

Nature Based Solutions (NBSs): Link briefing note

The benefits of NBSs

1) Climate mitigation

Nature has a critical role to play in responding to the climate emergency. By restoring a range of natural ecosystems, we can increase the amount of carbon stored by those habitats. This contribution from nature is essential in efforts to reach net zero, helping to compensate for unavoidable emissions as we decarbonise the economy. In the words of Environment Minister Lord Goldsmith *“there is no pathway to net-zero that does not involve a massive scale up of nature-based solutions. They could provide a third of the cost-effective climate change mitigation we need.”*¹

Research undertaken by the University of Aberdeen, WWF and RSPB charts the extent of this climate potential, suggesting that restored land habitats could store 16,231 MtCO₂e of carbon and could store an extra 278-492 MtCO₂e by 2050. Marine ecosystems could an extra store 137 MtCO₂e over the same time period.² For context, in 2020 the UK emitted 405.5 MtCO₂e in 2020.

Some of these habitats have truly remarkable carbon storage capabilities - seagrass covers less than 1% of the seafloor but absorbs over 10% of the ocean’s carbon each year.³

2) Climate adaption

The role of NBSs go beyond helping prevent further climate change; they address effect as well as cause by allowing us to adapt to the climate change that is already taking place. For example, trees on farmland provide shelter and shade for animals and crops encountering more extreme weather, as well as helping to restore soils damaged by that weather. Similarly, restoring riverine ecosystems to their natural state helps these habitats to retain more water, reducing flooding further downstream. A 2021 comparative study of a technical ‘grey’ flooding preventative measures and a large-scale NBS in Belgium revealed *“similar flood security, lower costs, more ecosystem services benefits and higher biodiversity values associated with the NBS option in comparison to the technical alternative.”*⁴

3) Biodiversity

The Lawton Review showed that nature cannot recover in isolated, disconnected protected sites.⁵ Nature must be connected by a latticework of habitats across the country if wild species are to have the space they need to shelter, feed and breed in. NBSs increase the quantity and quality of habitats, helping to

¹ <https://www.iiied.org/cba14-closing-uk-minister-urges-countries-allocate-more-finance-nature-based-solutions-help-tackle>

² <https://committees.parliament.uk/writtenevidence/38933/pdf/>

³ <https://www.wwf.org.uk/what-we-do/planting-hope-how-seagrass-can-tackle-climate-change>

⁴ <https://link.springer.com/article/10.1007/s13280-021-01548-4>

⁵ <https://www.gov.uk/government/news/making-space-for-nature-a-review-of-englands-wildlife-sites-published-today>

build to a nature recovery network across the country, helping to fulfil the Environment Act commitment to halt the decline in species abundance by 2030.

4) Cleaner water and air

Healthier ecosystems benefit the wider environment, and the environmental services we all rely on. Up to 70% of UK drinking water is sourced from catchments dominated by peatland habitat; when that peatland is in good condition it produces good quality water that requires little treatment.⁶ Woodland serves as a natural air filter, with tree foliage removing airborne particles and improve air quality. A 2021 Cambridge Economics report suggested that the value of these air pollution benefits could be estimated at £13,442 per hectare of woodland.⁷

5) Health benefits

More restored natural habitats means more high quality green and blue spaces for people to enjoy. Such engagement with nature has direct health benefits, with a 2019 study finding that 120 minutes a week in nature leads to a significant increase in wellbeing.⁸ 70% of UK adults report that being close to nature improves their mood.⁹ This combination of physical and mental health benefits enhances and extends life, in the words of a recent evidence review "*living in areas with higher amounts of green spaces reduces mortality*".¹⁰

This tangible boost to health from access to nature is why Natural England have estimated that levelling up to give everyone in England good access to green space would save £2.1 billion in health spending every year, by reducing NHS pressures.¹¹

