifying pollutant exposure and the parallels between pollutant and carbon cycling in soils.



Professor Paul Leinster CBE

Paul is Professor of Environmental Assessment at Cranfield University and was formerly Chief Executive of the Environment Agency. He has over 40 years of practical experience in environmental management, science, policy development and regulation. Before joining the EA in 1998, Paul worked in the private sector for a number of major companies. He has a particular interest in translating research into effective policy, regulatory, operational and governance measures and in natural capital and ecosystem service approaches to environmental management. Paul has a number of non-executive roles.



Professor Colin Mayer CBE

Colin is Professor of Management Studies, Saïd Business School at the University of Oxford. He is an expert on all aspects of corporate finance, governance and taxation, the regulation of financial institutions and the role of the corporation in contemporary society.



Professor Kathy Willis CBE

Kathy is a Professor of Biodiversity and Head of the Long-term Ecology laboratory at the University of Oxford. She is also the Principal of St Edmund Hall, one of the Colleges that make up the University of Oxford. Until recently, she was the Director of Science at the Royal Botanic Gardens, Kew. She has over 30 years of research experience focusing on modelling and remotely determining important landscapes for biodiversity and ecosystem services across the world. Most recently she has been leading a research team to develop new and emerging models and technologies to assist land managers in decision making to ensure the best outcomes for business and biodiversity.

Table 2 Former Committee members and biographies

Previous NCC member **Profile**



Professor Giles Atkinson (2012 to 2015)

Giles Atkinson is Professor of Environmental Policy in the Department of Geography & Environment and an Associate of the Grantham Research Institute on Climate Change and Environment at the London School of Economics. His research specialises in sustainability economics and, more recently, distributional issues in natural capital accounting. He is a member of the Steering Group for the ONS Natural Capital Project and co-authored a flagship publication for OECD in 2018 on environmental cost-benefit analysis.



Professor Diane Coyle CBE (2016 to 2019)

Diane is Bennett Professor of Public Policy at the University of Cambridge. She has held a number of public service roles including Vice Chair of the BBC Trust (2006 to 2014), member of the Competition Commission (2001 to 2009), and member of the Migration Advisory Committee (2009 to 2014). Diane is an expert adviser to the National Infrastructure Commission and a member of the Council of Economic Advisers. She was awarded a CBE for her contribution to the public understanding of economics in the 2018 New Year Honours.



Professor Rosie Hails MBE (2012 to 2015)

Professor Rosie Hails MBE is an ecologist and Nature and Science Director at the National Trust, holding a visiting chair at the University of Exeter. She is Nature and Science Director at the National Trust where her role is to develop the Trust's research portfolio and develop the science evidence base upon which decisions are made. She is a member of Defra's Science Advisory Council and bovine TB eradication group, Council member of the RSPB and Trustee of the John Innes Foundation. Formerly she was the Science Director for Biodiversity & Ecosystem Science at the UK Centre for Ecology & Hydrology.



Kerry ten Kate (2012 to 2015)

Kerry is an independent consultant, advising governments, companies and civil society organisations on how best to integrate the natural environment into economic decision-making. She is a board member of Natural England and a trustee of the RSPB, where she chairs the Conservation Committee. Formerly a barrister, Kerry served on the Secretariat of the United Nations Conference on Environment and Development in 1992 (the 'Rio Earth Summit'). She was policy adviser at the Royal Botanic Gardens, Kew and Director of Investor Responsibility at asset manager Insight Investment. She founded and directed the international Business and Biodiversity Offsets Programme (BBOP) at Forest Trends.



Dame Professor Georgina Mace (2012 to 2017)

Georgina Mace DBE was Professor of Biodiversity and Ecosystems at University College London. She was previously Professor of Conservation Science and Director of the Natural Environment Research Council (NERC) Centre for Population Biology, Imperial College London (2006 to 2012) and Director of Science at the Zoological Society of London (2000 to 2006). For her services to environmental science, Georgina was awarded an OBE in 1998, a CBE in 2007 and made a DBE in 2016.



Robin Smale (2012 to 2015)

Robin is a director and co-founder of Vivid Economics, leading teams on the economics of the environment in the fields of natural resources, finance, earth observation, cities, infrastructure and energy. He advises governments, multi-national companies, international organisations and NGOs. He sits on the leadership group of the Finance for Biodiversity Initiative. His current special focus is on the financial system and biodiversity and on the provision of urban green infrastructure. His work takes him across the EU, Africa, North America and Oceania from a London base.



Delivery against Terms of Reference

The Committee has performed its duties within both its Terms of Reference, an exemplar for staying with the remit of its Terms of Reference. It has delivered cutting edge advice over nine years, completing both of its Terms of Reference in full. The NCC's first and second Terms of Reference are detailed in Annex A and B.

NCC's first term (2012 to 2015)

The Natural Capital Committee's (NCC) first term commenced in May 2012 and concluded in September 2015. The Committee met its Terms of Reference (ToR) in full. The full impact the advice the NCC delivered is detailed in section '3. Impact of NCC advice' on page 21.

This table details the advice the NCC delivered against the main components of its first ToR.

| First Terms of Reference components | NCC advice |
|---|--|
| <p><i>“Provide advice on when, where and how natural assets are being used unsustainably.”</i></p> | <ul style="list-style-type: none"> • In autumn 2012, the NCC advised the ONS on the development of the national natural capital accounts, which are essential in understanding the state of our natural capital assets and whether they are being used sustainably. • In its first 'State of Natural Capital' report to the EAC in April 2013, the NCC highlighted the decline of our natural capital assets and the need for these trends to be properly measured. • In its advice paper 'Towards a Framework for Defining and Measuring Changes in Natural Capital' (March 2014), the NCC defined the meaning of 'natural capital' and provided guidance on how to identify thresholds and aspirational targets for natural capital assets and the provision of goods. • As part of its second 'State of Natural Capital' report to the EAC (March 2014), the NCC undertook a preliminary analysis of the state of natural capital in England and established that long-standing patterns of use mean some assets are not being used sustainably. As a result, the benefits derived from them are at risk. |
| <p><i>“Advise the Government on how it should prioritise action to protect and improve natural capital... this will include advising... on tools and methodologies to ensure that the value of natural capital is fully taken into account in policy decisions and in economic planning.”</i></p> | <ul style="list-style-type: none"> • In its discussion paper 'Unnatural Capital Accounting' (December 2013), the NCC discussed accounting for the natural environment and ecosystems, and the importance of inclusive wealth accounting. • In its second and third 'State of Natural Capital' reports in 2014 and 2015, the NCC advised that the government should develop a long-term, 25 year plan for improving the environment and provided a detailed framework on how to achieve this. • In 'The economic case for investment in natural capital in England' study (January 2015), in partnership with Efec, the Committee identified priority areas for natural capital improvements and developed the corporate natural capital accounting (CNCA) framework to help identify investment priorities. As part of this report, the CNCA framework was tested with a group of 'pilot organisations.' • In the advice paper 'Improving cost benefit analysis guidance' (February 2015) the Committee provided a set of suggestions for improving guidance for cost benefit analysis of projects that have impacts on the natural environment, i.e. the Green Book. • In several other working and discussion papers, including 'Natural Capital and Economic Growth' (September 2015), 'Developing corporate natural capital accounts' (January 2015) and 'Introduction to the Natural Capital Committee's Corporate Natural Capital Accounting Project' (2015), the NCC made a case for and further developed the CNCA framework. |

| First Terms of Reference components | NCC advice |
|--|--|
| <p><i>“Advise the Government on research priorities to improve future advice and decisions on protecting and enhancing natural capital.”</i></p> | <ul style="list-style-type: none"> • The Committee provided its initial advice on research priorities in March 2014 following consultation with the UK Research Councils. The NCC updated this paper in September 2015 following further consultation with the Research Councils, other research funding bodies and academia. The advice highlighted two priority themes the government should focus on: i) sustaining natural capital, and ii) decision making for sustainability. |

NCC's second term (2016 to 2020)

The main difference in the ToR for the second term was a shift in focus towards advising the government on development, implementation and progress of the 25 Year Environment Plan (25 YEP) and metrics to assess progress. The Committee's second term commenced in February 2016 and completed in December 2020. The full impact the advice the NCC delivered is detailed in '3. Impact of NCC advice' on page 21.

This table details the advice the NCC delivered against the main components of its second Terms of Reference.

| Second Terms of Reference components | NCC advice |
|---|---|
| <p><i>“Advise Government and its delivery bodies on the development and implementation of an integrated 25 year environment plan to protect and improve our natural capital; making use of appropriate knowledge and tools to identify priority assets for protection and improvement.”</i></p> | <ul style="list-style-type: none"> • A former Secretary of State, Rt Hon Michael Gove, requested advice on what the 25 YEP should aim to achieve, how it should seek to do so and what the necessary conditions for success are. The NCC responded to this request by publishing advice to government on the 25 YEP in September 2017. This advice focussed on recommendations on what the government should consider when drawing up the Plan building on the Committee's previous recommendations. The NCC's overall recommendation was that a good plan requires a clear vision for the environment in 25 years' time; a set of actions and associated investments to deliver this vision; credible and measurable milestones; and robust governance to oversee implementation. • In January 2018, the NCC advised on the goals, scale of investment for natural capital assets, milestones and the governance for the Plan. • In July 2018, the NCC advised the Secretary of State on Environmental Institutions and a Nature Act, in which NCC discussed what was needed in respect to governance of the 25 YEP. For example, NCC advised on establishing <i>“an independent body to scrutinise the government's delivery of the 25 YEP and wider domestic and EU-inherited environmental protections and standards”</i> and on <i>“Government to review the complex environmental delivery landscape with a view to streamlining it”</i>. • The main focus of the NCC's sixth, 2019 'State of Natural Capital' report to the EAC was the 25 YEP. The single most important recommendation from the report was that the Plan must be placed on a meaningful statutory basis in the forthcoming Environment Bill. • In April 2020, the NCC advised on delivering the net zero target within the context of the 25 YEP goals, noting that <i>“mitigating and adapting to climate change”</i> is goal seven. |

| Related to advising government on the 25 YEP, the TOR also states that the NCC should have particular regard to: | |
|--|---|
| <p>a) <i>“Advising Government on how national environmental priorities could be delivered in partnership with the private, public and third sectors – including local community endeavours.”</i></p> | <ul style="list-style-type: none"> • In its fourth ‘State of Natural Capital’ report, the Committee recommended a number of Pioneer Projects to explore the challenges and opportunities raised in implementing a natural capital approach in practice and on local scale, focusing on river catchments (Cumbria), urban areas (Manchester), landscapes (North Devon) and marine areas (Devon and Suffolk). The NCC also recommended that the four Pioneer Projects should be used to test the fit between national and local programmes and priorities, and to provide a means of understanding which methods and approaches might be applicable across locations and at what scale. • In its fifth ‘State of Natural Capital’ report, the NCC expanded on its recommendations for the Pioneer Projects, stating that clear leadership is required, with clear outcomes and objectives. The projects needed to build a firm evidence base of locally and nationally significant natural capital with a definition for what success looks like. It also requested a formalised reporting mechanism to the Committee so it could provide structured input into the projects. |
| <p>b) <i>“Providing practical advice to Government on how people and businesses can re-connect with nature.”</i></p> | <ul style="list-style-type: none"> • In July 2018, the NCC advised the Secretary of State on the benefits of an environmental census which includes citizen involvement as a way of connecting people with nature. Following the request by the Secretary of State, this advice was further developed in the NCC’s September 2019 ‘advice on an environmental baseline census of natural capital stocks: an essential foundation for the government’s 25 Year Environment Plan’. |
| <p>c) <i>“The development of suitable metrics to be used to track progress against the plan’s objectives and benchmarking the English environment with the rest of the world.”</i></p> | <ul style="list-style-type: none"> • In July 2018, the NCC advised Defra officials on metrics to be used to track the progress of the 25 YEP. • In January 2019, as part of its sixth ‘State of Natural Capital’ report, the NCC advised government on the indicator framework consultation which was published in December 2018. • In 2019 and 2020, the NCC recommended that government should prioritise developing headline indicators for soils and marine. • Following a request by the Secretary of State, the NCC provided and published advice in September 2019 on how to create a robust environmental baseline against which the progress of the 25 YEP can be assessed. • As part of the NCC’s response to the 25 YEP Progress Report, the NCC advised on which metrics could be used in tracking progress. • In 2020, the NCC developed its own framework to measure the state of natural capital assets and handed this over to the Office for Environmental Projection so it can undertake its scrutiny function more effectively. |
| <p>d) <i>“Advising Government on progress against the plan.”</i></p> | <ul style="list-style-type: none"> • As part of its sixth, 2019 ‘State of Natural Capital’ report, the NCC assessed progress since 2011 in improving the environment within one generation. The main conclusion was that only moderate/limited progress has been made towards the ten 25 YEP goals. Full assessment can be found in Annex 1 of the NCC sixth annual report document. • Following the official request by the Secretary of State for NCC to advise government on the transition from the NCC to OEP, the SoS requested this advice included scrutiny of the first two 25 YEP Progress reports. In September 2019, the NCC published its response to the 25 YEP Progress Report, in which it concluded that Defra’s Progress Report did not provide an assessment of whether the natural environment in England had improved. • In July 2020 and October 2020, the Committee responded to the government’s second report on progress against the 25 YEP. It concluded that very little progress had been made and presented its own framework for comprehensively measuring the state of the natural capital assets. |



