



## Nature-based solutions to societal challenge of climate change

### Why do we need them?

The fact of the matter is that we are in climate and nature emergencies. These are inextricably linked, thus requiring an integrated approach to solutions, where progress for one should result in progress for the other. Action for climate should not act against action for nature: this is where nature-based solutions to climate change are so important because they respond to both emergencies.

Nature-based solutions to climate change are an essential part of the challenge in tackling Scotland's contributions to climate change. A technical working group for the now postponed Nature CoP 15, has suggested that 37% of global emissions could be mitigated by nature-based solutions. They are also essential tools in reversing the decline of Scotland's biodiversity.

However, nature-based solutions are not a panacea: they are essential but are in no way an alternative to the vital work of ending our reliance on fossil fuels. Decarbonising Scotland's, and the world's, economy is more urgent than ever, and developed nations must urgently take responsibility for historical greenhouse gas pollution. Nature-based solutions, such as native woodland expansion and peatland restoration, cannot be used to allow some sectors to drag their feet on adopting net zero practices nor can they justify ongoing greenhouse gas emissions: carbon sinks on land and at sea do not have endless capacity. Furthermore, nature-based solutions to climate change need to be grounded in nature-friendly science, where climate friendly action is balanced against any long-term impact on nature.

At the same time, if transformative change is needed, it is important that we fully engage with local people and communities so that they do not feel these solutions are being imposed upon them, given that they may be asked to change the way they have historically used resources and managed land. People across Scotland should also be encouraged to support these positive changes, which are in their own wider public interest.

We can and must act now: nature-based solutions are part of immediate and ongoing action.

### What are 'nature-based solutions'?

Amongst a range of concepts that endorse conservation, improvement, and restoration of biodiversity and ecosystems, nature-based solutions as a concept provide an overarching framework to other established nature-based methods such as ecosystem-based adaptation, mitigation, environmental disaster risk reduction, green infrastructure and natural climate solutions<sup>1</sup>. Nature-based solutions build on these established methods in the rural and urban context, across different scales and explicitly address societal challenges: climate change, food security, water security, disaster risk, human health, and economic and social development, while at the same time protecting natural

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<sup>1</sup> What are Nature-based Solutions? - Nature-based solutions initiative-University of Oxford  
<https://www.naturebasedsolutionsinitiative.org/what-are-nature-based-solutions/>



ecosystems and biodiversity<sup>2,3</sup>. Nature-based solutions move beyond environmental challenges and do not include measures which are inspired by nature (for example, biomimicry a practice that learns from and mimics the strategies found in nature to solve challenges<sup>4</sup>), they only include measures that are nature- or ecosystem- based<sup>3</sup>.

The IUCN<sup>4</sup> defines nature-based solutions as: *“actions to protect, sustainably manage and restore natural or modified ecosystems that address societal challenges effectively and adaptively, simultaneously providing human well-being and biodiversity benefits”*.

The IUCN approach offers a useful basis of understanding what nature-based solutions look like in practice when addressing societal challenges, and what benefits they provide to humans and nature. To guide nature-based solutions from concept to practice, the IUCN approach frames implementation of nature-based solutions within eight principles, which also act as a means of testing whether a solution is nature-based or nature- ‘inspired’. The IUCN nature-based solution principles summarized below, also provide the basis to LINK’s proposed solutions in this briefing:

1. Nature-based solutions embody nature protection norms and principles.
2. Nature-based solutions can be implemented stand alone or with other solutions to societal challenges.
3. Nature-based solutions are determined by local, natural and cultural contexts.
4. Nature-based solutions produce societal benefits in a fair and equitable manner.
5. Nature-based solutions maintain biological and cultural diversity, along with the ecosystems ability to evolve over time.
6. Nature-based solutions balance competing land use demands by being applied at a landscape scale.
7. Nature-based solutions recognise the trade-offs between a few immediate economic benefits against future options of a full range of ecosystem services.
8. Nature-based solutions are integrated with the overall design of policies and actions, that address a specific societal challenge.

