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THE ROLE OF NATURE IN A UK NDC

SUMMARY

In the face of a climate emergency, we need to secure ambition from all sectors. In the UK's Nationally Determined Contribution (NDC) under the Paris Agreement, nature could provide vital additional mitigation ambition alongside rapid and deep emissions cuts from fossil fuels. With support for the right types of activity, investment in nature could protect existing carbon stocks and enhance carbon removals, help address the biodiversity crisis, support climate change adaptation and deliver a range of other socio-economic co-benefits. Seizing this opportunity would support the UK's environmental leadership aspirations on the global stage.

This report sets out science-based recommendations from the RSPB and WWF on the role of investing in nature in an ambitious UK 2030 NDC and towards the UK's mid-century net-zero target. The report, underpinned by new analysis¹ from the University of Aberdeen with inputs from the University of Oxford, highlights how actions to protect, restore, manage and create different priority habitats - including forests, peatlands, and types of permanent grassland - will store even more carbon in vegetation and soils. We have not assessed mitigation potential from improved agricultural practices, but we have accounted for carbon stocks in agricultural land. Our analysis finds that protecting existing carbon stocks will secure 16,231 Mt CO₂e, equivalent to over 36 years of UK emissions at 2018 levels. It also finds that nature can provide additional climate change mitigation of 75-123 Mt CO₂e by 2030 and 278-492 Mt CO₂e by 2050.

The Government is advised to recognise the important role that investing in nature can play in helping it achieve its climate ambition by highlighting it in the UK's NDC and Long-Term Strategy. Specifically:

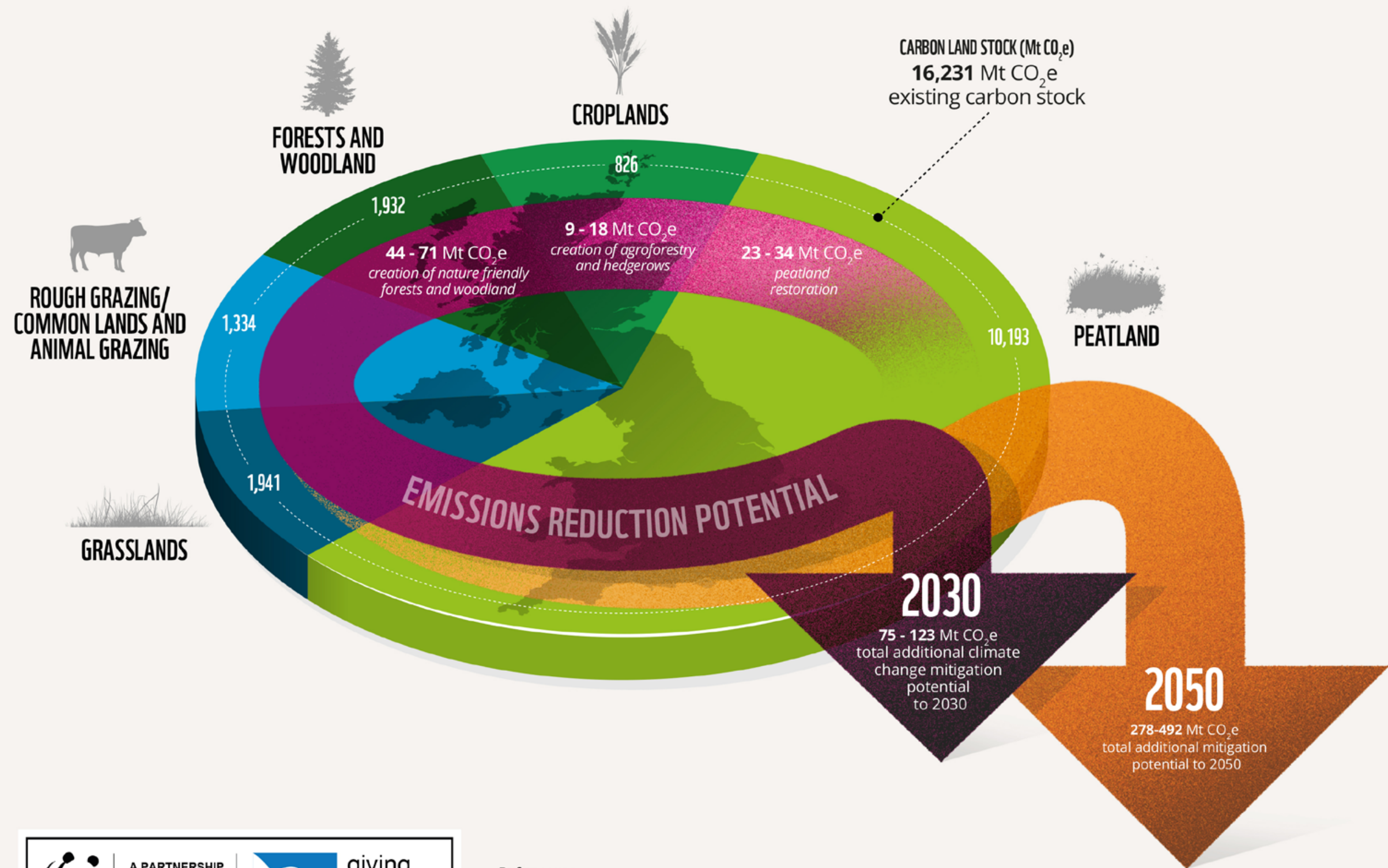
1. The NDC targets should include protecting existing carbon stocks, in particular native woodlands, peatlands and permanent grasslands to avoid further emissions from these.
2. The NDC should reflect the need to enhance our carbon sinks through improved management, restoration and the creation of a broad range of native habitats. Priority actions could include nature-friendly woodland expansion, which uses a mix of native species and avoids planting on semi-natural grassland, and simple steps that 'switch off' substantial emissions sources, for example by rewetting peatlands.
3. The NDC should explore mitigation potential beyond current proposals in the land and forests sectors and should include options beyond those in the current Greenhouse Gas Inventory. Resilient coastal and marine ecosystems are crucial to human adaptation to climate change and also secure coastal assets exposed to the impacts of sea level rise (waves, storm surges, and erosion).²
4. The Government's approach to its NDC implementation to 2030 in the land and forests sector, and the LTS to 2050, should prioritise a nature-based solutions³ (NBS) approach, following the principles set out in the [NBS Guidelines](#), which will help address the biodiversity crisis and deliver wider socio-economic benefits.

¹ Based on the scenarios used by the Committee on Climate Change and referencing recent research by Green Alliance, the Royal Society, WWF and the RSPB

² CCC (2018) [Managing the Coast in a Changing Climate](#)

³ Based on [WWF's definition of nature-based solutions for climate change](#), the scope of NBS includes all ecosystem conservation, management and restoration interventions which (1) are intentionally designed to deliver measurable climate change adaptation and/or mitigation outcomes; (2) simultaneously deliver co-benefits for human development and biodiversity; and (3) manage anticipated climate risks to nature that can undermine their long-term effectiveness.

LAND-BASED TARGETS IN THE UK'S NDC





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CCC (Vivid) - <https://www.theccc.org.uk/wp-content/uploads/2020/01/Economic-impacts-of-Net-Zero-land-use-scenarios-Vivid-Economics.pdf>
GA - https://www.green-alliance.org.uk/resources/Cutting_climate_impact_of_land_use.pdf
RS/RAE - <https://royalsociety.org/-/media/policy/projects/greenhouse-gas-removal/royal-society-greenhouse-gas-removal-report-2018.pdf>

BACKGROUND

To help address the climate change emergency, 195 Parties committed under the Paris Agreement to aim to limit global warming to 1.5°C above pre-industrial levels. To contribute to this global goal, countries must outline their domestic efforts in Nationally Determined Contributions (NDCs) and long-term strategies (LTS).