| Second Terms of Reference components | NCC advice |
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| Other areas of advice | |
| <p><i>“The NCC will play a key role in advising the Government on environmental assets at risk, and ways of identifying priorities for improvement where the benefits are greatest, building on its work of the last three years.”</i></p> | <ul style="list-style-type: none"> • The NCC identified soils and marine as environmental assets at risk and welcomed two new members in 2018 to provide expertise in these areas. • In May 2019, the Committee published advice papers on marine and soil management. • The main recommendation on marine management is considering what further action could be taken beyond what’s included in the draft Environment and Fisheries Bills to better understand and manage benefits from the marine environment. • The main recommendation on soils management is that government should give soils equivalent focus to air and water and this should be reflected in the 25 YEP indicators, making soil health one of the headline indicators. • The NCC published an advice paper on environmental net gain as an area where environmental improvements could gain biggest benefits. The NCC recommended that biodiversity net gain should urgently be replaced with environmental net gain and that this should apply to all developments including nationally significant infrastructure projects and the marine environment. • In its fifth annual report, the NCC advised that locally and nationally significant natural capital assets need to be identified with a view to compiling a natural capital asset register; an associated risk register for those assets; and a natural capital account for each of the projects. • In its ‘Advice on using nature based interventions to reach net zero greenhouse gas emissions by 2050’ the NCC identified a range of nature based interventions which will deliver multiple benefits if properly evaluated and planned. |
| <p><i>“The Committee will need to make use of appropriate knowledge, tools and techniques to ensure natural capital can be properly and consistently assessed, valued and accounted for in decision-making and economic planning.”</i></p> | <ul style="list-style-type: none"> • In May 2019, the Committee hosted a roundtable with HMT, ONS and Defra on accounting, measurement and valuation of natural capital focusing on what has been achieved to date, ongoing work, gaps in knowledge and how to join up various work streams. • In the 2020 ‘State of Natural Capital’ report, the NCC set out how the government needs to develop a valuation framework for organisations and landowners to value their natural capital assets in a consistent way. The Committee advised there should be a standardisation of structures and principles to support external reporting, similar to those used in financial accounting. • From 2016 to 2018, the NCC worked with HMT to co-author Green Book guidance to incorporate natural capital and the value of associated goods and services into government policy appraisals. • As part of the collaboration on the Green Book and wider work on the 25 YEP, in 2017 the NCC published its report ‘Economic valuation and its applications in natural capital management and the Government’s 25 Year Environment Plan’. Here the Committee advised that decision support tools should be developed to assist policy makers in their valuation of environmental costs and benefits and natural capital. • The revised Green Book was published in March 2018 setting out guidelines for incorporating environment-related goods and services into the appraisal of policy and ensuring that decisions enhance natural capital. • In March 2020 the NCC published ‘The Green Book guidance: embedding natural capital into public policy appraisal’ which recommended changes to public policy appraisal/evaluation to better embed natural capital into government decision making. • In November 2020 the NCC will host a Natural Capital Accounts (NCA) Roundtable. The NCA framework enables a structured approach to help organisations and the public sector account for and protect/enhance the natural assets they own and depend on. |

| Second Terms of Reference components | NCC advice |
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| <p><i>“There should be a strong focus on embedding the use of open data, tools and techniques to facilitate positive action on the environment across the country, and consideration of national (England wide) and local delivery.”</i></p> | <ul style="list-style-type: none"> • In the NCC’s advice on an environmental baseline census of natural capital stocks, the NCC stressed the importance of making data open and available. For example, there is a clear recommendation that: <i>“All information should be captured in a centralised, open-source database and web-portal.”</i> • In the same advice, the Committee has called for an environmental census to engage citizens across the country with the environment. • In its 2017 fourth and fifth ‘State of Natural Capital’ reports, the NCC recommended that the four Pioneer Projects should be used to test the fit between national and local programmes and priorities, and to provide a means of understanding which methods and approaches might be applicable across locations and at what scale. |
| <p><i>“The Committee will advise on the importance of natural capital to sustainable economic growth, health and wellbeing and identify potential actions that could be taken to boost these.”</i></p> | <ul style="list-style-type: none"> • The NCC advice on marine management (May 2019) called for the enhancement of public engagement with the natural marine environment through promotion of the massive recreational and leisure value of blue spaces, with their physical and psychological health and wellbeing benefits (as well as social and economic benefits) for those living on or visiting the coast, including improving public access. • The NCC advice on marine management (May 2019) recommended that the Environmental Land Management Scheme should also enable landowners to reduce their impact upon the coastal and marine economy and environment. This should be mirrored by incentives in the Environment Bill for good environmental stewardship to marine users, for example, fishermen, aquaculture businesses, marine renewable developers, oil and gas companies and port and harbour authorities. • The NCC advice on marine management (May 2019) recommended that net gain principles should also be applied to marine activities and implemented through existing regulation under the Marine and Coastal Access Act (via spatial planning and licencing activities) as well as via the Environment Bill. • In its 2020 report on nature based interventions, the Committee identified five interventions which had multiple benefits including health and wellbeing. |
| <p><i>“The Committee will continue working with the Government and the Office for National Statistics to develop national natural capital accounts and work with businesses to develop and apply corporate natural capital accounts, recognising that much of our natural capital is privately owned.”</i></p> | <ul style="list-style-type: none"> • The NCC engaged with the ONS in a roundtable meeting (May 2019) where both parties agreed to work together with the HMT and Defra to ensure the Indicator Framework and the ONS’s national natural capital accounts are better aligned. • In November 2020, the NCC will host a Natural Capital Accounts (NCA) Roundtable, with a focus on: standardising Corporate Natural Capital Accounts (CNCA) across different business types; and showcasing CNCA and National Natural Capital Accounts (NNCA) good practice case studies. |

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| <p><i>“It will consider the international dimensions of natural capital in formulating its advice where appropriate.”</i></p> | <ul style="list-style-type: none"> • In July 2018, the NCC proposed to the Secretary of State an International Conference on natural capital. This conference is due to take place on 3 November 2020. Its goal is to showcase the UK’s ambitious natural capital programme and set an example to other countries, encouraging them to adopt similar commitments such as the 25 YEP to improve the environment within a generation. • In 2020, the Committee was asked by Lord Goldsmith to provide advice on linking the 15th meeting of the Conference of the Parties to the Convention on Biological Diversity (CBD COP15) and 26th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26). It proposed using the natural capital approach to meet the objectives of both conferences. |
| <p><i>“The Committee will also advise the National Infrastructure Commission to ensure that ‘green and blue infrastructure’ is appropriately considered within wider infrastructure discussions.”</i></p> | <ul style="list-style-type: none"> • In the NCC’s fourth annual report (2017), the committee recommended that the newly created NIC should: <i>“...incorporate natural capital, including its maintenance, restoration and recovery, into long term infrastructure plans; ensuring consistency with the objectives of the 25 Year Environment Plan.”</i> • Following publication of the ‘National Infrastructure Assessment’ in July 2018, the NCC engaged with the National Infrastructure Commission (NIC) noting that <i>“the National Infrastructure Assessment paid little regard to the 25 YEP, and the 10 goals set out in the 25 YEP and instead considered the environment as a constraint.”</i> • In its sixth annual report, the NCC advises the NIC to <i>“ensure that all major infrastructure recommendations incorporate the need for full natural capital baseline assessments.”</i> • The 2020 ‘State of Natural Capital’ Annual Report to the EU Exit, Economy and Trade Committee of the Cabinet advised the NIC to consider degradation of natural capital, including marine capital, upon which the economic infrastructure depends and to consider the role ecosystem services play in the proper functioning of infrastructure. |



Impact of the NCC's advice

In this section, a summary of the impact the NCC's advice has had on environmental policy is presented across three themes: i) 25 YEP and essential statutory framework; ii) asset-based framework for measuring changes in natural capital/progress against the 25 YEP, and iii) embedding natural capital principles into decision making.

i) 25 Year Environment Plan and essential statutory framework

The impact of the NCC's advice on the 25 YEP and the essential statutory framework required to underpin it is summarised. This includes the Committee's advice on the OEP and three guiding principles: public money for public goods, net gain and the polluter pays.

25 Year Environment Plan

The NCC's single most important achievement was to advise on the creation and content of a long-term plan to protect and improve the environment. Its 2014 recommendation built on the landscape-scale approach advocated in the Lawton report 2010¹³ and is necessary to deliver the government's commitment in its 2011 White Paper, *The Natural Choice*, "*to be the first generation to leave the environment in a better state than it inherited.*"¹⁴ The NCC advised that the long-term plan should be supported by commensurate government investment in natural capital projects, to enhance the country's natural capital.¹⁵

Following the Committee's advice, the former Prime Minister, Theresa May, launched the government's first long-term, 25 Year Environment Plan (25 YEP) to improve the environment in 2018.¹⁶ Natural capital is at the heart of this plan, recognising its important contribution to human wellbeing and the significant economic benefits that investment in natural capital can yield.¹⁷ The plan is based on ten goals underpinned by the natural capital framework developed by the NCC, as outlined in its 2015 'State of Natural Capital' report.¹⁸

Statutory framework

The NCC recommended that the 25 YEP should be placed on a statutory footing with legally binding targets.¹⁹ The NCC advised this to be an essential first step to enable the 25 YEP to drive real environmental improvement. The Committee advised that without a credible statutory underpinning, the plan would risk ending up as "*yet another interesting document on the shelf.*" Similarly, the NCC stated that quantified targets were necessary to drive progress and that they should be given legal force through the Environment Bill.²⁰ This will ensure that successive governments are required to deliver the environmental objectives supported by these targets.

13 Lawton, J.H., et. al. *Making Space for Nature: a review of England's wildlife sites and ecological network* (2010): <https://webarchive.nationalarchives.gov.uk/20130402170324/http://archive.defra.gov.uk/environment/biodiversity/documents/201009space-for-nature.pdf>

14 HM Government, *The Natural Choice: securing the value of nature* (2011): <https://www.gov.uk/government/publications/the-natural-choice-securing-the-value-of-nature>

15 NCC, *Improving Natural Capital fourth report to the Economic Affairs Committee* (2017): <https://www.gov.uk/government/collections/natural-capital-committee-documents>

16 HM Government, *A Green Future: Our 25 Year Plan to Improve the Environment* (2018): <https://www.gov.uk/government/publications/25-year-environment-plan>

17 NCC, *Natural Capital Committee's Sixth Annual Report* (2019): <https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report>

18 NCC, *The state of natural capital: protecting and improving natural capital for prosperity and wellbeing* (2015): <https://www.gov.uk/government/publications/natural-capital-committees-third-state-of-natural-capital-report>

19 NCC, *Natural Capital Committee's Sixth Annual Report* (2019): <https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report>

20 NCC, *Natural Capital Committee's Sixth Annual Report* (2019): <https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report>

Following the Committee's advice, the Environment Bill is expected to put Environment Improvement Plans (EIP), the first of which is the 25 YEP,²¹ on a statutory footing, with an obligation for the government to report to Parliament annually on its progress.²² The Bill also requires the government to set and meet long-term targets in four priority areas.²³ Targets may also be set in other areas that relate to the natural environment or people's enjoyment of the natural environment. The NCC has advised that a number of issues need to be addressed if these targets are to be effective.²⁴

In 2020, the NCC advised that the Environment Bill needs to place the 25 YEP on a meaningful statutory footing, with a general duty to protect and enhance the natural environment, and legally binding interim and long-term targets for each of the ten 25 YEP goals. In the absence of a number of statutory interim targets which are linked to clear long-term legally binding targets, it is likely that the ten 25 YEP goals and all future EIPs will become aspirational. The Committee recommended detailed and enforceable milestones for the 25 YEP are essential to assess and drive progress.²⁵ The government responded positively, in part, to this recommendation with the Environment Bill/Act establishing a new statutory cycle of monitoring, planning and reporting to track the government's progress in improving the natural environment against a very limited set of measures.

The government has credited the Committee for first suggesting the innovative idea for environmental improvement plans, the first of which is the 25 YEP.^{26,27} Furthermore, organisations such as the British Ecological Society have praised the NCC's recommendations for the 25 YEP as providing a "clear and consistent framework for protecting and improving England's stock of natural capital."²⁸

Recommendations:

- The 25 YEP and all future EIPs require legally binding interim targets which are clearly linked to the legally binding long-term targets. Without statutory interim targets, it is likely that the ten 25 YEP goals and future EIPs will become aspirational and risk long-term targets being missed because, for example, the government may prioritise other short-term public expenditure items.
- The government should include a general overall statutory duty to protect and improve the environment in the Environment Bill as a priority. The significant improvement test for targets, as described in the Environment Bill, is highly subjective and decided by the Defra Secretary of State. For example, improving part of the environment could be classed a significant improvement even while other natural assets may be declining.

Office for Environmental Protection

The Committee recommended in several of its reports that a lead body should be designated and given responsibility for overseeing the delivery of the 25 YEP and its ten goals.²⁹ The Environment Bill/Act establishes the Office for Environmental Protection (OEP), a new statutory body that has been designed to hold government to account on its environmental commitments. Each year, the OEP will undertake a comprehensive review of progress in improving the natural environment in accordance with the government's environmental improvement plans, currently the 25 YEP, and targets.

A previous Secretary of State for the Environment, Rt Hon Michael Gove, specifically requested that the NCC provide scrutiny of the 25 YEP annual reports, paving the way for the OEP to undertake this function in the future. The framework the NCC has developed following its assessment of the first two 25 YEP Progress Reports is summarised in the second section.

21 The Environment Bill/Act puts Environmental Improvement Plans and not just the 25 YEP on a statutory footing. This is in recognition of the perpetual need for environmental improvement plans, beyond the 25 YEP and what it could achieve for the natural environment in that timeframe. See clause 7 of the Environment Bill.

22 HM Government, *Natural Capital Committee's sixth annual report: government response* (2019): <https://www.gov.uk/government/collections/natural-capital-committee-documents>

23 Defra, *Environment Bill 2019-20* (2020): <https://services.parliament.uk/Bills/2019-20/environment.html>

24 NCC, *State of natural capital Annual Report* (2020): <https://www.gov.uk/government/publications/natural-capital-committees-seventh-annual-report>

25 NCC, *Natural Capital Committee's Sixth Annual Report* (2019): <https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report>

26 HM Government, *A Green Future: Our 25 Year Plan to Improve the Environment* (2018): <https://www.gov.uk/government/publications/25-year-environment-plan>

27 Bright Blue, *Saving Global Nature, greening UK Official Development Assistance* (2018): <https://brightblue.org.uk/wp-content/uploads/2018/06/Saving-global-nature-Greening-ODA.pdf>

28 British Ecological Society, *Natural Capital Committee publishes 4th report* (2019): <https://www.britishecologicalsociety.org/naturalcapitalreport/>

29 NCC, *Natural Capital Committee's Sixth Annual Report* (2019): <https://www.gov.uk/government/publications/natural-capital-committees-sixth-annual-report>

Recommendations:

- The NCC does not consider the OEP being accountable to government to be a credible position; the OEP should be accountable to Parliament. Other similar regulatory bodies, such as the Office for National Statistics (ONS) or the Audit Commission are accountable to Parliament. The OEP should be fully independent from the organisations it is responsible for; its budget and appointments should be decided by Parliament.
- The NCC recommends that the OEP's remit is expanded so that the government must consider and respond to its advice on target setting and any revisions to interim and long-term targets/EIPs. The NCC advises that without a clear remit for the OEP in environmental target setting, the ambition to significantly improve the environment could be compromised in favour of other government priorities and lead to further stalling of progress in meeting the 25 YEP objectives, undermining public confidence in the government's green commitments.
- Defra should review the roles and remit of the existing environmental delivery bodies, including the EA, NE, the MMO and Local Authorities to clearly identify responsibilities for delivery of the many actions in the 25 YEP. There is a case to be made for incorporating all aspects of environmental protection at a national level within one body. This would entail substantial changes to the existing bodies.