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<sup>2</sup> Kabisch, N., N. Frantzeskaki, S. Pauleit, S. Naumann, M. Davis, M. Artmann, D. Haase, S. Knapp, H. Korn, J. Stadler, K. Zaunberger, and A. Bonn. 2016. Nature-based solutions to climate change mitigation and adaptation in urban areas: perspectives on indicators, knowledge gaps, barriers, and opportunities for action. *Ecology and Society* 21(2):39. <http://dx.doi.org/10.5751/ES-08373-210239>

<sup>3</sup> Cohen-Shacham, E., Walters, G., Janzen, C. and Maginnis, S. (eds.) (2016). *Nature-based Solutions to address global societal challenges*. Gland, Switzerland: IUCN. xiii + 97pp

<sup>4</sup> IUCN (2020): Defining nature base solutions- <https://www.iucn.org/theme/nature-based-solutions/about>



## What do nature-based solutions for climate change look like in practice?

Under the umbrella concept of nature-based solutions a whole range of ecosystem related measures provide tools to restore nature, deliver issue-specific solutions, support development of natural and green infrastructure, produce integrated solutions to natural resource management and deliver on conservation and protected area management objectives. This section deliberates on nature-based solutions to the societal challenge of climate change, exploring various options that provide climate benefits through carbon sequestration (storing carbon in nature).

### a. Peatlands

Peatlands are a type of wetland that are amongst the most valuable ecosystems on Earth: they are critical for preserving biodiversity, provide safe drinking water, minimise flood risk and help address climate change. Peatlands are the largest natural terrestrial carbon store; the area covered by near natural peatland worldwide (>3 million km<sup>2</sup>)<sup>5</sup> sequesters 0.37 gigatonnes of carbon dioxide (CO<sub>2</sub>) a year – storing more carbon than all other vegetation types in the world combined. Peatlands are a key part of the Scottish landscape, and part of Scotland’s cultural and natural heritage. They are both an internationally important habitat and a hugely important carbon store. Scotland’s peat soils cover more than 20% of the country and store around 1600 million tonnes of carbon<sup>6</sup>.

Peatlands provide vital essential ecosystem services when in their natural wet state, whether it is through regulating water flows that minimise the risk of flooding and drought or preventing seawater intrusion. In many parts of the world, peatlands supply food, fibre and other local products that sustain local economies. They also preserve important ecological and archaeological information such as pollen records and human artefacts<sup>7</sup>. However, it is estimated that over 80% of Scotland’s peatlands are degraded<sup>6</sup>, which roughly works out to be 2,424,000 hectares.

Peatlands in good condition actively form peat, removing CO<sub>2</sub> from the atmosphere and storing carbon in the soil. Conversely, degraded peatlands may emit more CO<sub>2</sub> than they remove and become a net source of greenhouse gases (GHG). If Scotland lost all the carbon stored in its peat soils as CO<sub>2</sub>, it would be the equivalent of more than 120 times Scotland’s annual GHG emissions. More than this however, peatland restoration has other benefits including providing an internationally important habitat, improving water quality and reducing flood risk.

Urgent action is needed worldwide and in Scotland to protect, sustainably manage and restore peatlands. This involves protecting them from degrading activities such as agricultural conversion and drainage, and restoring the waterlogged conditions required for peat formation to prevent the release of carbon stored in peat soil. The Scottish Government, within its Climate Change Plan<sup>8</sup> has a target to restore 50,000 hectares of degraded peatland by 2020, increasing to 250,000 hectares by 2030, a fifth of the extent of the degraded area. This is supported by commitments to increase funding.

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<sup>5</sup> Measurements of Scotland’s total extent of peatland vary based on the methodology used. Based on JNCC (2011) figures, this works out to be 3.3 million hectares.

<sup>6</sup> Scotland’s soils part of Scotland’s environment (2020) Peatland restoration: <https://soils.environment.gov.scot/resources/peatland-restoration/>

<sup>7</sup> IUCN (2017): Peatlands and Climate change [https://www.iucn.org/sites/dev/files/peatlands\\_and\\_climate\\_change\\_issues\\_brief\\_final.pdf](https://www.iucn.org/sites/dev/files/peatlands_and_climate_change_issues_brief_final.pdf)

<sup>8</sup> Scottish Government Climate Change Plan: <https://www.gov.scot/publications/scottish-governments-climate-change-plan-third-report-proposals-policies-2018/>



## b. Woodlands

The protection of existing native woodlands (especially ancient woodland) and the expansion of native woodlands is key. The expansion can be through new planting alongside natural regeneration. Effective deer management to reduce browsing pressure is essential for natural regeneration and restoration of woodlands.