The UK is committed to delivering ambitious outcomes under the Paris Agreement and has identified nature as a major theme for its Presidency of the United Nations Framework Convention on Climate Change (UNFCCC) Conference of the Parties (COP26). In addition, in September, the UK Prime Minister joined more than 77 world leaders plus the EU in endorsing the Leaders’ Pledge for Nature. As such, the UK has an opportunity to show global leadership in tackling the twin crises of climate change and nature loss by including an ambitious role for nature in its NDC, to be published in December 2020. Across the globe, 131 nations included reference to nature-based solutions for climate change mitigation and/or adaptation in their NDCs⁴. The UK NDC should not only include NbS, but as part of its mission to lead on nature, raise ambition to inspire other nations to do the same.

Integrating an ambitious role for nature in the UK’s NDC will support delivery on a range of national commitments, including the UK National Biodiversity Strategy and Action Plan under the Convention on Biological Diversity (CBD); the Sustainable Development Goals 13 and 15; and the delivery of the forthcoming Global Biodiversity Framework following CBD COP15 in 2021.

4 Seddon N, Daniels E, Davis R, Harris R, Hou-Jones X, Huq S, Kapos V, Mace GM, Rizvi AR, Reid H, Roe D, Wicander, S (2020) Global recognition of the importance of nature-based solutions for climate change adaptation. Global Sustainability 3 2020, e15.

THE CURRENT ROLE OF NATURE

The UK’s territorial greenhouse gas emissions are reported in the annual UK Greenhouse Gas Inventory. The role that nature plays is partially captured within the land use, land-use change and forestry (LULUCF) sector in this inventory.

LULUCF is unique as an inventory sector in that it can both be a source of greenhouse gas emissions and a sink for removals – with carbon dioxide drawn down from the atmosphere and sequestered in vegetation and soil carbon. Reduced emissions and increased removals from land sectors must be delivered alongside rapid and deep economy-wide decarbonisation for LULUCF to realise its role in helping the UK to realise its net-zero target by 2050. While this analysis does not assess the mitigation potential of interventions on agricultural land, we would like to stress that a transition to net-zero, nature-positive agricultural practices is critical in reducing land-use emissions and delivering for nature.

Emissions from peatlands are not currently included in the UK greenhouse gas inventory; but there are plans for this to be included from the 2020 inventory (to be published Spring 2022). The 2017 inventory (without peatland emissions) reports LULUCF as a net removal of –9.8 MtCO₂e⁵. However, when the 21.3 MtCO₂e emissions⁶ from degraded peatland are added, the LULUCF sector becomes a net emissions source of 11.5 MtCO₂e.

Under a business-as-usual scenario, net LULUCF emissions (including peatlands) are projected to be 14.4 MtCO₂e in 2030. This increase, from the 2017 LULUCF emissions (including peatlands) of 11.5 MtCO₂e, reflects the continued emissions from degraded peatlands and declining removals from UK woodlands and forests as a result of the changing age-class structure.

5 Brown et al. (2020) UK Greenhouse Gas Inventory 1990 to 2018: Annual Report for submission under the Framework Convention on Climate Change..

6 Evans et al (2017). Implementation of an emission inventory for UK peatlands. Report to the Department for Business, Energy and Industrial Strategy, Centre for Ecology and Hydrology, Bangor.88pp.

THE FUTURE ROLE OF NATURE

The UK Government must not only look to enhance and refine current goals focused on tree planting and peatland restoration, but also consider a broader range of land- and sea-based interventions, including protection and restoration of grassland, heathland and wetland habitats.

Coastal and marine ecosystems have an understudied role in enhancing sequestration and storage through protection, restoration and habitat creation (such as through managed realignment), yet large-scale shelf seas research suggests significant potential. The UK can commit to improve data, scope and methodologies within the NDC timeframe, and to explore the potential for sequestration in coastal and marine habitats. In the meantime, the existing carbon stock in these ecosystems should be protected and the additional role they play in providing essential adaptation services, notably protection of people and coastal assets from coastal flooding and erosion, should be recognised.