Three guiding principles

The NCC has advised that in developing the policies to implement the 25 YEP, overarching principles should be set, and enshrined in legislation. The NCC has recommended³⁰ that three environmental principles should be applied in the development and implementation of any policy relating to the use of or impact on natural capital, including the implementation of the 25 YEP as follows: 1. public money for public goods; 2. the polluter pays; and 3. net environmental gain.

Following the NCC's advice:

- The Agriculture Bill and Environmental Land Management Scheme are **underpinned by the principle of public money for public goods**, although this principle is not explicitly mentioned in the Agriculture Bill;
- The **polluter pays principle** has been included in the Environment Bill;³¹
- The NCC has advised that the Environment Bill does not go far enough in **introducing only biodiversity net gain** which is restricted to Town and Country Planning Act developments.³²

Further detail on each of these three principles is provided below.

Public money for public goods and the ELM scheme

The NCC has advised that the concept of public goods is fundamental to natural capital policy and decision making. While there are numerous types of public good, many of which concern the natural environment (e.g. air quality and public health), the concept is perhaps most easily related to public funding in respect of land use policy. The principle of public money for public goods is central to the government's 25 YEP.

As part of its recommendations on the 25 YEP, the Committee offered suggestions for an alternative structure of agricultural policy for the UK.³³ These included an overhaul of the farming subsidies system, following the UK's withdrawal from the Common Agricultural Policy.

In its 2019 and 2020 Annual Reports, the NCC repeated its strong endorsement of the move from a system of agricultural support, predicated mainly on the ownership of land, to one following the public money for public goods principle. In its response to the NCC's 2020 Annual Report, government confirmed its commitment to moving towards a system based on payment for delivering goods which benefit the public.

30 NCC, 2019 State of Natural Capital Annual Report (2019): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/916074/ncc-annual-report-2019.pdf

31 UK Parliament, *Environment Bill 2019-21* (2020): <https://services.parliament.uk/Bills/2019-21/environment.html>

32 NCC, *Natural Capital Committee advice to government on net environmental gain* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-to-government-on-net-environmental-gainz>

33 NCC, *Advice to government on the 25 Year Environment Plan* (2017): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/677872/ncc-advice-on-25-year-environment-plan-180131.pdf

The Agriculture Bill is testament to the NCC's advice. At its heart lies the principle of public money for public goods, one of the three pillars that the NCC has recommended for the vision that should underpin the 25 YEP.³⁴ The Bill sets out how farmers and land managers in England will receive payments only where they provide 'public goods', such as better air and water quality, higher animal welfare standards, improved access to the countryside or measures to reduce flooding.³⁵ This forms part of the government's plans for a new Environmental Land Management system, which is intended to contribute to delivering many of the goals of the 25 YEP.³⁶ Under current plans, the Environmental Land Management (ELM) scheme aims to deliver outcomes which fall under six categories of public goods as identified in the 25 YEP: clean air; clean and plentiful water; thriving plants and wildlife; reducing risk from environmental hazards; mitigating and adapting to climate change; and enhanced beauty, heritage and engagement with the natural environment. Actions to conserve and restore soil health will be central to delivering on these goals, although current plans do not include it as an outcome in itself.

The NCC's advice has been clear that the main public good highlighted in the government's farming consultation document is environmental improvement. Agriculture is a private enterprise and food is sold in markets, directly to consumers, and is therefore by definition (and according to official government guidance) a private, rather than a public, good.³⁷ Public funding that improves farming productivity is acceptable only when it protects and enhances natural capital.

The NCC advised that any actions funded by the scheme (for example, nutrient management) should be incorporated into a process of monitoring, review and reallocation, to make sure that the scheme is delivering on the broad environmental outcomes and values, driven by results, rather than delivering unmonitored payments for actions which may have unintended consequences. Government has agreed that ELM baselining data will need to be closely aligned with the environmental census, and advised that Defra analysts are exploring how the environmental census could support and complement ELM baseline requirements and vice versa.³⁸

Net environmental gain

In 2017, the NCC proposed that environmental net gain should be incorporated as a key policy intent within the government's 25 YEP.³⁹ The Committee welcomed its inclusion in the 25 YEP where government committed to "embed an 'environmental net gain' principle for development, including housing and infrastructure." This could offer a potential source of long-term investment in the delivery of an improved natural environment. The NCC was therefore disappointed when in 2018, the government pursued the much narrower concept of biodiversity net gain.

The NCC provided a written response to a Defra commission on environmental net gain in September 2019, and further advice in May 2019,⁴⁰ recommending that an environmental net gain approach that considers first and foremost key natural capital assets should be developed as a priority and then introduced as soon as practicable, and outlining the key principles that this approach should follow. In its 2020 Annual Report, the NCC reiterated its advice that: "the proposed net biodiversity gain approach falls short of many of the goals of the 25 YEP as it fails to address most of the natural capital assets that are included within the plan."⁴¹ The NCC regards this as a missed opportunity to embed a net environmental gain principle at the heart of decision making. Furthermore, contrary to the NCC's recent advice,⁴² nationally significant infrastructure and the marine environment remain out of scope which poses a real danger of further degradation of England's terrestrial and marine ecosystems.

The NCC advised the Defra Secretary of State in June 2020, outlining its concerns related to four elements of the net biodiversity/environmental gain metrics which the Committee advised need to be urgently addressed. These are detailed in the recommendations section below.

34 The other two being the polluter pays principle and the net environmental gain. See NCC, *State of the natural capital 2019 annual report* (2019): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/774218/ncc-annual-report-2019.pdf

35 UK Parliament, *Agriculture Bill 2019-21* (2020): <https://services.parliament.uk/bills/2019-21/agriculture.html>

36 HM Government, *Natural Capital Committee's sixth annual report: government response* (2019): <https://www.gov.uk/government/collections/natural-capital-committee-documents>

37 HM Treasury, *The Green Book: Central Government Guidance on Appraisal and Evaluation* (2018): <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

38 Defra, *The government's response to the Natural Capital Committee's State of Natural Capital Report 2020* (2020): <https://www.gov.uk/government/publications/natural-capital-committees-seventh-annual-report-government-response/the-governments-response-to-the-natural-capital-committees-state-of-natural-capital-report-2020>

39 NCC, *Natural Capital Committee advice on government's 25 year environment plan* (2017): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

40 NCC, *Advice to government on net environmental gain* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-to-government-on-net-environmental-gain>

41 NCC, *Advice to government on environmental net gain* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-to-government-on-net-environmental-gain>

42 NCC, *The Natural Capital Committee's response to Defra's net gain commission* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-to-government-on-net-environmental-gain>



The polluter pays principle

Following the NCC's advice, the 25 YEP rightly incorporated the polluter pays principle, and it is included as one of the principles in the Environment Bill which legally obliges all government policymakers to consider choosing policy options which cause the least environmental harm. The Environment Bill will legislate for environmental principles which legally obliges all government policymakers to consider choosing policy options which cause the least environmental harm. In the Bill as introduced in 2020, these principles include the principle that environmental protection should be integrated into the making of policies; the principle of preventative action to avert environmental damage; the precautionary principle, so far as relating to the environment; the principle that environmental damage should, as a priority, be rectified at source; and the polluter pays principle. The Environment Bill clause 16(4) will ensure that the policy statement on environmental principles contributes to the improvement of environmental protection and sustainable development.⁴³

In its 2019 Annual Report, the NCC noted that although the polluter pays principle was carried over to the consultation document for the Agriculture Bill⁴⁴, it was not included in the Bill itself.

An economically efficient market is one in which all the costs (and benefits) are included so that the price sends the right signal to allocate resources. Environmental externalities are examples of where these costs are not included, and hence the prices are too low, and pollution as a result is excessive. Making the polluter pay improves market efficiency and hence increases properly measured economic growth.

The net environmental gain principle (see above) incorporates the polluter pays principle: developers are required to compensate for the environmental damage caused by their projects. Fines for pollution are also examples of the polluter pays principle. As with environmental net gain, fines need to be at least equal to the damage caused.

Recommendations

Environment Bill guiding principles

The NCC notes that all Ministers of the Crown will have to ensure 'due regard' to the five environmental principles. The wording of the clause should be strengthened to 'act in accordance with' before the Bill is re-introduced into Parliament.

Public money for public goods and the ELM scheme

- The NCC advises that public funding for agriculture should be focused on the delivery of environmental public goods. There should be no presumption that historic levels of funding or the current distribution of these are correct; in some cases, they might need to rise, in others fall. The principle of public money for public goods is not explicit on the face of the Agriculture Bill – this raises the risk of financial assistance being given by the Secretary of State for "improving the productivity of an agricultural, horticultural or forestry activity" (see Agriculture Bill Part 1 Chapter 1).
- Payments to support productivity should only be made when they protect and enhance natural capital, e.g. increasing the numbers of beneficial insects. The main public good highlighted in the government's farming consultation document is environmental improvement, and food is not a public good.
- The National Food Strategy, in focusing on delivering safe, healthy, affordable food, regardless of where people live or how much they earn, should take into account that food is a private, not a public good. The NCC advises that the review should make sure that the food system does not prioritise the subsidy of food over payments to protect natural capital assets and the services they provide, both to agriculture and to wider society.
- Public money for public goods schemes should include reducing the impact upon coastal and marine natural capital. Tests and trials should be expanded to mitigating impacts on marine and coastal natural capital, and the scheme should deliver public money for land management practices that deliver public goods in the coastal and marine environment.
- ELM baselining data needs should be aligned with the environmental baseline census proposed by the NCC.⁴⁵
- The NCC advises that efforts to create auction platforms enabling landowners to bid, ought to incorporate tools to assess the value and spatial extent of public goods. The pricing and allocation of land improvements should be underpinned by an evidence base to determine which areas will deliver the greatest environmental improvement, with consideration of the implications for each of the 25 YEP goals.

43 UK Parliament, *Environment Bill 2019-21 (2020)*: <https://services.parliament.uk/Bills/2019-21/environment.html>

44 Defra, *Health and Harmony: the future for food, farming and the environment in a Green Brexit (2018)*: <https://www.gov.uk/government/publications/the-future-for-food-farming-and-the-environment-policy-statement-2018/health-and-harmony-the-future-for-food-farming-and-the-environment-in-a-green-brex-it-policy-statement>

45 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 (2019)*: <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-developing-an-environmental-baseline-census>

Polluter pays

- Consideration should be given to including the polluter pays principle on the face of the Agriculture Bill, as it is in the Environment Bill.

Net gain

- The NCC advises that government should replace biodiversity net gain in the Environment Bill with environmental net gain. The biodiversity net gain measure does not go far enough – only an environmental net gain approach which applies to all development covered by the Town and Country Planning system, all nationally significant infrastructure projects and the marine environment will ensure that aggregate natural capital is maintained and enhanced.
- The NCC recommends that environmental net gain (which also delivers net biodiversity gain) should be mandatory and funded by the developers whose activities give rise to the environmental damage.
- The NCC advises that Defra's chosen methodology/metrics for measuring net biodiversity gain and environmental gain (in the Eco-metric pilot project) should be reworked so that they produce accurate accounts for establishing when a 'net gain' has been achieved. In particular:
 - Quantitative measures should be used wherever possible and where qualitative measures must be used (for instance for measuring cultural impacts) they should be clearly explained. An overuse of qualitative assessments will prevent a robust comparison of impacts on different development or compensation sites and fail provide a consistent quantitative basis to test or challenge decisions.
 - All natural capital and associated ecosystem services should be assessed at a broader strategic level (for example at a catchment scale) – not at the narrow 'habitats' scale, which can lead to a fragmented assessment and perverse environmental outcomes.
 - A natural capital baseline is urgently needed – without this it will be impossible to determine whether these measures enhance natural capital assets.

ii) Asset based framework for measuring changes in natural capital/progress against the 25 YEP

In this section, a summary of the NCC's advice/impact on the main components for measuring changes in natural capital: an environmental baseline, asset-based metrics, corporate and national natural capital accounts and a template for the OEP to undertake its 25 YEP scrutiny function is provided.

Environmental baseline census of natural capital stocks

If the government is to meet its objective to leave the environment in a better state, the NCC has advised that it must ensure that **there is no further degradation of our natural capital assets** and identify those assets which need to be enhanced.^{46,47}

In 2018, the NCC recommended that building a baseline understanding of natural assets should be a key milestone for the first five years of the 25 YEP. The baseline is required to assess the key risks they face, the investment needed to maintain or enhance them and the prioritisation of those investments. The NCC advised that there are significant gaps in current knowledge and a lack of joined-up data collection, measuring and monitoring of natural assets. It warned that this leads to both gaps and duplications in the data collected and impedes effective decision making necessary to deliver the 25 YEP.⁴⁸

In 2019, the previous Defra SoS Michael Gove, requested the NCC provide more detailed advice on developing a baseline. The Committee published detailed advice on developing an environmental baseline census of natural capital stocks. The Committee's main recommendations include: integrating existing data and addressing gaps, establishing an independent body to coordinate the census, including a substantial citizen science component and ensuring the appropriate spatial coverage.⁴⁹ As a direct result of the Committee's advice, in 2020 the Defra SoS George Eustice announced a £5m Natural Capital and Ecosystem Assessment pilot to improve the baseline understanding of habitats and species abundance across the country.⁵⁰ The Committee advises that this opportunity should be maximised by designing the pilot in a way that enables a comprehensive natural capital asset-based assessment.