Urban trees in woodlands, gardens, streets and parks also have a critical role in the mitigation and adaptation to climate change in our towns and cities where most people live. Urban forestry provides shade; reduces air and ground temperatures; improves air quality by absorbing pollutants; and helps to mitigate surface water flooding.

Commercial forestry has its role to play. Well designed and sensitively managed commercial forests (especially where native woodland creation and adequate open space are included within habitat networks) can and do play an important role in carbon sequestration, ecosystem services and replacement of carbon intensive products such as concrete. However, native woodland not only provides very significant ecological and social benefits but is also highly effective at storing carbon for long periods. Woodland expansion should be guided by Scotland's Land Use Strategy and Land Use Frameworks which allow us to make the most of the nature-based solutions provided by trees and woodlands at landscape-scale. Strategically placed trees can deliver a far greater range of outcomes, including carbon sequestration, a reduction in flood risk, improved health and wellbeing, and restoration of ecological networks for wildlife.

More information: [LINK paper on achieving net-zero emissions and nature's recovery: role of trees and woods](#)

## c. Uplands

Scotland's deer have always been an important part of our cultural and natural heritage. However, for several centuries they have had no natural predators and numbers have been kept unsustainably high since Victorian times to allow for shooting for sport – and therefore requiring human management. As a country, we have ambitious objectives to expand woodlands, improve biodiversity and reduce carbon emissions. But it will not be possible to achieve these unless deer numbers are reduced to a level that enables natural woodland regeneration to take place. Unnaturally high deer densities come with significant ecological and economic costs to the country. Better regulation of deer management would hugely benefit Scotland's environment and rural economy. That means setting a clear target and timetable in each individual deer management group area to achieve the density needed to protect habitats and enable natural woodland regeneration to take place freely, without the need for fencing. While there are many benefits to a different approach to managing Scotland's deer, there are two benefits that are a direct nature solution to climate change:

- More trees. Reducing browsing pressures would help accelerate the expansion of woodland – especially native woodland – thus producing a cleaner, greener, healthier environment.
- Healthier peatlands. Trampling and grazing dry out the soil, thus diminishing the ability of peat to absorb carbon and store greenhouse gases.

More information: [LINK report on managing deer for climate, communities and conservation](#)





#### d. Grasslands

Species-rich grasslands provide a wealth of public goods including healthy livestock and soils, pollinator habitat, clean air and water, carbon storage and flood management. We have lost most of our species-rich grasslands over the last 100 years<sup>9</sup>, but by restoring them, we can realise significant benefits to society.

Grassland soils contribute to carbon sequestration, with some types of grassland sequestering even more carbon than woodlands. Flower-rich floodplain meadows have more absorbent soils, so capture and hold back floodwaters more effectively than improved grassland. Flower-rich grasslands support greater numbers and diversity of pollinating species than other habitats. Proximity to semi-natural grasslands increases predator control of agricultural pests. A fifth of all priority species for conservation action are associated with grassland habitats. Biodiverse grasslands lock up more pollutants thereby reducing impacts to air and water. Species-rich pasture and hay benefit grazing livestock, providing a wider range of minerals and amino acids than intensive pasture, resulting in healthier animals and healthier food<sup>9</sup>.

We need large-scale grassland restoration to help tackle the biodiversity and climate emergencies, and to move to regenerative agriculture. We can achieve this through the creation of new interconnected habitat corridors and by integrating biodiversity into the management of grasslands at scale across rural Scotland.

Scotland's grassland meadows also provide forage and nesting opportunities for our native wild insect pollinators and a wide range of other wildlife, from grasshoppers to small mammals to birds. Insect pollinators are vital in ensuring a healthy environment and support our economy by contributing to farming and food industry. There are over 4,000 species of insect pollinator in the UK that include bumblebees, solitary bees, wasps, hoverflies, butterflies, moths and some beetles<sup>10</sup>.

Our wild pollinators are in trouble through the loss of species-rich grassland and the resulting loss of wildflower forage and nesting sites. The loss of habitat has meant that in some places, sites have become isolated from each other and this has affected those species that are unable to travel great distances<sup>11</sup>. Creating a Nature Network<sup>12</sup> and better connecting habitat for pollinators to move across the landscape will create a healthier and more resilient population of pollinators in the future. B-Lines<sup>13</sup> contribute towards the Nature Network as they are continuous 3km wide routes that travel east to west and north to south throughout the country. B-Lines connect the most important key and beneficial sites for pollinators allowing them to move across the country.