Our analysis shows that a target to protect existing carbon stocks in the land sector will secure 16,231 MtCO₂e, with cumulative climate change mitigation potential of between 75-123 MtCO₂e through further actions (over the period 2017-2030). A summary of the mitigation that can be delivered by protecting, restoring, managing and creating new land habitats is set out below.

PROTECTION

Existing carbon stocks hold 16,231 MtCO₂e and it is critical to protect these carbon stores to prevent emissions from ecosystems. Our research highlights that **peatlands are particularly critical, storing 10,193 MtCO₂e** and their protection requires further supporting policies (see end of this document). We estimate that 85% of the climate benefit derived from protecting high carbon habitats will also provide direct benefits to biodiversity. The nature benefits are mixed or context specific in the remaining 15% (for example overgrazed grassland), where there is an imperative to protect the carbon stock and plan for additional carbon and nature enhancement activities. Although more data is needed to quantify their full potential (beyond the scope of this study), coastal and marine carbon ecosystems hold substantial carbon stores in high-carbon sediments, biogenic reefs, and vegetation, and these also require urgent protection.

RESTORATION

Restoration is vital given that, while nature has a unique ability to capture carbon, degraded ecosystems can instead be sources of emissions thereby contributing to the climate crisis. Restoring peatlands immediately 'switches off' the most substantial emissions source from the LULUCF sector and begins the process of restoring these habitats to a net carbon sink over the long-term. **Compared to business-as-usual, peatland restoration could provide a cumulative emissions reduction of 23-34 MtCO₂e by 2030 and 63-122 MtCO₂e by 2050.** We also anticipate there is potential for restoration of other habitats (such as native woodland, wetlands and dunes), but quantification of the benefits requires improved data and analysis.

MANAGEMENT

Management of existing ecosystems could also increase carbon stocks by up to 43 MtCO₂e by 2050. Improved management of coniferous woodland will have modest climate benefits. Improved management of broadleaved woodland provides larger climate benefits but the impact on biodiversity is uncertain. If management were sensitive (i.e., not over-extractive), potential negative impacts on biodiversity could be lessened.

CREATION

The impacts from woodland creation are context specific – with recent research showing likely negative biodiversity outcomes (short/medium/long-term) and climate outcomes (medium/long-term) from large-scale non-native plantations⁷, for example. This emphasises the importance of a policy framework that ensures **the right trees go in the right places**⁸. This is crucial to promote resilient woodland, which can withstand the impacts of climate change and sustainably deliver sequestration and adaptation services, notably flood reduction. **Nature-friendly woodland creation** using low-intensity establishment techniques and a diverse mix of native species could deliver large climate benefits, with **the potential to provide cumulative emissions reductions of 44-71 MtCO₂e by 2030 and 143-224 MtCO₂e by 2050.** This will likely benefit biodiversity but may have adverse consequences for some bird species that require open habitats (e.g., curlew, lapwing). A strategic vision for UK landscapes, balancing stakeholder objectives through a landscape approach with NBS, is required to deliver benefits for climate, nature, and other significant co-benefits, such as improved access to green spaces and human health and wellbeing.