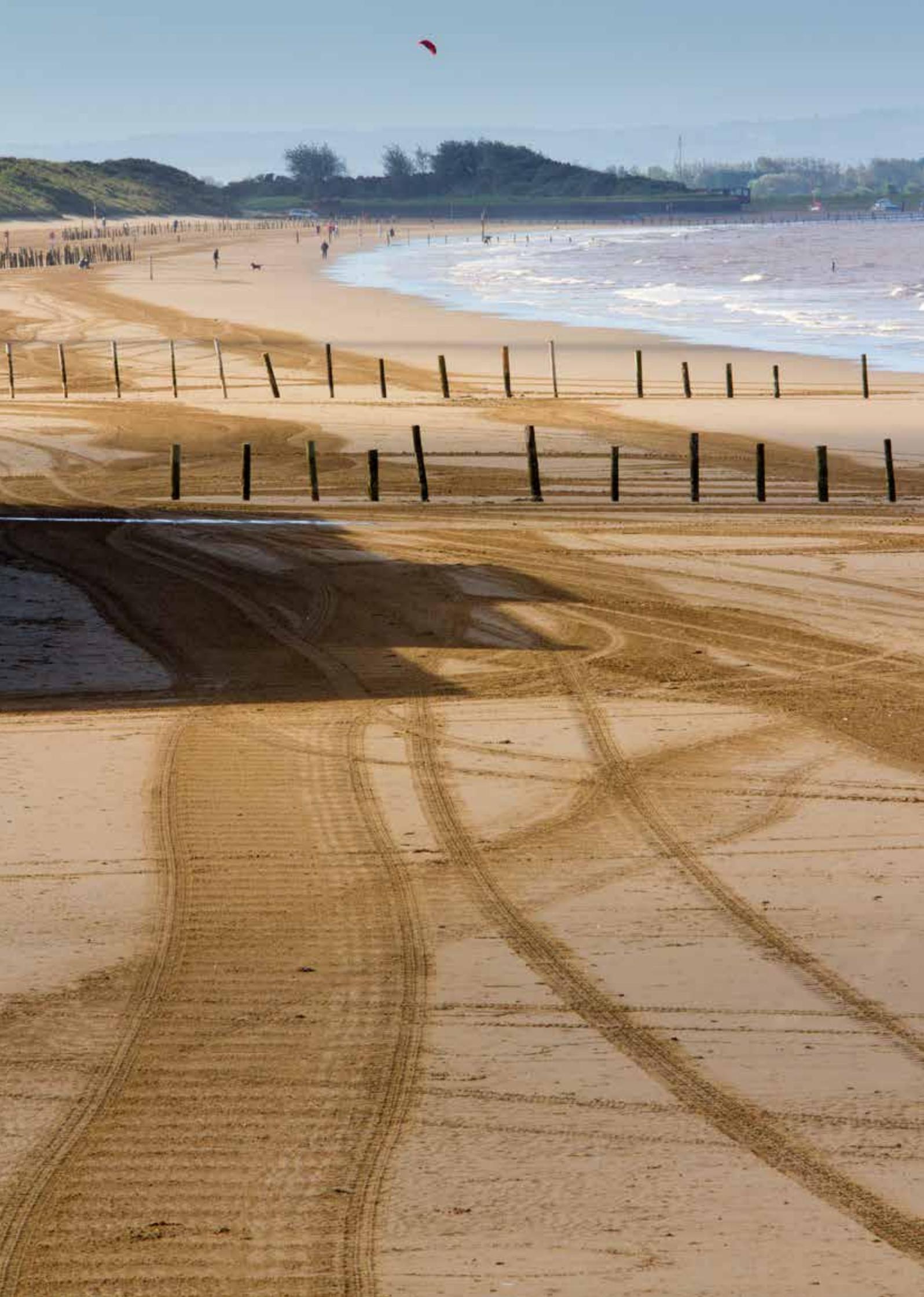
46 NCC, *The state of natural capital: towards a framework for measurement and valuation* (2013): <https://www.gov.uk/government/publications/natural-capital-committees-first-state-of-natural-capital-report>

47 NCC, *State of natural capital: protecting and improving natural capital for prosperity and wellbeing* (2015): <https://www.gov.uk/government/publications/natural-capital-committees-third-state-of-natural-capital-report>

48 NCC, *Natural Capital Committee's fifth annual report* (2018): <https://www.gov.uk/government/publications/natural-capital-committees-fifth-annual-report>

49 Natural Capital Committee, *The 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* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-developing-an-environmental-baseline-census>

50 Defra, *George Eustice speech on environmental recovery* 20 July (2020): <https://www.gov.uk/government/speeches/george-eustice-speech-on-environmental-recovery-20-july-2020>



Asset-based metrics

The NCC's advice has consistently highlighted the need for asset-based metrics to assess more accurately the changes in condition and extent of natural capital assets, and effectively manage these assets to ensure they continue to provide sustainable flows and benefits into the future.⁵¹ Given data limitations and the lack of appropriate indicators and targets for some assets, it is not possible to state with confidence and for all asset classes, which natural assets are being used unsustainably or are at high risk of unsustainable use.^{52,53} For example, less than 20% of the 66 proposed indicators included in the government's Outcome Indicator Framework (OIF), provide a measure of natural capital assets. Even then, these are partial measures. The data included for air, water, species, ecological communities, land and coasts only measure parts of the asset because of either limited spatial coverage or data deficiency. This leaves gaps across all of the main assets, with some critical assets such as soils having no measurements at all.

The Committee has advised that degraded assets can still deliver a multitude of flows and benefits. This is because the relationship between assets and the services they provide is not linear, hence focusing solely on flows prevents an assessment of the condition of the underlying asset(s). For example, it is widely accepted that soil health on high input agricultural land in England is deteriorating – despite this, the yield of food being produced from that soil continues to increase. Developing metrics, indicators and targets based on flows and benefits only can result in perverse outcomes.⁵⁴

In order to monitor environmental changes over time, the Committee has advised that a comprehensive approach is needed so decisions about different natural capital assets can be made in an evidence-based manner.⁵⁵ Natural capital assets operate as a system, hence co-dependencies and trade-offs between assets should be identified.

The NCC notes that the government has acted on some of these recommendations, by including a number of measurable commitments in the 2020 25 YEP Progress Report – which is a step in the right direction towards each goal having a number of

statutory quantitative targets. There has also been a marked increase in the number of indicators presented in the Progress Report: 27 have been included and eight provide an assessment, albeit partial, of natural capital assets.

NCC advice on soils metrics

Soils are critical to human existence. Their role in food production is clearly recognised but their important role in wider ecosystem services including climate regulation, flood risk reduction and water purification is less recognised. Soils also provide support for buildings, landscapes and heritage as well as opportunities for engagement with the natural environment. It takes an average of 100 years to generate 1cm of topsoil; thus soil should be considered as a non-renewable resource and managed accordingly. A quarter of the earth's biodiversity including earthworms, fungi and bacteria resides in soil. However, soils are being degraded due to pressures including erosion, intensification of farming and soil sealing⁵⁶ with an estimated cost between £0.9 billion and £1.4 billion per year for England and Wales.⁵⁷

In May 2019, the NCC published advice on managing soils in line with the 25 YEP.⁵⁸ The NCC advised that the government should give soils equivalent focus to air and water and this should be reflected in the 25 YEP indicators by making soil health one of the headline indicators. The Committee advised that a national survey should be undertaken as part of the NCC's proposed environmental census to determine the state of soils in England, and outlined how this might be done on its 2019 advice on delivering an environmental baseline census of natural capital assets.⁵⁹

In its 2020 Annual Report, the NCC advised that healthy soils are a public good and should be a priority outcome for the ELM scheme, underpinned by time-bound targets for both national and local improvement, with appropriate metrics developed for assessing this.

51 NCC, *State of natural capital: protecting and improving natural capital for prosperity and wellbeing* (2015): <https://www.gov.uk/government/publications/natural-capital-committees-third-state-of-natural-capital-report>

52 Unsustainable use is defined as: i) natural assets which are continually declining, and/or ii) thresholds or safe limits in aspects of natural assets or benefits are approached.

53 NCC, *The state of natural capital: restoring our natural assets* (2014): <https://www.gov.uk/government/publications/natural-capital-committees-second-state-of-natural-capital-report>

54 NCC, *The state of natural capital: restoring our natural assets* (2014): <https://www.gov.uk/government/publications/natural-capital-committees-second-state-of-natural-capital-report>

55 NCC, *State of natural capital: restoring our natural assets* (2014): <https://www.gov.uk/government/publications/natural-capital-committees-second-state-of-natural-capital-report>

56 Soil sealing is the covering of soil by impermeable materials e.g.: concrete, tarmac etc.

57 Graves et al., *The total costs of soil degradation in England and Wales*, *Ecological Economics* (2015): <https://www.sciencedirect.com/science/article/pii/S0921800915003171>

58 NCC, *Natural Capital Committee Advice on Soil Management* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-soil-management>

59 NCC, *The Natural Capital Committee's advice on an environmental baseline census of natural capital stocks* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-developing-an-environmental-baseline-census>

Building on the NCC's advice, Defra is now moving forward with a national soil health programme. In its response to the NCC's 2020 Annual Report, the government set out several positive actions, as follows:

- A soil indicator to contribute to the ambition to ensure the sustainable management of soils by 2030, as outlined in the 25 YEP, will be developed;⁶⁰
- Defra will push ahead with plans for a national soil monitoring programme, which it hopes to have in place by 2025.

NCC advice on marine natural capital and metrics

The systems approach taken by many marine scientists provides strong support for a natural capital approach. In many ways it is easier to take a natural capital approach to the marine environment than for the terrestrial and freshwater habitats, and to consider the flows of marine ecosystem services and the benefits they provide. These include provisioning services such as food, biotechnology, genetic and medicinal resources; regulating services such as climate regulation, coastal and flood defence, waste treatment and assimilation; and cultural services such as leisure, recreation, tourism and cultural heritage. The value of benefits from marine ecosystem services in the UK, and the natural capital that underpins them, are not yet well quantified.

The NCC published advice on marine and the 25 YEP in May 2019, making the case for implementing the natural capital approach which informed the 25 YEP in the marine context, in line with the understanding that *"we need to understand the full value of the marine environment and incorporate that into the decisions we take"*.⁶¹ Building on the NCC's advice, the government has invested in developing the science and evidence to underpin integration of natural capital in marine policy-making. This has included projects aimed at understanding how the natural capital approach might apply to the marine environment to develop marine accounting and assessment for some marine assets.

Defra's marine evidence team have set up a Marine Natural Capital Coordination Group in order to ensure a collaborative approach is taken towards marine natural capital evidence development. Government have advised that they are still in the process of identifying policy areas where a natural capital approach can be applied practically, such as domestic fisheries management, future funding and offshore wind farm development.

The NCC advised that the Environment Bill should explicitly cover marine natural capital within the targets framework of the Bill. In response, government advised that the marine environment will also be in scope of the Environment Bill targets framework, with marine environmental legislation falling within the remit of the OEP.⁶² The Environment Bill targets policy paper published in August 2020⁶³ advised that a target for marine may include improving the condition of marine protected areas.

The NCC has also advised on the Fisheries Bill as introduced in 2019, including in its 2020 Annual Report.⁶⁴ The NCC advised that there was no indication in the latest version of the Fisheries Bill that fisheries policy, including setting fishing catch targets, will be implemented in a manner that is wholly consistent with the 25 YEP, including improving the whole marine environment and taking into account that fish are one element of a complex and highly integrated marine system delivering multiple services. For example, the 'ecosystem-based approach' which the Bill aims to deliver through the Ecosystem Objective aims for the achievement of good environmental status within the meaning of the Marine Strategy Regulations 2010.^{65,66} The NCC has previously advised that these descriptors were not designed to reflect the systems' capacity to continue delivery of wider services and benefits.⁶⁷ Future high level objectives and criteria for measuring progress should be more ambitious, and be aligned with natural capital asset assessment requirements for ensuring sustainability of ecosystem service flows and for natural capital accounting.⁶⁸

60 Defra, *The government's response to the Natural Capital Committee's State of Natural Capital Report 2020* (2020): <https://www.gov.uk/government/publications/natural-capital-committees-seventh-annual-report-government-response/the-governments-response-to-the-natural-capital-committees-state-of-natural-capital-report-2020>

61 NCC, *Natural Capital Committee advice on marine management* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-marine-management>

62 Defra, *The government's response to the Natural Capital Committee's State of Natural Capital Report 2020* (2020): <https://www.gov.uk/government/publications/natural-capital-committees-seventh-annual-report-government-response/the-governments-response-to-the-natural-capital-committees-state-of-natural-capital-report-2020>

63 Defra, *Environment Bill – environmental targets* (2020): <https://www.gov.uk/government/publications/environment-bill-2020/august-2020-environment-bill-environmental-targets>

64 NCC, *State of Natural Capital Annual Report* (2020): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/858739/ncc-annual-report-2020.pdf

65 UK Parliament, *Fisheries Bill* (2020): <https://services.parliament.uk/bills/2019-21/fisheries.html>

66 The National Archives, *Marine Strategy Regulations 2010* (2020): <https://www.legislation.gov.uk/uksi/2010/1627/contents/made>

67 For the NCC's advice on the limitations of the ecosystem based approach committed to in the Fisheries Bill see p14, NCC, *State of Natural Capital Annual Report 2020* (2020): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/858739/ncc-annual-report-2020.pdf

68 NCC, *Interim response to the 25 Year Environment Plan progress report and advice on a green economic recovery* (2020): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

Further policy outcomes which the NCC has influenced in the context of its advice on marine natural capital include:

- In its response to the NCC's 2020 Annual Report, government advised that it aims to first introduce marine biodiversity net gain using a similar methodology to the approach used for terrestrial, but that options to go beyond marine biodiversity net gain are being considered. The NCC first advised that the net environmental gain principle should be extended to cover development and activities in the marine environment in its 2019 Annual Report, and followed up with advice on specific aspects of net gain in the marine context in May and September 2019 in response to a commission from the Defra marine team.
- Following the NCC's advice on developing national natural capital accounts, the Defra marine team continues to work with the ONS on refining the marine and coastal natural capital accounts – their ambition is to include an update in the next UK Environmental Accounts.
- The NCC also worked with Defra to establish the North Devon Marine Pioneer to inform the government's 25 Year Environment Plan, using a Natural Capital Approach, to enhance the marine environment.⁶⁹ The Marine Pioneer was supported nationally by the Marine Management Organisation but delivered locally by the Marine Pioneer Steering Group. The lessons learned from the Pioneer project including the findings of its demonstration projects were used to develop and test the North Devon Marine Natural Capital Plan.⁷⁰
- Defra is working on plans to improve marine monitoring through the proposed Natural Capital and Ecosystem Assessment, as a result of the NCC's advice on developing an environmental baseline census delivered in September 2019. This advice included a section on the data and monitoring required for the assessment of marine assets necessary for a joined-up natural capital approach to marine management.
- Defra is currently working on proposals to scope the future of marine nature based solutions. This builds on the NCC's advice on using nature based interventions to reach net zero greenhouse gas emissions by 2050 – both include specific advice on managing marine natural capital to sequester and store carbon as part of an integrated natural capital approach to marine management.