B-Lines mapped across the Central Scotland Green Network area are already being enhanced providing a range of benefits to pollinators but also people too. The John Muir Way was identified as

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<sup>9</sup> "Hay Festival? Action Now for Species-rich Grasslands", Plantlife,

[https://www.plantlife.org.uk/application/files/2315/3087/2058/Grasslands\\_action\\_plan\\_-\\_Plantlife.pdf](https://www.plantlife.org.uk/application/files/2315/3087/2058/Grasslands_action_plan_-_Plantlife.pdf)

<sup>10</sup> Buglife - Helping Pollinators Locally in Scotland <https://cdn.buglife.org.uk/2020/04/Helping-Pollinators-Locally-in-Scotland-final.pdf>

<sup>11</sup> Pollinator Strategy for Scotland – Technical Annex <https://www.nature.scot/sites/default/files/2018-04/Pollinator%20Strategy%20for%20Scotland%202017-2027%20-%20Technical%20Annex.pdf>

<sup>12</sup> LINK Discussion Paper (2020): Nature Networks <https://www.scotlink.org/publication/nature-networks/>

<sup>13</sup> B-Lines Scotland (2020): <https://www.buglife.org.uk/our-work/b-lines/b-lines-scotland/>

Scotland's first B-Line in 2015, known as the John Muir Pollinator Way<sup>14</sup>. This 134-mile walking and cycling route passes through nine local authority areas from Helensburgh in Argyll & Bute in the West to Dunbar in East Lothian in the East of Scotland.

Over 1,700 opportunities for the creation of new habitat, enhancement and management of grasslands for pollinators have been identified either side of the route of the John Muir Way on school grounds, golf courses, parks and more. So far, over 70 sites have been created and enhanced for pollinators along the route with further work planned. Habitat has also been created and enhanced for pollinators along B-Lines outwith the John Muir Pollinator Way.

By creating new sites in areas that were previously over-managed amenity grassland and by enhancing sites for pollinators along B-Lines this will help ensure that good quality habitat is better connected and that pollinators are freely able to move across the landscape. Other wildlife that require grassland meadows and flower-rich habitat will also benefit through improved connectivity of our grasslands, such as spiders and bats. The addition of colour through the planting of diverse plant mixes and other habitat improvements for pollinators will also improve the health and well-being of people living locally and visiting these areas.

Developing agri-environment schemes which recognise the importance of species-rich grasslands, and that support and incentivise land managers to restore and manage grasslands, is crucial. Properly resourced collaborative schemes which restore grasslands at the landscape scale, allowing for the exchange of knowledge and best practice, and the sharing of equipment, are the most effective ways of realising the benefits of grasslands to wider society. Recognising the contribution that traditional land management regimes (such as crofting) make to wider societal objectives, and ensuring that these are properly recognised and rewarded, is vital.

#### e. Freshwater and natural flood management

Giving more space for rivers and coasts to move and adjust naturally will regenerate habitat, improve wildlife, and help us adapt to climate change. Measures such as avoiding development on floodplains, arable reversion and implementing measures such as crop rotations will support our adaptation to the effects of climate change, helping to restore the functionality of some floodplains. High proportions of rivers are disconnected from their floodplain by embankments and flow control structures, limiting the scope of those floodplains to hold water during high flows and contributing to downstream flooding issues<sup>15</sup>. The restoration and recreation of wetlands, such as reedbeds, ponds, wet meadows and wet woodlands, will make a significant contribution to securing biodiversity (such as amphibians and a wide range of aquatic invertebrates), healthy functional ecosystems and the provision of ecosystem services, as well as being crucial to the protection and enhancement of rivers, lakes and other freshwater habitats. Other measures such as targeting tree planting to riparian areas will help to shade watercourses and prevent water temperatures rising.