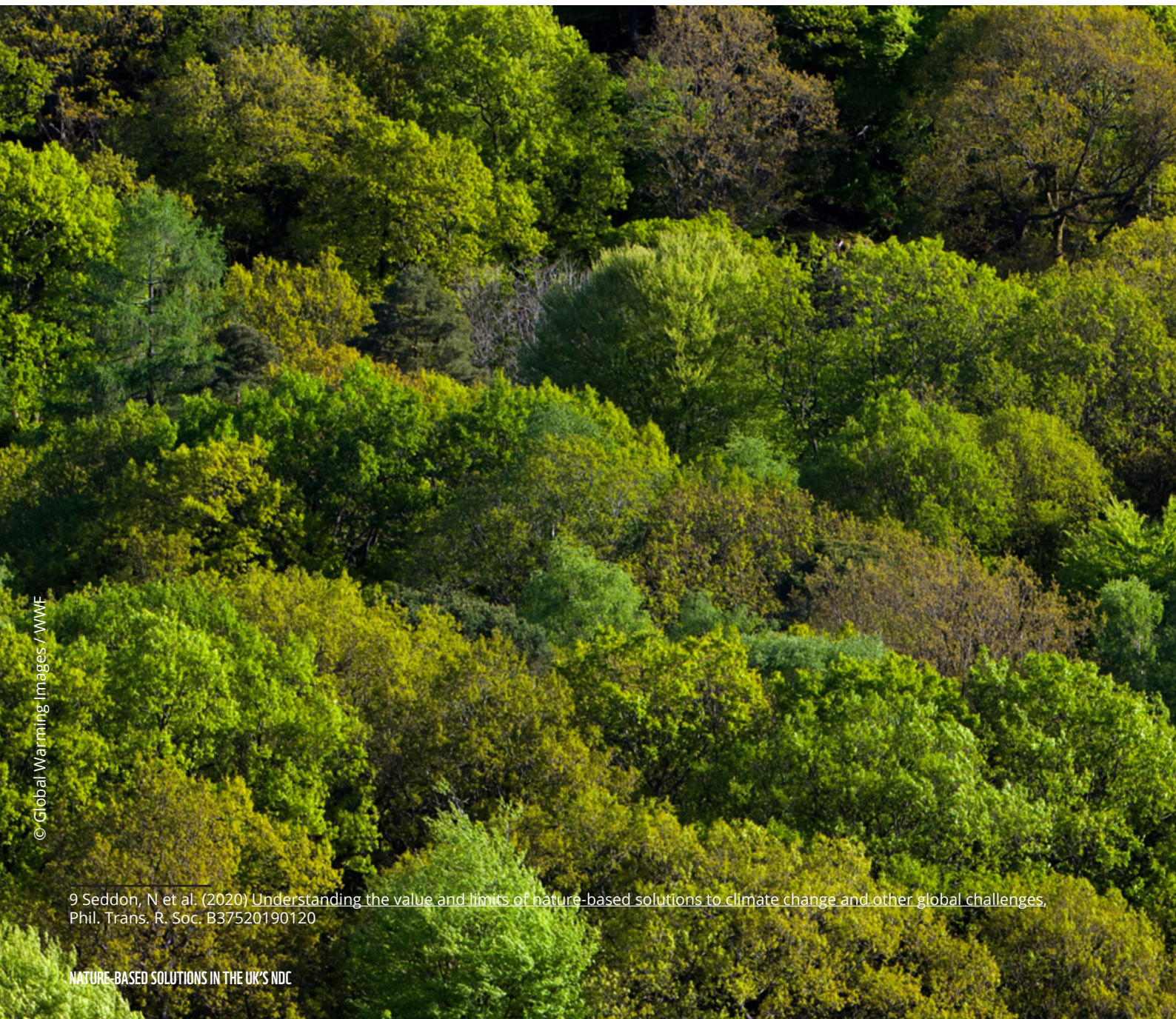
⁷ Crane E, (2020) Woodlands for climate and nature: A review of woodland planting and management approaches in the UK for climate change mitigation and biodiversity conservation. Report to the RSPB.

⁸ As called for by the CCC, e.g. CCC (2018) Land Use: Reducing emissions and preparing for climate change

MAKING THE RIGHT CHOICES

WWF and RSPB recommend that the UK NDC prioritises those activities within the LULUCF sector that deliver co-benefits including supporting nature’s recovery in the UK and improving our resilience to future climate change. These activities, “nature-based solutions” (NBS) to climate change, are an important subset of what is possible within the LULUCF sector.

Nature-based solutions should be implemented in order to secure good outcomes for the climate, biodiversity and people, consistent with the [NBS Guidelines](#). Making this distinction in the NDC is key as not all actions intended to achieve mitigation in the land sector provide benefits to biodiversity. A narrow focus on mitigation can lead to negative effects on biodiversity and jeopardize the provision of adaptation services⁹. Approaches such as monoculture afforestation using non-native species and monoculture bioenergy crops at inappropriate scale are likely to present low climate benefits and high risks to biodiversity, and therefore would not be considered as NBS.