Recommendations

Natural capital baseline and metrics

- Defra should ensure that the natural capital and ecosystem assessment pilot, and any subsequent fully developed baseline exercise focuses on identifying and measuring the extent and condition of natural capital assets across England (i.e. species, ecological communities, soils, freshwaters, land, atmosphere, minerals, sub-soil, oceans and coasts), with a substantial citizen science component. The NCC advises that the baseline assessment should be repeated (not 'reset') every five years to enable a periodic understanding of the trends in England's natural capital assets. The Treasury should ensure that the baseline assessment is properly funded at the next Spending Review – there are huge economic opportunities to be realised from this. The OEP will be unable to carry out its 25 YEP scrutiny function effectively without a natural capital asset baseline.^{71,72}
- Many existing datasets and monitoring programmes are suitable for measuring changes in natural capital assets, as highlighted by the NCC in its detailed final response to the 2020 25 YEP Progress Report. This data should be included in the baseline, with new data collection targeted on filling gaps including soils, marine, biodiversity, ecological communities and urban areas.
- Information from the baseline census should be used in a natural asset system model – which Defra should develop jointly with the OEP – to identify the trade-offs, co-dependencies and ecosystem services which flow from natural capital assets; and inform decisions related to optimising 25 YEP policy interventions.

69 North Devon Biosphere, *North Devon Marine Pioneer* (2020): <https://www.northdevonbiosphere.org.uk/marinepioneer.html>

70 North Devon Biosphere, *North Devon's Marine Natural Capital Plan* (2020): <https://www.northdevonbiosphere.org.uk/mncp.html>

71 NCC, Response to the 25 Year Environment Plan progress report 2019 (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

72 NCC, Interim response to the 25 Year Environment Plan progress report and advice on a green economic recovery (2020): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

Soils

- The NCC repeats its recommendation that a national survey is urgently needed to provide data on the extent and condition of soils, including establishing a baseline assessment of soils against which change can be measured. Only then will we know if we are on track to meet the government target to manage our soils sustainably by 2030. This requires a significant scale-up in the number of sites monitored consistently at fixed periods to provide data that can show changes over time. The national survey should aim to improve certainty in modelled data, with data regularly updated. Defra's proposed Natural Capital and Ecosystem Assessment should be used to deliver this, with a focus on delivering coverage at appropriate spatial scales.
- If current evidence is not sufficient to support a legally binding target for soils through the Environment Bill legislative framework, then the NCC recommends setting a shadow target for soils in the interim, in line with the ambition to ensure soils are sustainably managed by 2030.
- The five soil types outlined in the Environment Bill targets policy paper is a good place to start, but looking at these alone will not allow for an integrated natural system based assessment. The NCC advises that there is no 'one size fits all' indicator for soil health, and the soil types will need to be assessed across different land cover/habitat types to assess their condition, the services they deliver, and to understand how/why these are changing over time.

Marine

- The additional funding for monitoring and reporting through the proposed Natural Capital and Ecosystem Assessment (NCEA) provides an opportunity to broaden the scope of marine monitoring to allow for a joined up natural capital approach to protecting and improving the broad suite of marine assets.
- The NCC acknowledges the government's intention to limit marine targets to a biodiversity target for marine protected areas (MPA), within the first suite to be set under the statutory framework of the Environment Bill.⁷³

The NCC strongly advises that this should not prevent the Environment Bill framework from driving the protection of natural capital assets across the marine environment, in line with the 25 YEP goals. The current focus on MPA condition does not reflect the interconnected nature of the wider marine environment and its components and will not allow for integrated implementation and assessment measures to improve the condition of marine natural assets.

- The government should urgently address data gaps related to assessing the extent and condition of marine natural capital assets, with a particular focus on how changes in the marine environment affect the dynamic flows of services and benefits. This evidence should then be utilised through the Environment Bill targets framework to review and set targets for marine beyond MPA as a matter of urgency.

Corporate Natural Capital Accounts

In England and many other countries, the private sector owns and manages the majority of natural assets. For example, over two thirds of land in England is privately owned.⁷⁴ In general, privately owned natural capital assets are not reflected in market prices and, therefore, the private sector has no overt financial incentive to deliver or conserve them.⁷⁵ To address this issue, public and private organisations and landowners need to recognise their role in maintaining and enhancing the natural capital they own, the first step being to produce a corporate natural capital account (CNCA).

The development of CNCA is fundamental for securing the government's environmental objectives. This is because these accounts enable natural assets to be measured in the context of company profits, providing a powerful 'self-interest' incentive for organisations such as landowners and corporate investors to maintain and enhance natural assets. Without such an incentive, it is unlikely that any substantial environmental improvement will be achieved.⁷⁶

In 2015, the Committee developed and piloted in collaboration with the RSPB and PwC, an innovative and ground-breaking CNCA framework, for organisations to account for natural capital assets they own and the value they derive from them, and document assets and liabilities in a balance sheet format that extends traditional financial reporting.⁷⁷

73 Defra, *19 August 2020: Environment Bill – environmental targets* (2020) <https://www.gov.uk/government/publications/environment-bill-2020/august-2020-environment-bill-environmental-targets>

74 NCC, *Introduction to the Natural Capital Committee's Corporate Natural Capital Accounting Project* (2015): <https://www.gov.uk/government/collections/natural-capital-committee-documents>

75 Mayer, C, *Unnatural Capital Accounting, NCC Member's Discussion Paper, Number 1*. (2014): www.naturalcapitalcommittee.org

76 NCC, *Introduction to the Natural Capital Committee's Corporate Natural Capital Accounting Project* (2015): <https://www.gov.uk/government/collections/natural-capital-committee-documents>

77 Eftac et al, *Developing corporate natural capital accounts* (2015): <https://www.gov.uk/government/publications/natural-capital-committee-research-corporate-natural-capital-accounting>

The key insights from this work include:

- Most accounting frameworks, in practice, focus on recording changes in flows, often neglecting changes in the underpinning assets (or stocks) from which they are derived. GDP epitomises this problem.
- Despite the best of intentions, there are many one-off environmental accounting projects that have had very little impact.
- Capital maintenance provisions are commonplace in infrastructure policy and routine for many organisations. For example, machines wear out and parts need replacing, roads need repairing, and trees need replanting after felling in a commercial forestry operation.
- Any reduction in the value of natural capital over time, as recorded in the natural capital accounts, can be seen as giving rise to a corresponding requirement for a capital maintenance provision; the size of the provision should be the payment necessary to keep an asset or capital item intact through time.
- These capital maintenance provisions can therefore be thought of as a measure of the money that needs to be spent in order to maintain natural capital intact. Given that the objectives of many areas of environmental policy are primarily about stopping further declines as a first step, the Committee is of the view that explicitly recording the requirement for capital maintenance provisions in accounts will help to ensure that these investments actually happen in practice.
- The methodology developed for CNCA should complement traditional financial and management accounts. This will enable organisations to gather natural capital information in a coherent and comparable format to aid decision-taking about the management of natural assets, to the benefit of both the organisation and society.

The NCC further advised in its recent 2019 and 2020 Annual Reports that an increase in legal requirements to produce CNCA (e.g. Companies Act 2006 Section 172 and section 414C) should not be seen as additional bureaucratic burden, but as an opportunity to increase the monetary benefits derived from an organisation's assets. This can be achieved by restoring, improving and maintaining the condition and extent of their assets.

The CNCA template developed by the NCC has had a positive uptake, including by organisations participating in the pilot: the National Trust, Lafarge Tarmac, The Crown Estate and United Utilities. The Committee has also used the CNCA framework as a basis to advise the government's Council for Sustainable Business (CSB) on developing natural capital accounts.

The government continues to incorporate elements of the corporate accounting template produced by the NCC into natural capital accounting practice, including informing the BSI's work on its new standard which will enable replicable and consistent ways to report natural capital accounts.

More recently, there is increasing recognition of the need to adopt natural capital by institutional investors as a risk class equivalent to CO₂ emissions and global warming. This is reflected in the setup of the Taskforce for Nature-related Disclosures (TNFD) in July 2020, with support from leading global financial institutions and the UK Government.⁷⁸ The TNFD is expected to be launched in early 2021 and will be tasked with delivering a framework to guide nature-related financial disclosure by the end of 2022. The NCC regards this as a very significant advance, because it holds the potential for the first time that natural capital will be a determinant of portfolio allocations. This in turn will mean that it will form a key part of the stewardship of companies by investors and provide a strong impetus for companies to take investment in natural capital seriously. In this context, the CNCA framework developed by the NCC becomes extremely important, as it provides an off the shelf practical guide for companies to measure natural assets.

Recommendations:

- Defra should work with the Department for Business, Energy and Industrial Strategy (BEIS) to encourage private sector production of corporate natural capital accounting which require provisions to be made for the maintenance of natural capital, notably by engaging with the TNFD initiative and accounting bodies to consider future revisions to accounting standards to include natural capital.
- The government should require businesses to make the use of the practical corporate accounting template that the NCC has developed, including a set of corporate accounting standards as a formal audit requirement. The NCC is concerned that the plethora of initiatives and different 'natural capital accounting' approaches that are currently emerging will lead to greenwashing. There should be a standardisation of structures and principles to support external reporting, similar to those used in financial accounting.

⁷⁸ Coalition of partners including Global Canopy, UNDP, UNEP Finance Initiative and WWF. It is supported by financial institutions like AXA, BNP Paribas, DBS Bank, Rabobank, First Rand, Yes Bank, Storebrand as well as the governments of UK, France, Netherlands and Switzerland

National Natural Capital Accounts

In 2011, the government committed to working with the Office for National Statistics (ONS) to incorporate natural capital into the UK Environmental Accounts by 2020.

The 25 YEP reiterated this commitment, and the ONS in 2018 published an updated road map to 2020.⁷⁹ To date, natural capital accounts for several broad habitats, as well as for aggregate UK-wide accounts, have been published and are being regularly updated.

The NCC has worked with the ONS and Defra since 2016 to develop the national accounts, advising, for example, that if natural capital is to be taken seriously, then the environment must be incorporated into the heart of the economy and integrated fully into national accounts.⁸⁰ Natural capital is at least as important as physical and human capital in producing economic outputs and hence economic wellbeing. Further areas of the Committee's advice to the ONS on national accounts include:

- National natural capital accounts should be extended in coverage to cover more renewable natural assets and a broader range of ecosystem service, include estimates of the capital maintenance and restoration costs (as per the Committee's CNCA framework) as well as the valuations of renewable natural assets; and incorporate cost-based approaches that complement existing valuation methods.
- Valuing natural capital assets at their exchange value can, in some cases, lead to figures that appear counterintuitive. For example, the contribution of mineral resources to natural capital has declined significantly compared to previous years. This reflects the large decline in the oil price and projections of future oil prices. Using these projections to calculate the net present value of the UK's mineral assets can result in a published decline. Yet the physical depletion is proportionately far less, and the reduced oil price may slow down future depletion rates.

The latest UK Natural Capital accounts estimate the partial value of UK Natural Capital to be around £951 billion.⁸¹ The NCC advised in its 2020 Annual Report that while good progress had been made, this partial estimate is a *"disappointingly low estimate when compared to the UK housing stock which has been estimated at around £7.3 trillion in 2019."*⁸² The NCC response to the first 25 YEP Progress Report further highlights that the extent and condition of natural capital assets are declining or flat, but this is not reported or properly captured in the flows-based national accounts.

The next update to the UK aggregate accounts will be in 2020. Development work will continue so that all eight broad habitats will have accounts compiled: woodland, farmland, marine, freshwater, urban areas, semi-natural grassland, coastal margins, and mountains, moorland and heath. The ONS continues to build on the NCC's advice with respect to individual assets and the need to extend the range of ecosystem services provided by natural assets.

Recommendations

- The ONS should further develop national natural capital accounts and, in particular, include estimates of the capital maintenance and restoration costs as well as the valuations of renewable natural assets, and incorporate cost-based approaches that complement existing valuation methods.
- A full set of national accounts for the extent and condition of the individual components of natural capital (e.g. freshwater, marine or different 'ecosystems') is needed which will enable the state of these assets, as well as the values derived from them, to be recorded and reported on at a more detailed level, which is relevant for decision making and policy development. These so called 'bottom-up' accounts can be aided by a natural capital baseline assessment and should enable further refinement of the 'wealth accounts' referred to above.
- The next iteration of the national accounts should work towards/include a national balance sheet of the value of our natural assets, estimates of the depreciation of those assets (where this occurs) and a redefinition of the way in which income and savings are measured in national accounts.