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<sup>14</sup>Buglife (2016) John Muir Pollinator Way, Scotland's first B-line <https://www.buglife.org.uk/news/john-muir-pollinator-way-scotlands-first-b-line/>

<sup>15</sup> Maltby, E., Ormerod, S., Acreman, M., Blackwell, M., Durance, I., Everard, M., Morris, J., Spray, C., Biggs, J., Boon, P., Brierley, B., Brown, L., Burn, A., Clarke, S., Diack, I., Duigan, C., Dunbar, M., Gilvear, D., Gurnell, A., Jenkins, A., Large, A., Maberly, S., Moss, B., Newman, J., Robertson, A., Ross, M., Rowan, J., Shepherd, M., Skinner, A., Thompson, J., Vaughan, I. and Ward, R. (2011). Chapter 9: Freshwaters – Openwaters, Wetlands and Floodplains. UK National Ecosystem Assessment, pp. 295-360, Cambridge, UK, UNEP-WCMC.



In Scotland we are already ahead of the game with using sustainable solutions to flood risk. Our flood management legislation advocates a sustainable approach to reducing flood risk, including the use of natural flood management techniques such as riparian and catchment woodland creation, river restoration, instream woody debris, and floodplain washlands<sup>16</sup>. However, the uptake of these measures is generally low, and much more could be done to manage our freshwater environment in a natural, sustainable way.

Connectivity is a key attribute required for healthy, functioning ecosystems. The prioritisation of projects or proposals mapped through Nature Networks could be used to enhance connectivity, both directly (e.g. fish passage projects which improve physical connectivity, and enhancements to lateral connectivity by reconnecting rivers with their floodplains) as well as by considering the quality of connected habitats. For example, a river restoration project may be more valuable if it links upstream and downstream areas which have already been restored, as it increases the area of connected high-quality habitat. Mapping of priority wetland habitats would also identify existing areas of good-quality habitat as well as opportunities for restoration, and allow the identification of areas where habitat restoration or re-creation will be valuable to support biodiversity delivery as well as creating functional floodplains / coastal habitats that can play a role in flood and coastal erosion risk management.

Existing work to identify and remove unnecessary/defunct structures, and enforcement to deal with unconsented works, must continue, and preference must be given to schemes which utilise nature-based solutions / natural flood management wherever possible. It will not always be possible to adapt to climate change and the pressure to implement hard engineering solutions in order to attempt to do so must be resisted; we must instead think in terms of mitigating the impacts of a changing climate, and select solutions which work with nature.

#### f. Marine

Kelp forests along Scotland's west coast act as vital buffers against storms for low lying coastlines and provide crucial habitat for fish and shellfish. Research has shown that more than 200 animal species can inhabit kelp holdfasts and many more rely on the stems and fronds above<sup>17</sup>. The demand for the polymers found in kelp from the pharmaceutical, food processing and textile industries is growing. Kelp dredging is an unsustainable way of harvesting kelp: heavy metal dredges, approximately 3 to 4 metres in width are dragged through kelp beds and uproot and gather entire plants. This harvesting technique removes the holdfasts, which prevents the plants from re-growing. Research in Norway, where mechanical dredging of this type has occurred since the 1970s, investigated the impact of kelp dredging on commercially important species and found 92% fewer young fish in harvested areas. Mechanical kelp dredging removes a key habitat both for nursery fish stocks, destroys the ability of kelp beds to store carbon and removes vital physical protection against storms like Storm Ciara and Storm Dennis. Inshore habitats such as seagrass meadows, maerl beds, flameshell beds, can play an invaluable role in providing ecosystem services. Stocks of carbon within the habitats and surface sediments of inshore MPAs are estimated at 9.4 million tonnes (Mt) organic carbon and 47.8 Mt

<sup>16</sup> Flood Risk Management (Scotland) Act 2009: <https://www.legislation.gov.uk/asp/2009/6/contents>

<sup>17</sup> Lorensten *et al* (2010): Multi-trophic consequences of kelp harvest, Vol.143 (9) Biological Conservation <https://doi.org/10.1016/j.biocon.2010.05.013>



inorganic carbon<sup>18</sup>. Protecting these forests and inshore habitats increases natural storm defences, protects commercially valuable fish stocks and stores carbon, rather than releasing it<sup>18</sup>.