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9 Seddon, N et al. (2020) Understanding the value and limits of nature-based solutions to climate change and other global challenges, Phil. Trans. R. Soc. B37520190120

A NATURE-LED APPROACH REFLECTS A NO-REGRETS STRATEGY FOR THE UK

An approach grounded in NBS prioritising the benefits of nature could yield range of societal co-benefits. This includes jobs in ecosystem restoration, improved water and air quality, soil health, urban cooling, noise reduction, flood prevention, recreation and amenity, and physical and mental health benefits. This means that investing in nature-based solutions can deliver impressive societal returns on investment.

Our analysis highlights the overlapping opportunities for aligning climate ambition in an NDC with the delivery of the Nature Recovery Networks in England (and devolved equivalents) and the 25 Year Environment Plan ambition for 500,000 ha wildlife-rich habitat creation and restoration. The co-benefits from an NBS approach could help deliver on the UK’s Government commitment in September to protect 30% of land and seas by 2030, ensuring this includes measures which will help secure both biodiversity, natural carbon stocks and climate adaptation. Committing to further work to establish overlaps with the species and habitats of principal importance under Section 41 of the NERC Act would also help shape an action plan that could towards species recovery in the UK through a NBS approach.

Recognising the significant impact that the COVID-19 pandemic has had on the UK economy, an approach that prioritises investment in NBS will support the government realise its ambitions to build back better through, for example, creating jobs and building resilience. UK landowners and local communities are on the front line of the biodiversity and climate crises in the UK. A strategy including ecosystem protection, restoration and management with strong stakeholder engagement into a UK climate response provides new opportunities for rural livelihoods and supports a just transition. Recent analysis by WWF found that investment in the agriculture and LULUCF sector would bring total economic benefits of £4bn a year by 2050¹⁰.

UK Overseas Territories: significant potential for negative emissions exists in the Territories. Carbon rich habitats merit restoration, such as peatland in the Falkland Islands where the highest recorded carbon accumulation rate for any global peatland has been measured. Likewise, critical Caribbean wetlands such as mangroves offer good carbon mitigation opportunities while reducing storm surge vulnerabilities. The UK Government has a critical role in reaching out to resource-poor Territory Governments to help them engage in the Paris agreement and the UK NDC where there is local ambition to tackle climate change. In return the Territories are well-placed to help the UK demonstrate world leading nature-based solutions to climate change.

Finally, further consideration of the role of nature in a UK NDC includes understanding climate mitigation commitments in the context of a changing climate, as well as mapping out ambitious actions to enhance adaptation and increase resilience in UK landscapes. This will be explored in the next phase of this project, with the University of Oxford [Nature-based Solutions Initiative](#) to inform the UK’s Adaptation Communication.

10 WWF UK 2020 Keeping us Competitive: A UK [Investment Strategy for Net-Zero](#), A report for WWF by Vivid Economics

POLICIES TO SUPPORT MAJOR CLIMATE BENEFITS FROM NATURE

The extent to which the UK NDC can realise the potential climate action set out in this analysis will depend on the policy-making which supports this. A list of near-term policy actions which would support significant increases in climate ambition from the sector is set out below:

PEATLANDS:

- Ban burning on blanket bogs, including grouse moors, in line with CCC's recommendations.
- Ban peat extraction for horticulture, and the sale of peat for horticulture to avoid 'offshoring' supply from markets such as Ireland and Eastern Europe.
- Prohibit new extraction permissions, and review ongoing commercial extraction under existing permissions in the context of net zero commitments.
- Review and update the Peatland Code to ensure emission reduction is a principle aim of restoration work.
- Upscale delivery and investment in upland peat restoration, ensuring that bare peat is revegetated, drains are blocked and harmful activities ceased.
- Commit dedicated funding for peatland re-wetting and restoration.
- Ban tree planting on organo-mineral soils such as shallow peat, unless nature and carbon benefits can be demonstrated.
- Ensure England's Nature Recovery Networks and devolved equivalents networks buffer and reconnect fragments of peatlands.
- Reform land management subsidies and regulations (including via Environmental Land Management schemes) to encourage effective management of existing peatland.
- Develop measures to halt the serious, ongoing loss of lowland peat soils under intensive agricultural production.