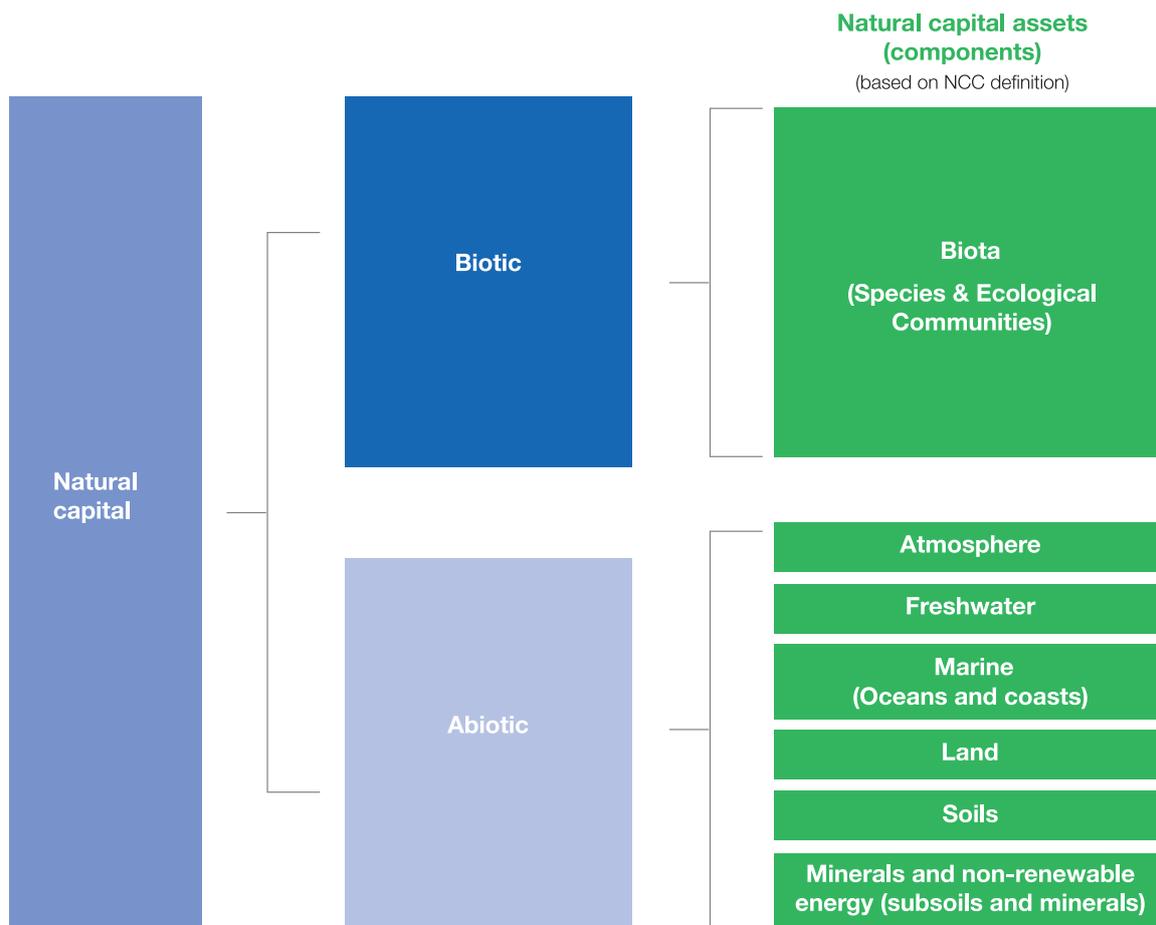
79 ONS, *UK Natural Capital: interim review and revised 2020 roadmap* (2018): <https://www.ons.gov.uk/economy/nationalaccounts/uksectoraccounts/methodologies/uknaturalcapitalinterimreviewandrevised2020roadmap>

80 NCC, *State of natural capital Annual Report* (2016): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/516725/ncc-state-natural-capital-third-report.pdf

81 Office for National Statistics (ONS), *UK natural capital accounts: 2019* (2019): <https://www.ons.gov.uk/economy/environmentalaccounts/bulletins/uknaturalcapitalaccounts/2019>

82 NCC, *State of natural capital Annual Report* (2020): <https://www.gov.uk/government/publications/natural-capital-committees-seventh-annual-report>

Figure 1: Natural Capital assets



Source: NCC 2020

Natural capital framework for the OEP to scrutinise the 25 YEP

A previous Defra Secretary of State, Michael Gove, formally commissioned the NCC to scrutinise the first two 25 YEP Progress Reports and lay the foundation for the OEP to undertake this function on a statutory basis from 2021.

The Committee’s response to the 2019 25 YEP Progress Report included several recommendations for improving the reporting framework: the need for baseline, clearly defined 25 YEP goals with statutory, quantitative targets and an increase in the number of metrics that measure the extent and condition of natural assets.⁸³

The Committee’s assessment of the 2020 Progress Report has been delivered in two parts: an interim report, published in July 2020,⁸⁴ and a final response.⁸⁵

In its interim response, the NCC raised concerns that the evidence presented in the Progress Report at best provides only a partial picture, given the narrow range of datasets considered, and mostly shows declines in England’s environment. The Committee also set out a natural capital approach to assessing progress, as follows:

- i) Determine the main natural capital assets,** and link these to the ten 25 YEP goals. The seven natural assets identified – biota, atmosphere, freshwater, marine, land, soils and minerals/ resources are displayed in Figure 1.

The seven natural capital assets were aligned to the 10 goals in the 25 Year Environmental Plan (25 YEP), and the four priority areas outlined in the Environment Bill⁸⁶ (see Table 1 below), and mapped against the UK National Ecosystem Assessment (NEA) habitat types for completeness.

83 NCC, *Response to the 25 Year Environment Plan progress report 2019* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

84 NCC, *Interim response to 25 Year Environment Progress Report and advice on a green economic recovery* (July 2020) <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

85 NCC, *Final response to the 25 Year Environment Plan Progress Report* (October 2020): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-governments-25-year-environment-plan>

86 Defra, *Bill documents – Environment Bill 2019-21* (2020) <https://services.parliament.uk/Bills/2019-21/environment/documents.html>



Table 1: Aligning NCC asset grouping with 25 YEP goals and Environmental Bill priority areas

| NCC asset grouping | Main 25 YEP goals | Environmental Bill Priority areas | UKNEA broad habitats |
|-----------------------|--|---|---|
| Atmosphere (abiotic) | Clean air Mitigating and adapting to climate change <i>But will also cover:</i> <ul style="list-style-type: none"> • Minimising waste • Managing exposure to chemicals | Air quality, Climate Change Act – carbon budgets, Resource efficiency and waste reduction | |
| Freshwaters (abiotic) | Clean and plentiful water <i>But will also cover:</i> <ul style="list-style-type: none"> • Minimising waste • Mitigating and adapting to climate change • Managing exposure to chemicals • Reducing the risks of harm from environmental hazards • Using resources from nature more sustainably and efficiently | Water, Resource efficiency and waste reduction | <ul style="list-style-type: none"> • Freshwater, wetlands, and floodplains |
| Marine (abiotic) | Mitigating and adapting to climate change <i>But will also cover:</i> <ul style="list-style-type: none"> • Minimising waste • Managing exposure to chemicals • Enhancing beauty, heritage • Engagement with the natural environment | Resource efficiency and waste reduction, Climate Change Act – carbon budgets, Resource efficiency and waste reduction, Water | <ul style="list-style-type: none"> • Marine • Coastal margins |
| Biota (biotic) | Thriving plants and wildlife Enhancing biosecurity <i>But will also cover:</i> <ul style="list-style-type: none"> • Minimising waste • Managing exposure to chemicals • Mitigating and adapting to climate change • Using resources from nature more sustainably and efficiently • Enhancing beauty, heritage and engagement with the natural environment | Biodiversity | <ul style="list-style-type: none"> • Marine • Coastal margins • Semi-natural grassland • Farmland • Mountains, moorlands, and heaths • Urban • Woodland • Freshwater, wetlands, and floodplains |
| Soils (abiotic) | Mitigating and adapting to climate change <i>But will also cover:</i> <ul style="list-style-type: none"> • Minimising waste • Managing exposure to chemicals | | |

| NCC asset grouping | Main 25 YEP goals | Environmental Bill Priority areas | UKNEA broad habitats |
|------------------------------------|---|-----------------------------------|---|
| Land (geomorphology) | <ul style="list-style-type: none"> Enhancing beauty, heritage and engagement with the natural environment Reducing the risks of harm from environmental hazards | | <ul style="list-style-type: none"> All habitat types |
| Resources and non-renewable energy | <ul style="list-style-type: none"> Using resources from nature more sustainably and efficiently Minimising waste | | |

ii) Identify the full range of natural asset components and existing datasets/evidence for each of the seven assets, and shortlist these on the basis of ecosystem service flows/societal benefits they provide.

iii) Develop an analysis of trends for each asset/its components, focusing on progress made towards compliance with existing targets/commitments relative to a 2011, long-term and near-term baseline where possible.

iv) Issue a ‘RAG’ (Red, Amber, Green) rating based on this analysis to provide a transparent and accessible indication of the state of natural assets.

In its final response to the 25 YEP Progress Report, the NCC demonstrated how this natural capital framework can be applied to independently scrutinise progress. The Committee provided an assessment of the seven natural assets: none of the assets were rated ‘Green’, and a number of assets were assessed overall as ‘Red’ (e.g. freshwaters and land), and several assessed as ‘Amber’ (e.g. atmosphere and minerals/resources). The NCC advised on priority areas where government should focus in order to turnaround the evidenced declines in natural assets and get on track to meet the objective the 25 YEP to improve the natural environment within a generation. The final response includes detailed technical annexes and underpinning datasets. This information will provide a robust template for the OEP to undertake its statutory 25 YEP scrutiny function from 2021.

The NCC’s advice to the OEP set up team has shaped the OEP business case and first year work programme. In particular, the Committee emphasised the need for a decision support tool (and sufficient staffing, well beyond the size of the NCC secretariat) to enable the OEP to undertake a comprehensive assessment of the overall environmental system, future trajectories and potential impact of changes in natural assets on ecosystem services. Such a comprehensive analysis is critical for informing whether or not the government will meet the environmental “significant improvement test” that it has set itself in the Environment Bill and developing optimal policy interventions across not only the ten 25 YEP goals, but also for attaining net zero by 2050.

iii) Embedding natural capital in decision making

In this section, the impact of the NCC’s advice in terms of embedding natural capital into decision making is summarised, covering the Green Book, valuing ecosystem services, the How to do it workbook, taking a joined up approach to environmental improvement through nature based interventions, and applying the UK’s natural capital approach in the international context.

The Green Book

The H.M. Treasury Green Book sets out the government’s guidance on how new or revised policies, programmes and projects undertaken by government or its agencies should be appraised and evaluated. The intention of the Green Book is to guide assessments to provide objective analysis of the impacts of public spending proposals, analysis which is consistent across government and considers the effects of a proposal in terms of its impacts on social welfare.

Between 2016 and 2018, the Natural Capital Committee (NCC) worked with H.M. Treasury to advise and co-author the Green Book guidance regarding the incorporation of natural capital, ecosystem services and the value of associated goods and services into government appraisals. The guidance was incorporated into the revised Green Book published in March 2018. This was the first time that natural capital had been incorporated within the Green Book, with its revision, the first for 15 years, being published in March 2018.

In its 2020 Annual Report, the NCC advised that the government should develop measures “...of the value of benefits delivered by change in natural capital and the ecosystem services it delivers. These measures should be compatible with the Green Book guidance regarding the incorporation of environmental improvements within economic assessments of government spending and investment decisions.”⁸⁷

⁸⁷ Natural Capital Committee, *State of Natural Capital Annual Report 2020* (2020): <https://www.gov.uk/government/publications/natural-capital-committees-seventh-annual-report>

Natural Capital in the Green Book

The Green Book is a key input to the public sector decision making process, including capital expenditure and has a major impact upon the implementation of policy, in effect shaping its consequences. The intention of the Green Book is to ensure objective analysis of the impacts of proposals; analysis which is consistent across government and considers the effects of a proposal in terms of its impacts on social welfare.⁸⁸

The 2018 edition of the Green Book contained a number of innovative changes in the approach to appraisal from previous guidance. In relation to the environment, the Green Book embraced NCC recommendations on the use of a natural capital-based approach to decision making. This included the incorporation within decision making of:

- Natural capital asset stocks;
- The flows of services derived from natural capital.

The requirement to consider stocks of natural capital rather than just the services they provide is a fundamental change to decision appraisal. It is no longer sufficient that a project/programme should deliver benefits which exceed costs by some set margin. A project also needs to demonstrate its impact upon sustainability in terms of its effect on natural capital stocks.

This approach accords with the ambitions set out in the Environment White paper of 2011, the government's 25 YEP and the Environment Bill. These outline a policy commitment to *"become the first generation to leave (the) environment in a better state than we found it and pass on to the next generation a natural environment protected and enhanced for the future"* (p.5) and that *"the 25 Year Environment Plan will help boost the productivity by enhancing our natural capital"*.⁸⁹ As such the 2018 Green Book shows the Treasury proactively leading in terms of developing guidance standards fit for ambitious policy objectives.

Impact of the updated Green Book

In March 2020, the NCC published a report⁹⁰ looking at how the revised Green Book had influenced the appraisals produced, both in terms of their consideration of natural capital stocks and the flows derived from them. The research sifted the 280 impact appraisals published since the 2018 Green Book update and identified 20, where an assessment of natural capital impacts could have been considered as a reasonable requirement, due to the description of the change to be brought about in the policy or programme. While the total societal value of the

policies/appraisals within the 20 assessments was over £8.2bn, no evidence of natural capital assessment was found within any of the appraisal summaries. The NCC will publish a further report in November 2020 updating these recommendations based on earlier feedback from practitioners, gathered over the summer of 2020, on how current practices and processes can be improved.

Recommendations

- As part of the ongoing Green Book review, the government should consider how the OEP could work in collaboration with the Regulatory Policy Committee (RPC), assessing how well natural capital has been considered in impact assessments. Where proper analysis of the policy impacts, as per the Green Book guidance, has not been undertaken – or for policies that will result in significant losses of natural capital, there should be the option to 'Red Flag' impact assessments.
- The NCC advises that a section of the impact assessment summary template should be set aside for reporting the natural capital impacts of a policy change and how it is contributing towards the planned statutory targets in the Environment Bill (as the current template does for carbon budgeting). The natural capital valuation template, proposed by the NCC, will help to populate this information.
- Official guidance could then be referred to and used in the same way that analysts are currently able to refer to the guidance produced by the Department for Business, Energy and Industrial Strategy (BEIS) on valuing energy use and greenhouse gas emissions,⁹¹ whenever it is relevant to an appraisal. In this way, the approach taken to ecosystem services valuation would be standard across government and based upon the best available evidence.

Valuing ecosystem services

Stocks of natural capital assets (such as stocks of fertile soils or populations of fish and bees) deliver flows of ecosystem services (such as natural levels of crop growth, potential harvests of fish and pollination services). These services, often combined with inputs from different types of capital (e.g. human or manufactured capital) and the flows of services they provide (e.g. labour and machinery inputs), yield the goods which maintain human wellbeing⁹².

88 HMT, *The Green Book: appraisal and evaluation in central government* (2020): <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

89 H.M. Government, *The 25 Year Environment Plan* (2018): <https://www.gov.uk/government/publications/25-year-environment-plan>

90 NCC, *The Green Book guidance: embedding natural capital into public policy appraisal* (2020): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-the-green-book-guidance-embedding-natural-capital-into-public-policy-appraisal>

91 BEIS, *Green Book supplementary guidance: valuation of energy use and greenhouse gas emissions for appraisal* (2012): <https://www.gov.uk/government/publications/valuation-of-energy-use-and-greenhouse-gas-emissions-for-appraisal>

92 Natural Capital Committee, *Natural capital terminology* (2019): <https://www.gov.uk/government/publications/natural-capital-committee-natural-capital-terminology>

However, while the latter inputs are supplied through markets and are therefore priced, many ecosystem services are non-marketed and unpriced. This leads to a problem if they are treated as being free and are as a result over-used. Indeed, if ecosystem service flows are used at rates that deplete the natural capital stocks they come from, then this becomes unsustainable. Regrettably, there are now many examples of such over-use and degradation of natural capital, ranging from over-fishing driving fish populations towards extinction, to climate change resulting from over-use of the ability of the atmosphere and oceans to soak up greenhouse gases.