6) New jobs

The restoration and creation of natural habitats to provide NBSs requires labour, creating new job opportunities. Green Alliance & WPI's 2021 report 'The economics of enhancing the natural environment' looked at three sets of NBSs (woodland creation, peatland restoration and urban green infrastructure) and found a potential for over 16,000 new jobs through these workstreams, with the new roles being concentrated in areas of economic deprivation.¹²

⁶ <http://publications.naturalengland.org.uk/publication/47001>

⁷ https://www.camecon.com/wp-content/uploads/2021/03/The-economic-costs-benefits-of-nature-based-solutions_final-report_FINAL_V3.pdf

⁸ <https://www.nature.com/articles/s41598-019-44097-3>

⁹ https://www.mentalhealth.org.uk/sites/default/files/MHAW21_NATURE%20REPORT_ENG_web.pdf

¹⁰ <https://pubmed.ncbi.nlm.nih.gov/26540085/>

¹¹ <http://publications.naturalengland.org.uk/publication/35009>

¹² <https://green-alliance.org.uk/wp-content/uploads/2021/11/The-Economics-of-Enhancing-the-Natural-Environment-final.pdf>

7) Multiple benefits from one investment

The capacity of NBSs to offer climate mitigation, climate adaption, nature recovery, environmental services, health and economic benefits from one investment renders them formidably cost-effective. The value of marine reserves in the UK has been estimated at between £10.2-£25.5 million at a benefit: cost ratio of 5.5-12.7:1.¹³ Further estimates suggest that for every £1 invested, there is an estimated return of £4.62 for peatland restoration, £2.79 for woodland and £1.31 for saltmarsh.¹⁴

Examples of NBSs

Hesketh Out Marsh, Lancashire

The RSPB, the Environment Agency and Natural England created this 180-ha wildlife-rich saltmarsh by natural flood management. The restored marsh helps protect the local sea wall and absorbs water from high tides, cutting flood risk for 1050 ha of land from 1 in 50 years to 1 in 200 years. The new marsh has attracted a wide variety of wading birds, including avocets, little egrets, redshank, teal and wigeon.

Wicken Fen, Cambridgeshire

On this site the National Trust restored arable land to lowland fen, creating a flood storage area capable of dealing with a 1 in 20 year flood event. This is estimated to protect 53 houses and 50 ha of farmland from flooding, providing flood protection benefits of £35 /ha/y, as well as gains of £482/ha/y in nature-based recreation and £51 /ha/y in climate mitigation.

Garron Plateau, Northern Ireland

This peatland site had been in poor condition, with 95% of the peatland degraded, to such an extent that water supplied from it turned brown in colour. NI Water are now working with RSPB and the NI Environment Agency to restore the bog. It is estimated that total benefits including climate mitigation and enhanced water quality will outweigh the project costs by £37 million by 2045, with a cost: benefit ratio of 1: 3.9. A 27% improvement in flood mitigation is also predicted.

Wakelyns Farm, Suffolk

This site has seen trees planted on farmland, in the form of alleys of fruit bearing and willow trees amongst arable crops. This provides additional crop for the farm, as well as improving soil health, managing water flow and attracting pollinators to the benefit of the existing cereal crop. The trees themselves provide spaces for wildlife and help store carbon.¹⁵

¹³ <https://www.rspb.org.uk/globalassets/downloads/policy-briefings/nature-based-solutions-adaption-report.pdf>

¹⁴ https://www.camecon.com/wp-content/uploads/2021/03/The-economic-costs-benefits-of-nature-based-solutions_final-report_FINAL_V3.pdf

¹⁵ <https://www.rspb.org.uk/globalassets/downloads/policy-briefings/nature-based-solutions-adaption-report.pdf> (for all cited examples)

Actions needed to support NBSs

The benefits that NBSs deliver can be increased by Government support, including:

1) Increased funding

Both the Dasgupta report and the Natural Capital Committee recommended that public bodies should be required to invest in maintaining and enhancing natural habitats. Historically, this investment has been limited with less than £500m p.a. being spent on habitat restoration per year. Link has highlighted a need for over £2 billion p.a direct investment in habitat restoration across the UK, sufficient to deliver NBSs on a significant scale.¹⁶

Investment in NBSs can offer extremely high value for money when non-market benefits are properly quantified. For example, the National Trust recently showed that 5.5 £billion Government investment in urban green infrastructure could bring £200bn in physical health benefits¹⁷, so the case for increased public investment is strong. There is also an opportunity for other funding options, including private sector finance, to play a role if subject to proper regulation (see below).

This funding is also required to prevent further deterioration of the carbon-storing habitats. As habitats degrade due to climate changes, land use pressures and poor management, they actively start to release carbon, turning carbon stores into carbon emitters. The problem is particularly acute for all UK peatlands (both upland and lowland peatland), which a 2019 study found to have transitioned “into large emission sources”.¹⁸ Rather than locking away carbon, peatlands may now be responsible for around 20Mt of greenhouse gas emissions, 4% of total UK emissions.

2) New regulation to apply high standards for NBS offsets

It is important to distinguish nature-based solutions from offsets.

Private investment in NBSs is essential to achieve large-scale improvements, but this becomes more risky when investments are “marketised” as offsets, which allow ongoing environmental harm elsewhere. While high-integrity markets are possible, in some cases, where the benefits of NBSs are hard to quantify and maintain, this can lead to “greenwashing”, where the use of NBSs masks ongoing pollution.

The use of NBSs for offsetting purposes is emerging in several areas, including water pollution mitigation, plastics reduction, development and carbon emissions. For example, the deployment of NBSs as part of carbon offsetting plans (the idea that emissions in one sector can be “cancelled out” by

¹⁶ https://www.wcl.org.uk/docs/Autumn_Budget_Spending_Review%202021_representation-%20WCL-1.PDF

¹⁷ <https://www.nationaltrust.org.uk/press-release/new-research-shows-55bn-fund-needed-to-level-up-access-to-urban-green-space-as-part-of-uks-green-recovery>

¹⁸ https://uk-air.defra.gov.uk/assets/documents/reports/cat07/1904111135_UK_peatland_GHG_emissions.pdf

paying for a project to reduce emissions or remove carbon from the atmosphere) is becoming an increasingly common.

However regulation is currently highly variable, both in international markets and in a growing domestic market for NBSs. Especially in international markets, there are well-documented cases of projects that sell emissions reductions that would simply have happened anyway or “avoided emissions” that would never have happened. Others have sold investments in poorly implemented nature-based solutions that do not last, such as monoculture plantations with short lifespans, or projects that have a negative impact on the natural environment.¹⁹

Domestically, there are some standards in place for some offset types (such as the Woodland Carbon Code and Peatland Carbon Code), but they are variable in their quality and attention to issues such as biodiversity benefits. Standards should rigorously address issues such as the permanence of benefits, avoiding double counting and ensuring that any benefits are additional. In other areas, such as nutrient offsetting as a nature-based solution for water quality, standards are only just beginning to emerge.

The Government should intervene to better regulate markets in nature-based solutions, especially where they are used as offsets. For example, in carbon markets, the Government has a major role to play in ensuring that offsetting takes place as part of a third party-verified net zero plan, adhering to standards that ensure the highest standards of environmental integrity.

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- Nature Based Solutions offer high climate mitigation, climate adaption, nature recovery, environmental services, health and economic returns on investment.
 - Their full potential can be realised by direct Government investment and better regulation of emerging private markets.
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Wildlife and Countryside Link ([Link](#)) is the largest nature coalition in England, bringing together 65 organisations to use their joint voice for the protection of the natural world.

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¹⁹ https://www.wcl.org.uk/docs/Wildlife_and_Countryside_Link_Offsetting_Briefing_23042021.pdf