WOODLANDS:

- Prioritise the conservation, enhancement and restoration of the remaining areas of ancient and semi-natural woodland in the UK, ensuring these are buffered and reconnected by new Nature Recovery Networks.
- Commit to restoring important habitats damaged by plantation forestry in tree strategies e.g. the England Tree Strategy
- Implement the 25 Year Environment Plan aspiration of 12% cover in England by 2060, including natural regeneration. To deliver on these targets sustainably:
 1. Support new woodland creation in appropriate locations, at the right scale and utilizing appropriate native species, resilient to climate change, to deliver multiple benefits for carbon, the environment, wildlife and people.
 2. Ensure a strategic approach is underpinned by robust environmental assessment.
 3. Ensure woodland components to natural networks (e.g. England's Nature Recovery Network) focus on protecting, restoring, and enhancing native woodlands, emphasising the role of natural regeneration, and/or planting locally sourced, genetically diverse native trees, to support climate change adaptation for woodlands and woodland wildlife and to avoid importing pests and diseases.
- Ensure strategic coordination between relevant plans, policies and strategies, including inter alia, country Tree Strategies and Peat Strategies (to ensure no planting of trees on peat soils) England's Nature Recovery Network and devolved equivalents, new Environmental Land Management schemes (ELMS), and infrastructure and development planning strategies.
- Ensure that funding schemes, such as the ELMS, reward both carbon and biodiversity benefits of expanded hedgerows, orchards and other agroforestry measures.
- Ensure that the Nature for Climate Fund in England delivers nature-rich habitats including woodlands allocated on the basis of public money for public goods and that the Fund is not treated as a commercial subsidy.

GRASSLANDS

- Remove grazing pressure from overgrazed pastures to allow greater sequestration via natural regeneration or carefully selected tree planting with native species, minimising soil disturbance.
- Protect the tiny amount of biodiversity-rich carbon-rich meadow, lowland heath and natural wetlands remaining through, for example, England's Nature Recovery Network, and devolved equivalents.
- Restore via reversion from intensive grassland or arable land to permanent, natural grasslands, including wet or chalk grasslands as part of a varied farming landscape.





COASTAL AND MARINE HABITATS

- Accelerate development of appropriate methods to includes these ecosystems in the UK GHG inventory.
- Take a precautionary approach to protecting UK marine habitats including kelp beds and seagrass meadows - safeguarding extent, carbon stores, and associated ecosystem services including for climate change adaptation.
- Resource the monitoring, maintenance and protection of existing, threatened saltmarsh habitats.
- Reform marine planning and licensing to systematically identify and protect critical blue carbon ecosystems including saltmarshes and reduce collective pressures of human activities.
- Ensure that saltmarsh areas are incorporated into robust nature recovery networks.
- Restore coastland and estuarine habitats to reduce flood salt water intrusion and coastal erosion risk via managed realignment.
- Support research, data collection and analysis of the mitigation and adaptation benefits of coastal and marine habitats.

ALIGNMENT WITH INTERNATIONAL POLICY GOALS

By adopting the recommendations set out in this report, the UK Government would demonstrate leadership and signal ambition ahead of COP26 and shine a spotlight on the types of concrete actions that will help embed nature as a key theme of COP26. Furthermore, it would show domestic progress towards delivering key global environmental outcomes, including those captured in the Leaders' Pledge for Nature, and efforts towards better inclusion of nature in NDCs and in wider climate action.

Original research carried out by the University of Aberdeen for WWF-UK and RSPB. Written and edited by WWF-UK and RSPB, with contributions from the University of Aberdeen. We thank Professor Nathalie Seddon and Alexandre Chausson of the University of Oxford Nature Based Solutions Initiative, and Alison Smith of the University of Oxford Environmental Change Institute for comments and inputs.

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