In April 2018, the NCC published its guide to economic valuation.⁹³ This guide sets out the NCC's recommended approach for how to value ecosystem services in each of the contexts in which it is useful. The NCC advises that an important step towards sustaining natural capital stock levels, and thereby

sustaining human wellbeing, is to ensure that the value of the ecosystem service flows is recognised in policy and decision making. The optimal approach to delivering this is to value non-market ecosystem service flows in the same way that the flows of services from other types of capital are assessed; using economic values. This will allow fair, commensurate comparison of ecosystem services alongside other values, ensuring they are not over-used and thereby ensuring that natural capital stocks are not degraded.

Decisions that consider only market prices ignore some of the most important ways that natural capital benefits us. There are special valuation techniques that must be used in cases where market prices are not available. The NCC recommends a range of techniques and resources for decision makers evaluating non-market costs and benefits, as summarised in Table 2.

Table 2: Resources for ecosystem services valuation recommended by the NCC

| Valuation tool or relevant study | Web link |
|--|---|
| Environmental Value Look-up (EVL) | http://sciencesearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=19514 |
| Enabling a Natural Capital Approach (ENCA) | https://www.gov.uk/guidance/enabling-a-natural-capital-approach-enca |
| Natural Environment Valuation Online tool (NEVO) | https://sweep.ac.uk/portfolios/natural-environment-valuation-online-tool-nevo/ |
| List of valuation tools from Ecosystems Knowledge Network | https://ecosystemsknowledge.net/tool-assessor-list-of-tools |
| Woodland Valuation Tool | https://forestry.gov.scot/publications/sustainable-forestry/economic-research/680-woodland-valuation-tool |
| Outdoor Recreation Valuation tool (ORVal) | https://www.leep.exeter.ac.uk/orval/ |
| Natural Capital Planning Tool (NCPT) | http://ncptool.com/ |
| Local Ecological Foot printing Tool | https://www.left.ox.ac.uk/ |
| Valuing corporate environmental impact: PwC methodology document | https://www.pwc.co.uk/sustainability-climate-change/assets/pdf/pwc-environmental-valuation-methodologies.pdf |
| Green Infrastructure Valuation toolkit (GI-Val) | https://www.merseyforest.org.uk/services/gi-val/ |
| Toolkit for Ecosystem Service Site-Based Assessment | http://tessa.tools/ |

Source: NCC 2019⁹⁴

93 NCC, *Economic valuation and its applications in natural capital management and the Government's 25 Year Environment Plan* (2018): <https://www.gov.uk/government/collections/natural-capital-committee-documents>

94 NCC, *Natural Capital Committee advice on the Green Book guidance: embedding natural capital into public policy appraisal* (2020): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-the-green-book-guidance-embedding-natural-capital-into-public-policy-appraisal>





The NCC guide to economic valuation highlights the considerable technical advances that have been delivered through decades of research and the major improvements in decision making that can be delivered through application of these methods. The guide also emphasises the important development of decision support valuation tools. Expanded use of these methods and ongoing development of valuation support tools is considered a major achievement for the NCC. This legacy was helped greatly by the active collaboration of HM Treasury with the Committee in revising and co-authoring key sections of the Green Book guidelines for the appraisal and evaluation of public spending proposals (HMT, 2018).⁹⁵ The Green Book notes the significant strides which the NCC and colleagues have delivered in terms of improving access to non-market valuations of environmental costs and benefits and natural capital decision support tools more generally. These include both the development of support designed for specific applications (such as the searchable Woodland Valuation Tool; p.63) and more generic tools such as the Outdoor Recreation Valuation (ORVal) Tool (p.64). This latter tool was extended through the Defra funded Natural Environment Valuation Online (NEVO) tool which allows non-expert decision and policy makers to understand the value of environmental benefits and costs arising from a wide variety of user-defined public spending options.

The endorsement of NCC economic valuation advice was further boosted by Defra's launch, in January 2020, of the 'Enabling a Natural Capital Approach (ENCA)' online resource.⁹⁶ ENCA is designed to give government officials the materials they need to follow the Green Book⁹⁷ guidance on bringing the economic value of the ecosystem services provided by natural capital into policy appraisals. The online resource brings together case studies, templates, and good practice guidance in the valuation of natural capital, including material developed by the NCC.

Recommendations

- The NCC considers the ENCA tool a good starting point for the valuation of natural capital. However, the NCC advises that much more valuation information and decision support tools need to be developed if government appraisals are to be fully based on evidence and natural capital properly valued.⁹⁸ Given the inadequate state of the current evidence base, such development is likely to yield significant improvements in taxpayer value for money in terms of improved decisions.
- Defra should develop and make available valuation tools which analysts across government could refer to and use in their appraisals. These tools would allow access to values which reflect the natural variation in the environment and the changes being delivered by a policy or decision.

How to do it workbook

Alongside the guide to Natural Capital Valuation, the NCC published 'How to do it: a natural capital workbook' in 2017.⁹⁹

This practical guide is aimed at those wanting to use a natural capital approach in making decisions related to the natural environment. The workbook has been used extensively by practitioners to help support the implementation of natural capital based approaches in place-based decision making. The application of natural capital approach by decision makers such as planners, communities and landowners, will be key to achieving the 25 YEP objectives.

The Committee's workbook provides a straightforward five step model, summarised in Table 3, intended to support decision makers in protecting and improving stocks of natural capital assets and the flow of benefits derived from them. The five step model describes the planning cycle that practitioners can use to develop a natural capital plan. As the plan develops and more information is gathered **it may be necessary to revisit earlier steps.**

95 HMT, *The Green Book: appraisal and evaluation in central government* (2018): <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

96 Defra, *Enabling a Natural Capital Approach (ENCA)* (2020): <https://www.gov.uk/guidance/enabling-a-natural-capital-approach-enca>

97 HMT, *The Green Book: appraisal and evaluation in central government* (2018): <https://www.gov.uk/government/publications/the-green-book-appraisal-and-evaluation-in-central-government>

98 NCC, *Natural Capital Committee advice on the Green Book guidance: embedding natural capital into public policy appraisal* (2020): <https://www.gov.uk/government/publications/natural-capital-committee-advice-on-the-green-book-guidance-embedding-natural-capital-into-public-policy-appraisal>

99 NCC, *How to do it: a natural capital workbook* (2017): https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/608852/ncc-natural-capital-workbook.pdf

Table 3: Five step model presented in ‘How to do it: a natural capital workbook’

| 5 Steps | Summary |
|--|---|
| 1. Setting out the vision | What is the aim, without pre-empting the outcomes of the more systematic analyses that will follow. |
| 2. Understanding where you are starting from | What is the baseline position of natural capital assets, and what activities are already in place which impact assets? |
| 3 Building the evidence | What ecosystem services do the natural capital assets provide, and what are the economic and social benefits? |
| 4. Identifying and weighing up your options | Analysis of spatial data, environmental and economic modelling and valuation, and environmental management to form the basis of a plan. |
| 5. Implementation and evaluation | What governance, accountability and reporting arrangements should be put in place to enable progress to be made by stakeholders. |

The annexes of the workbook provide more detailed instructions on these five steps, on areas such as:

- Identifying the geographic, institutional and benefits area.
- Establishing the governance arrangements for the development, consultation, delivery and oversight of the plan and the stakeholders and partners who can contribute.
- Building the evidence base: Establishing a baseline for both the overall state of the environment and particular stocks of natural capital assets and the flow of benefits, goods and services.
- Compiling an asset risk register noting if the assets are renewable or non-renewable; which are at risk and from what; whether the extent and condition of the assets is increasing or decreasing; the proximity of the asset extent and condition to any tipping points, connectivity with other assets.
- Developing natural capital accounts alongside financial accounts.
- Considering the options for action, intervention and investment with the prize being creating new value and opportunities.
- Decisions should be made within the context of the government’s overall aim of being the first generation to leave the natural environment in a better state than that in which they found it.

Following a recommendation by the NCC, the creation of four Pioneer Projects was announced by government in 2016. The purpose of these projects was to inform the implementation of the 25 YEP and to identify lessons from the practical application of a natural capital approach, including trialling the How to do it workbook in a variety of environmental contexts. The four projects (across five locations) included a river catchment (Cumbria), an urban area (Manchester), a landscape-based area (north Devon) and marine areas (Devon and Suffolk)¹⁰⁰. Committee members provided advice to the Pioneer Projects throughout 2017 and 2018.

Recommendations:

- Building on lessons learned through the Pioneers and other exemplars, the NCC advises that a local natural capital baseline assessment methodology should be developed. This guidance should clearly set out how to undertake a baseline natural capital assessment for specific geographies such as a major river catchment, a city or town, a national park, a coastal stretch or a marine area. The approach, taken to local level natural capital assessments, should be based on the NCC’s How to do it workbook.
- The Environmental Analysis Unit within Defra should take ownership and further develop the How to do it workbook. The Committee advises that in order to achieve the 25 YEP goals, a natural capital approach needs to be accessible to decision makers at all levels: refinement of the workbook will facilitate this. The workbook should also be updated to reflect recent changes in legislation.

100 ICF, Evaluation of the 25 Year Environment Plan Pioneers (2018): <http://scienceresearch.defra.gov.uk/Default.aspx?Menu=Menu&Module=More&Location=None&Completed=0&ProjectID=20084>

Nature based interventions and taking a natural capital approach to climate and biodiversity conventions

The natural capital approach provides a suitable framework for incorporating the protection and enhancement of the full range of a country's environmental assets and the services that flow from them into financial and economic decision making.

In April 2020, the NCC published advice on using nature-based interventions to reach net zero greenhouse gas (GHG) emissions by 2050. In this paper, the Committee recommends that priority should be given to evaluating, managing and increasing tree cover, maintaining and increasing soil carbon (including peatland restoration), improving wildlife/biodiversity, managing freshwaters and wetlands and sea use changes. It also calls for an integrated, holistic, natural capital system-based approach to ensure nature-based interventions are designed in a way that maximises the full range of ecosystem services – including mental health and wellbeing benefits. The Committee has worked with the Committee on Climate Change to ensure that all natural capital and the wider ecosystem services are considered in climate change mitigation and adaptation advice.

As a result of discussions following the publication of this paper the NCC was commissioned by ministers to provide advice on taking a natural capital approach to linking the climate and nature dimensions of Convention on Biological Diversity (CBD COP15) and 26th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC COP26). The NCC's advice set out how the UK's natural capital approach can be applied in the international context to meet the aims of both conferences. The NCC has continued to engage with the government on the advice included in these papers, inputting into the work that the UK is leading on the Leaders' Pledge for Nature.

Recommendations:

- The UK Government should promote the 25 YEP and related natural capital metrics as an example of how to deliver and measure progress on a plan for the protection and improvement of natural capital. The UNFCCC and CBD frameworks should support countries to develop an asset-based framework for measuring changes in natural capital including through: establishing an environmental baseline of natural capital assets; developing appropriate asset-based metrics; delivering natural capital accounts to support local and national decision making; and allocating sufficient resources to deliver monitoring and build systems modelling capability.
- Integral to the NCC's advice on nature-based interventions in both the domestic and international contexts is that all actions to reduce the concentration of carbon in the atmosphere should be checked against their wider natural capital impacts. The NCC has advised that efforts to improve biocarbon stocks and biodiversity should not be delivered independently. All natural capital assets should be considered, recognising that they operate within an integrated system.



Annex A: Terms of reference for the Natural Capital Committee (first term)

Background

Our understanding of the value of nature is improving thanks to major recent studies such as the UK National Ecosystem Assessment (NEA) and, at the international level, the Economics of Ecosystem Services and Biodiversity (TEEB). The Government wants to ensure the value of the flow of services that nature provides and of the natural capital that underpins them is properly understood and reflected in the economy and policy making. This will help ensure we can continue to prosper and grow economically by protecting nature and using its services sustainably.

The Natural Environment White Paper, therefore, announced the creation of an independent Natural Capital Committee (“the Committee”), reporting to the Economic Affairs (EA) Committee of the Cabinet to provide expert independent advice on the state of English natural capital.

The role of the Committee

The Committee will play a key role in supporting the Government to ensure that natural capital is properly and consistently valued and accounted for in policy decisions and economic planning. By performing this role, the Committee will help the government ensure that our natural wealth is managed efficiently and sustainably, unlocking opportunities for increasing prosperity and wellbeing.

Specifically, the Committee will:

- Provide advice on when, where and how natural assets are being used unsustainably. For example, in a way that takes us beyond some acceptability limits or non-linearity thresholds, or in a way that diminishes some measure of comprehensive wealth;
- Advise the Government on how it should prioritise action to protect and improve natural capital, so that public and private activity is focused where it will have greatest impact on improving wellbeing in our society. This will include advising the Government on tools and methodologies to ensure that the value of natural capital is fully taken into account in policy decisions and in economic planning;

- Advise the Government on research priorities to improve future advice and decisions on protecting and enhancing natural capital. The Committee's advice in this area will reflect consultations with the Research Councils and the academic community.

The Committee may:

- Produce and publish annual reports to the EA Committee; it may also choose to publish a range of additional reports as appropriate;
- Provide advice to Ministers in confidence;
- Provide responsive, ad-hoc advice if requested by the Secretary of State for the Environment (or by the EA Committee via the Secretary of State).

The Committee may not:

- Perform a watchdog or advocacy role with respect to Government's policy decisions;
- Be policy prescriptive in its advice – unless requested by the Secretary of State for the Environment (or by the EA Committee via the Secretary of State);
- Make decisions on classifications or statistical standards.

Committee set-up and structure

The Committee has been set up as an ad-hoc independent advisory body, comprising of a Chair and expert members. They come from disciplines including economics, natural and social sciences. They are widely recognised as leading experts in their respective fields and have been appointed and perform on the basis of their academic and professional background as opposed to representing any stakeholder interests. Expert Committee members are independent appointments made through open competition, in line with OCPA guidelines on best practice for making public appointments. Members are expected to act in accord with the principles of public life.