Benthic habitats such as cold-water coral, deep sea sponges, deep sea sediments, within food webs (fish and whales) and burrowed mud are critical fish and shellfish habitat. Providing food, refuge and shelter for juveniles and adults of commercial species such as scallops, langoustine (breeding in sea loch mud which have greater relative carbon storage capacity than peat bogs<sup>19</sup>) and provide many other ecosystem services, including carbon sequestration, nutrient cycling and coastal protection. Species such as herring, cod, and haddock breed on more sandy gravelly sediments, which also have carbon storage capacity. Benthic habitats are being affected by bottom fisheries with 86% of the assessed areas in the Greater North Sea and the Celtic Seas showing evidence of physical disturbance, from bottom contacting gears, of the seafloor, of which 58% is 'highly disturbed'. Current trajectories will not achieve Good Environmental Status (GES) in UK waters by 2020 for benthic habitats, commercial fish, marine litter, cetaceans, or seabirds. The UK Marine Strategy Part One stated that "in 2012, a consensus of experts concluded that the spatial extent of damage to the seabed from fishing gear was greater than any damage caused by other activities"<sup>20</sup>.

Protecting these habitats against dredging, trawling and deep-sea mining exploration would protect these ecosystem benefits and the wider social and economic benefits that derive from them. Our seas are becoming even busier, increasing the competition for space and marine resources between different users within and beyond the fishing industry. Precautionary, evidence-based, plan-led spatial management is urgently needed for our vulnerable inshore seas to ensure that the cumulative pressures are regulated such that there is a net improvement of marine ecosystem health and functioning. Where the benthic habitats have been damaged, enabling recovery is a key nature-based solution to climate change and biodiversity loss, which by protecting seabed habitats from disturbance rebuilds fish populations and those species, including humans, that depend on them.

Recreating natural reefs, fished to extinction in the past, is a nature-based solution that restores biodiversity and ecosystem services, including carbon storage and higher water quality, to Scottish sea lochs. For example, the Dornoch Environmental Enhancement Project DEEP project between Marine Conservation Society, Heriot-Watt University and Glenmorangie is restoring the historic native oyster beds. 20,000 oysters are now being carefully placed, on a bed of waste shell that has been laid to mimic their natural habitat. Following a small-scale trial last year, this is the first time that native oysters have been re-introduced to an area where the species had become extinct and promises potential wider benefits for Scotland's seas. Their return will enrich the ecosystem of an already internationally important area of Scotland's inshore waters.

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<sup>18</sup> SNH Commissioned Report 957 - Assessment of Blue Carbon Resources in Scotland's Inshore Marine Protected Area Network

<sup>19</sup> Scottish lochs 'important stores' of carbon: <https://www.bbc.co.uk/news/uk-scotland-highlands-islands-43049001>

<sup>20</sup> Marine strategy part one: UK updated assessment and Good Environmental Status:

<https://www.gov.uk/government/publications/marine-strategy-part-one-uk-updated-assessment-and-good-environmental-status>





## Managing our land with nature in mind

### a. Nature networks:

Nature Networks are a strategic, long term approach to manage, restore and enhance Scotland's habitats and landscapes. The approach builds a nature friendly landscape, which is pervious to nature and provides life affirming wildlife and nature encounters to all people. Nature Networks are not physical networks like a path or hedgerow. They do however link the ecological processes that operate through the landscape together, across managed landscapes and Protected Areas. Nature Networks could help plan, implement, review and deliver climate adaptation and mitigation measures at scale and add value to land management approaches.

More information: [LINK discussion paper- Nature Networks](#)

### b. Nature friendly farming:

Scotland needs to invest in its soils. Key actions must be to continue to invest in and restore carbon-rich peatlands, safeguard semi-natural grasslands and protect and improve our valuable agricultural soils. Advice and incentives are needed to ensure all farmers regularly test their soils, increase soil organic matter – thereby locking in carbon and improving soil quality - and prevent soil erosion from fields. Better soil management also includes targeting inputs. For example, better nitrogen use and efficiency, reduces nitrous oxide and ammonia emissions, saves farmers money, promotes circular economy business opportunities, and reduces water and air pollution which damages people and nature. Helping land managers achieve more efficient use of nitrogen and less waste could be achieved through a nitrogen balance sheet. The Scottish Government now has a requirement to produce a national nitrogen balance sheet within 18 months<sup>21</sup>.

Low-carbon farming practices and systems must become the norm, in order to reduce emissions. Such practices, with lower, targeted inputs and nature friendly land management, are an important nature-based solution. This requires promotion and support for both organic farming and environmentally efficient production. In addition, public body procurement can help drive the transformation to carbon-neutral, nature friendly food production. Organic farming has an important role to play but needs promotion to reverse declines of recent years which have occurred despite strong demand for organic food.