The Committee is supported in its work by a secretariat based in Defra. It may also set up expert working groups or rely on existing groups to take forward its analytical work.

Annex B: Terms of reference for the Natural Capital Committee (second term)

Background

The government is establishing the Natural Capital Committee (NCC) through to September 2020, to provide it with independent advice on protecting and improving natural capital. The government's ambition is to improve the environment within a generation, so that England has the best environment and is one of the most beautiful places in the world to live, to work and to bring up a family.

The NCC are working with the government to develop a 25 YEP to deliver this vision; to empower people, businesses and the third sector to protect and improve the environment; taking into account the use of data, tools, new technologies and techniques. The government has a large number of environmental data sets which others could utilise to achieve positive environmental outcomes.

The initial phase of the NCC concluded on 30th September 2015 and the Committee successfully met its Terms of Reference in full. It provided advice to the government on three main issues:

1. The unsustainable use of natural assets;
2. How action to protect and improve natural capital should be prioritised;
3. Research priorities.

Terms of reference

Over this Parliament, the government requires advice from the NCC on the development and implementation of the 25 Year Environment Plan, which the NCC itself recommended. The Committee, therefore, will move into a new phase of work to help inform the plan's development.

The new NCC will be vital in driving forward the next stage of natural capital work in England. This will include playing a key role in advising the government on environmental assets at risk and ways of identifying priorities for improvement where the benefits are greatest, building on its work of the last three years.

To do this, the Committee will need to make use of appropriate knowledge, tools and techniques to ensure natural capital can be properly and consistently assessed, valued and accounted for in decision making and economic planning. There should be a strong focus on embedding the use of open data, tools and techniques to facilitate positive action on the environment across the country, and consideration of national (England-wide) and local delivery.

The Committee will advise on the importance of natural capital to sustainable economic growth, health and wellbeing and identify potential actions that could be taken to boost these.

The Committee will continue working with the government and the Office for National Statistics to develop national natural capital accounts and work with businesses to develop and apply corporate natural capital accounts, recognising that much of our natural capital is privately owned.

It will consider the international dimensions of natural capital in formulating its advice where appropriate. The Committee will also advise the National Infrastructure Commission to ensure that 'green and blue' infrastructure is appropriately considered within wider infrastructure discussions.

The NCC will continue to report to the Economic Affairs Committee of the Cabinet¹⁰¹.

Specifically, the Committee will advise government and its delivery bodies on the development and implementation of an integrated 25 Year Environment Plan to protect and improve our natural capital; making use of appropriate knowledge and tools to identify priority assets for protection and improvement.

¹⁰¹ In 2020 the NCC has reported to the Domestic and Economy Implementation Committee of the Cabinet.





In doing so, it should have particular regard to:

- Advising the government on how national environmental priorities could be delivered in partnership with the private, public and third sectors, including local community endeavours;
- Providing practical advice to the government on how people and businesses can reconnect with nature;
- The development of suitable metrics to be used to track progress against the Plan's objectives and benchmarking the English environment with the rest of the world;
- Advising government on progress against the Plan.

The Committee may:

- Produce and publish occasional reports to the Economic Affairs Committee;
- Provide responsive, ad-hoc advice if requested by the Secretary of State for the Environment on behalf of the Economic Affairs Committee;
- Provide advice to Ministers in confidence.

The Committee may not:

- Perform a watchdog or advocacy role with respect to government policy;
- Be policy prescriptive in its advice or publicly comment on specific projects, unless requested by the Secretary of State for the Environment (or by the Economic Affairs Committee via the Secretary of State);
- Make decisions on classifications or statistical standards.

Committee set-up and structure

The Committee will be set up as an ad-hoc independent advisory body to the government, comprising a Chair and members with expertise in the fields of economics, natural and social sciences, accounting, statistics, data, technical and both local and national delivery. Members of the Committee will be widely recognised as leading experts in their respective fields and have been appointed and perform on the basis of their professional background as opposed to representing any stakeholder interests. Members are expected to act in accord with the principles of public life.

The Committee will be supported in its work by a secretariat based in Defra. It may also set up expert working groups or rely on existing groups to take forward its work.

Annex C: First term publications

This table presents all of the second term publications in chronological order.

| Paper and link | Short description |
|---|---|
| Natural Capital Committee Principles for guiding decision making regarding forestry in the UK (December 2012) | A natural capital approach to adopting recommendations from the Independent Panel on Forestry (2012). |
| Information Sheet – The Natural Capital Committee (December 2012) | Information on the NCC; what is the NCC, what is its remit, definitions and why the NCC is needed. |
| Natural Capital Committee's first annual report: The state of natural capital: towards a framework for measurement and valuation (April 2013) https://www.gov.uk/government/publications/natural-capital-committees-first-state-of-natural-capital-report | This report sets out a framework of how the Committee will help to make sure natural capital is included in economic decision making. It also highlights work the Committee will be doing so that we can better understand which of our natural assets are critical to our wellbeing. |
| Natural Capital Committee's second annual report, The state of natural capital: restoring our natural assets (March 2014) https://www.gov.uk/government/publications/natural-capital-committees-second-state-of-natural-capital-report | This report sets out what the Committee has achieved so far and makes recommendations to government on what needs to be done. It also sets the work programme for the next year. |
| Natural Capital Committee's third annual report, The state of natural capital: protecting and improving natural capital for prosperity and wellbeing (January 2015) https://www.gov.uk/government/publications/natural-capital-committees-third-state-of-natural-capital-report | This is the Natural Capital Committee's (NCC) third report to government. The report sets out recommendations to achieve government's vision, 'to be the first generation to leave the natural environment in a better state than it inherited'. |
| Natural Capital Committee advice to government on research priorities (March 2014) https://www.gov.uk/government/publications/natural-capital-committee-advice-to-government-on-research-priorities | This report sets out the research priorities for the field of natural capital. The Committee consulted with Research Councils and the academic community to develop these priorities. |
| Initial term working papers (2012 to 2015) <ul style="list-style-type: none"> • Working paper: Introduction to the Natural Capital Committee's corporate natural capital accounting project • Working paper: Towards a framework for defining and measuring changes in natural capital (March 2014) • Discussion paper: Unnatural capital accounting (December 2013) • Discussion paper: Economic growth and natural capital (Sept 2015) https://www.gov.uk/government/publications/natural-capital-committee-initial-term-working-papers-2012-to-2015 | These papers were produced by one or more of the Committee members during the initial term (2012 to 2015) of the Natural Capital Committee (NCC). The working papers reflected the Natural Capital Committee position on important issues. The discussion papers were directly relevant to one or more of the Committee's work streams. The views are those of the authors and do not necessarily reflect the collective view of the initial Committee. |

| Paper and link | Short description |
|--|---|
| <p>Natural Capital Committee research: improving cost benefit analysis guidance (February 2015)</p> <ul style="list-style-type: none"> Improving cost benefit analysis guidance: non-technical summary Improving cost benefit analysis guidance: final report <p>https://www.gov.uk/government/publications/natural-capital-committee-research-improving-cost-benefit-analysis-guidance</p> | <p>Research examining the ways in which government economic appraisal guidance (the Green Book) can be improved to take better account of natural capital.</p> |
| <p>Natural Capital Committee research: corporate natural capital accounting (January 2015)</p> <ul style="list-style-type: none"> Developing corporate natural capital accounts: summary Developing corporate natural capital accounts: final report Developing corporate natural capital accounts: guidelines Testimonial from the pilot: Crown Estate Testimonial from the pilot: Lafarge Tarmac Testimonial from the pilot: National Trust <p>https://www.gov.uk/government/publications/natural-capital-committee-research-corporate-natural-capital-accounting</p> | <p>A framework for organisations to take better account of the natural capital they own, depend on or for which they are responsible. This framework helps businesses understand the value of their natural assets like timber and fish stocks. It's known as corporate natural capital accounting (CNCA). The framework was developed by the Natural Capital Committee (NCC), working with eftec, RSPB and PwC.</p> <p>Over the course of 2014, this framework was piloted with four major landowners:</p> <p>National Trust Lafarge Tarmac The Crown Estate United Utilities</p> <p>The guidelines contain practical steps for organisations seeking to undertake their own accounts.</p> |
| <p>Natural Capital Committee research: investing in natural capital (January 2015)</p> <ul style="list-style-type: none"> The economic case for investment in natural capital in England Appendix: air and urban Appendix: land use Appendix: marine <p>https://www.gov.uk/government/publications/natural-capital-committee-research-investing-in-natural-capital</p> | <p>A report on the economic case for investment to protect and improve natural capital in England. Natural capital is the elements of nature that directly and indirectly produce benefits (or value) to people.</p> <p>This report was developed by the Natural Capital Committee (NCC) working with eftec, Centre for Ecology and Hydrology (CEH), ABPmer and Regeneris.</p> |
| <p>Natural Capital Committee research: developing metrics for natural capital</p> <ul style="list-style-type: none"> Review of monitoring data for reporting on Natural Capital (Dec 2014) Restoration of natural capital: review of evidence (Dec 2014) Supporting evidence on natural capital metrics and risks (Dec 2013) <p>https://www.gov.uk/government/publications/natural-capital-committee-research-developing-metrics-for-natural-capital</p> | <p>Reports from research projects carried out in the Committee's initial term (2012 to 2015) to develop metrics and assess risks to natural capital. These projects have informed the summary presented in the second state of natural capital report.</p> <p>You might also want to read 'Towards a framework for defining and measuring changes in Natural Capital'. This working paper explains the meaning of 'natural capital' and explores the development of a set of metrics for measuring changes in natural assets.</p> |

Annex D: Second term publications

This table presents all of the second term publications in chronological order.

| Paper and link | Short description |
|--|---|
| State of Natural Capital Annual Report 2017 (January 2017) | In this fourth annual report, the NCC sets out the importance of rapid progress in developing and delivering a 25 year plan if the government's aims of this being the first generation to leave the environment in a better state than the one it inherited were to be met against a backdrop of falling stocks of national natural capital. |
| How to do it: a natural capital workbook (April 2017) | A practical guide aimed at anyone who wants to use natural capital approaches in making decisions about the natural environment. It is intended to support decision makers, including planners, communities and landowners, but has particular relevance for place-based decisions. |
| Economic valuation and its applications in natural capital management and the Government's 25 Year Environment Plan (April 2017) | The NCC lays out the types of decisions for which natural capital values might be useful and some principles to guide the choice of approaches to valuation. The intention is to guide and encourage coherence across decision making contexts, particularly relevant for the public sector, and especially for projects related to the development and implementation of the Government's 25 YEP. The principles set out here could also be used to guide relevant decisions in the private sector. |
| Advice to Government on the 25 Year Environment Plan (September 2017) | The Secretary of State for Defra asked the NCC to advise on what the 25 YEP should aim to achieve, how it should seek to do so and what the necessary conditions for success are. This note sets out the NCC's advice and recommendations on what the government should consider when drawing up the Plan, building on the Committee's previous recommendations over the past five years. |
| State of Natural Capital Annual Report 2018 (January 2018) | In this fifth annual report (following the publication of the 25 YEP on 11 January 2018), the NCC sets out its advice for the 25 YEP to succeed, it needs: a clear vision for the environment in 25 years' time; a set of actions and associated investments to deliver this vision; credible and measurable milestones; and robust governance to oversee implementation. |
| State of Natural Capital Annual Report 2019 (January 2019) | In this sixth annual report, the NCC sets out the recommendation that the 25 year plan must be placed on a meaningful statutory basis in the forthcoming Environment Bill. |
| Natural Capital Committee advice on soil management (May 2019) | This paper sets out the NCC's advice to government on the management of soils. It makes recommendations taking into account the broad goals of the 25 Year Environment Plan. |
| Natural Capital Committee advice on marine management (May 2019) | This paper sets out the NCC's advice to government on management of the marine environment. It makes recommendations taking into account the broad goals of the 25 Year Environment Plan. |



| Paper and link | Short description |
|--|--|
| Natural Capital Committee advice to government on net environmental gain (September 2019) | <p>The NCC published two advice papers on net environmental gain. The first was published in May 2019 and it introduced the approach in detail following Defra's net gain consultation in December 2018.</p> <p>The second (published in September 2019), builds on the previous advice and it answers questions commissioned by Defra on broad principles, metrics and delivery of net environmental gain.</p> <p>Both papers address questions related to marine net environmental gain.</p> |
| Natural Capital Committee response to the 25 Year Environment Plan progress report (September 2019) | The response document sets out the NCC's assessment of the government's first 25 Year Environment Plan progress report. The paper also presents the NCC's recommendations to government on how to improve the reporting framework for future progress reports. |
| Natural Capital Committee advice on developing an environmental baseline census (September 2019) | This paper sets out the NCC's advice to government on establishing an environmental baseline census of natural capital stocks. This is an essential foundation for measuring the progress of the 25 Year Environment Plan (25 YEP). |
| Natural capital terminology (August 2019) | This paper provides a summary of the main terminology used by the NCC, drawing on definitions used in its previous publications. This paper will be updated and reviewed periodically. |
| State of Natural Capital Report 2020 (January 2020) | This seventh and final annual report sets out that only moderate/limited progress has been made towards some of the 25 YEP goals, with many areas of the environment declining. This emphasises the urgent need for a comprehensive natural capital baseline census, as recommended by the NCC, against which progress can be measured. |
| The Green Book guidance: embedding natural capital into public policy appraisal (March 2020) | This paper sets out the NCC's advice to government on Green Book guidance. In particular, how to include natural capital, ecosystem services and the value of these into policy appraisals. |
| Advice on using nature based interventions to reach net zero greenhouse gas emissions by 2050 (April 2020) | <p>The government's net zero GHG target should be viewed in the broader context of the ten 25 YEP goals.</p> <p>Nature based interventions can deliver carbon reductions at a fraction of the cost of engineered solutions and can enhance the stocks of natural capital assets. However, the use of nature based interventions is not an alternative to a major systemic reduction of carbon emissions across all sectors.</p> |
| Interim response to the 25 Year Environment Plan progress report and advice on a green economic recovery (July 2020) | The interim response and advice on a green economic recovery document, published in July 2020, sets out the NCC's interim assessment of the government's second 25 Year Environment Plan Progress Report. This paper also presents the NCC's recommendations to government for delivering a green economic recovery. |
| Final response to the 25 Year Environment Plan progress report (October 2020) | This final response document presents the NCC's independent assessment of progress against the 25 Year Environment Plan and provides the Office for Environmental Protection the framework to undertake this assessment in the future. |