More farmers and crofters need to be helped to see how integrating trees into their farming business could be of value to them and the climate. When planting the right trees in the right place, agroforestry has the potential to sequester carbon and protect soils, as well as deliver other benefits, such as diversification of farm income, shelter for livestock, and fuelwood.

More information: [LINK briefing on a role for future farming and rural land policy](#)

## Next steps

Several policy agendas can be addressed when dealing with climate friendly measures through the adoption of nature-based solutions. The following policy recommendations identify different mechanisms through which nature-based solutions can be implemented

### a. Peatland

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<sup>21</sup> Climate change plan monitoring report 2019 <https://www.gov.scot/publications/climate-change-plan-monitoring-report-2019/pages/9/>





- Cease licensing peat extraction for horticultural use.
  - Revoke existing extraction licences by 2023.
  - Restore extraction sites where bare peat is re-vegetated and water tables are raised to protect the remaining carbon store. Where possible, peat forming function should be restored to facilitate future carbon sequestration.
- b. Woodland
- Increase native woodland creation target, both tree planting and natural regeneration, in line with overall tree planting targets for Scotland – through the proposed green recovery for Scotland (post COVID-19).
  - Integration of forestry and woodland strategies with Regional Land Use Frameworks.
  - Improve protection for ancient woodland through the National Planning Framework 4.
- c. Uplands
- Implement the recommendations of the Deer Working Group and introduce a new Deer Act at the start of the next Parliament from 2021.
- d. Grasslands
- New agri-environment schemes that support and incentivise land managers to maintain, restore and create species-rich grasslands at scale.
  - High quality well-resourced advice available to land managers.
  - Regulation of fertiliser and pesticide use to support grassland restoration and reduce air and water pollution.
  - Scottish Biodiversity Strategy 2020+ and national/local Nature Networks that set ambitious targets for large-scale grassland creation and restoration.
  - Implementation of Plantlife’s guidance on road verge management with local authorities and extension of the guidelines to grassy margins and limiting pesticide use.
- e. Freshwater
- Increase riparian tree regeneration and planting as part of the native woodland creation target.
  - Restore and re-create wetland features such as reedbeds, wet meadows and wet woodlands.
  - Reconnect rivers with their floodplains through river restoration schemes.
  - Encourage the uptake of natural flood management methods for new flood defence plans.
  - Nature based solutions should form a key component of Scotland’s 3<sup>rd</sup> River Basin Management Plans.
  - Adoption of Nature Networks, as a national development to enable delivery of green infrastructure, nature restoration, flood risk management and natural flood management measures.
- f. Marine
- Protect and restore natural marine carbon stores through wider policy implementation to recover the health of Scotland’s seas, including:





- Enshrining ambitious duties in law to recover the health of Scotland's seas, including achieving and going beyond *Good Environmental Status* and driving an ecosystem-based marine planning system;
- Commit to at least 30% of Scotland's seas being highly protected and fully protecting at least one third (10% of Scotland's seas);
- Introduce new legislation to support a transition to a modern, world-leading climate and nature friendly fishing industry, including mechanisms to transition to a new spatial management regime and a new vessel licencing system that promotes environmental sustainability by including conditions for selective and low-impact gear use, to protect vulnerable and ecologically important habitats, such as blue carbon;
- Provide and incentivise investment in projects to restore marine species and habitats;
- Establishing an independent commission to advise on the developing MPA network, including reviewing network condition and resilience to climate change, transforming MPA management, and to identify if new sites are needed to deliver ocean recovery.

This briefing is supported by the following LINK member organisations:

- Buglife – The Invertebrate Conservation Trust
- Bumblebee Conservation Trust
- Butterfly Conservation Scotland
- Froglife
- Marine Conservation Society
- Plantlife
- RSPB Scotland
- Scottish Badgers
- Scottish Wildlife Trust
- Soil Association Scotland
- Whale and Dolphin Conservation
- Woodland Trust Scotland

Scottish Environment LINK is the forum for Scotland's voluntary environment community, with 40 member bodies representing a broad spectrum of environmental interests with the common goal of contributing to a more environmentally sustainable society.

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