



Forestry and  
Land Scotland  
Coilltearachd agus  
Fearann Alba

Forestry and Land Scotland's

# Climate Change Plan

How we will take action on climate change and biodiversity loss through:

- reducing emissions
- capturing carbon
- adapting to change

December 2021

## Foreword from the Chief Executive

Our mission is to look after Scotland's forests and land for the benefit of all, now and for the future.

But the future is expected to look very different to now. Without radical change, by 2050 the planet will be at least 2°C warmer – with more droughts, floods, heatwaves and storms. Loss of nature will, if unchecked, cause catastrophic impacts to our economy and society. Together, the twin emergencies of climate change and biodiversity loss will see us living in a very different future.

Scotland's response is a shared, national endeavour and FLS is ideally placed to be part of the solution. We are already major contributors in woodland creation, peatland restoration and renewable energy generation. We are reducing our own emissions, adapting the forests and land and conserving biodiversity. Global leaders have just come together at COP26 in Glasgow to make commitments for our global future, and I want to take this opportunity to state FLS's commitments – not just for now, but through to 2045.

This plan outlines how we intend to put protecting biodiversity and developing nature-based solutions at the heart of our climate change response. Our aim is to adapt how we manage our land, reduce our emissions and capture more carbon, whilst becoming more efficient and creating more jobs and wealth as part of the 'green recovery' from Covid-19. We want to lead the way for the land-based sector.

**Simon Hodgson, CEO, Forestry and Land Scotland, December 2021**

## Our ambition

We manage around 9% of Scotland's land. This includes forests, moorlands, mountaintops, sand dunes, meadows, rivers and lochs. We are involved in forestry, of course, but we are also responsible for habitat restoration, visitor management, agriculture, road building, quarrying, development and much more.

We are at the front line when it comes to feeling the impacts of a changing climate – and we know we need to **adapt to change**. Four of the top risks identified by the UK Climate Change Risk Assessment for Scotland are risks we are exposed to every day. We are already seeing the effects from flooding, drought, pests and diseases, landslips and wildfires.

### Case study: Managing deer in Cairngorms Connect

We are active partners in the Cairngorms Connect initiative. This partnership has a bold and ambitious 200-year vision to enhance habitats, species and ecological processes across a vast area within the Cairngorms National Park. By managing deer, we're reducing trampling impacts and taking pressure off trees and other vegetation. This enables the forests and habitats to expand, capturing more carbon and providing better homes for nature.

We have almost a thousand staff and many buildings across Scotland. We also work with a multitude of contractors and suppliers. We need to better understand our carbon impact and continue to take steps to **reduce emissions**, waste and resource use.

As Scotland's largest land manager, we are well placed to **capture carbon** through nature-based solutions such as tree planting and peatland restoration. We also host renewable energy generation to help Scotland as a whole achieve Net Zero. In doing so, we help to create 'green jobs' to help Scotland's recovery from Covid-19.

At the same time, we are facing a **biodiversity crisis**, with huge decline in nature over the last 30 years. Further damage to ecosystems, habitats, species, soils and natural carbon stores will threaten society and the economy – and undermine our efforts to adapt to the changing climate, and to capture and store carbon. Threats to ecosystems come not just from climate change, but also from overexploitation, habitat loss and fragmentation, pollution and invasive species. In line with Government targets, FLS has the opportunity to play a leading role in turning around the decline of biodiversity in Scotland. FLS recognises that landscape scale change, and increased participation in joint projects will be required to implement nature restoration on the scale required.

As we move forward, we know we need to keep all of these interlinked challenges in sight and tackle them all together. We have therefore set ourselves a clear climate change ambition:

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***We will put protecting biodiversity and developing nature-based solutions at the heart of our forward-thinking, innovative approach.***

***Our aim is to reduce our emissions, capture more carbon and adapt how we manage the land – leading the way for the land-based sector.***

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## What we are doing now

We have always cared for Scotland's national forests and land, planning years ahead to benefit future generations. But combating the effects of climate change and biodiversity loss, while securing and increasing carbon stores, are now among our chief concerns. We are:

- future-proofing our forests and open land to cope with more frequent wildfires, droughts, floods, and new or damaging pests and diseases
- implementing natural flood management measures in high-risk water catchments
- stabilizing steep slopes above key transport routes
- adapting our forest roads to deal with intense weather
- developing and expanding habitat networks
- managing the impact of deer to allow woods to thrive.

We will continue to invest to improve the resilience of Scotland's national forests and land.

We are creating new woods to help absorb more carbon – more than 4,000 hectares over the last five years, in fact. We're doing it in ways that minimise ground disturbance and prevent the loss of carbon from the soil. By choosing the right species, we can give the trees the best chance in a changing climate – and we can support nature as we do so.

We are restoring peat bogs to help conserve biodiversity. As we re-wet these sites, we're turning them from net sources of greenhouse gases into sites that will eventually store carbon. Since 2015 we have restored 6,500 hectares.

### Case study: Tree nursery innovation

We plant around 25 million saplings each year to restock our forests after felling. These will go on to create new woodland of all kinds, including fast growing conifer woodlands for timber, native woodland habitats and community woodlands. Many of the saplings are grown in our nursery at Newton in Moray.

To help improve the success rate of these planting efforts, we are supporting research and development into compounds to make tree seed more resistant to drought.

We're also restoring our ancient woodlands and controlling non-native invasive rhododendron. This will contribute to our work to restore populations of rare and endangered species such as capercaillie, white-tailed eagles, wildcat and water vole.

To decarbonise Scotland's energy sector we need more renewables. We have worked with the energy industry and local communities to create renewable energy schemes on the land we manage for many years. The schemes built so far are capable of powering 600,000 homes, saving over one million tonnes of CO<sub>2</sub> emissions from fossil fuels each year. We are planning many more projects to increase this capacity.

We are investing in electric vehicles and charging infrastructure to reduce our transport emissions. We are also auditing our buildings to help us find ways to reduce energy use and waste.

The timber that we produce – some three million tonnes a year – helps Scotland on its Net Zero journey. It replaces imported timber, locks up carbon in buildings, replaces plastic packaging, and creates jobs in harvesting and processing.

### Case study: Woodland creation in partnership

We are working with organisations who want to reduce their carbon footprint by creating new woodlands in Scotland. These woodlands are designed to achieve multiple benefits. They capture carbon, create wildlife habitats, improve landscapes and provide places for recreation.

With our ability to acquire land to create and manage sustainable woodlands, we can help organisations from a range of different sectors achieve their corporate social responsibility and carbon capture goals.

Our collaborative approach allows us to create even more of the woodlands that we need in Scotland.

***We've made a strong start on our climate change ambition – and we're excited about our potential to make an even bigger difference in the future.***

## Next steps

We are making changes right across our business to achieve our climate change and biodiversity ambitions, guided by the following principles:

- **Reduce emissions before considering offsetting**

We will drive down our organisation's emissions as much as possible, aiming towards *zero direct emissions*\*

- **Aim to achieve net zero emissions sooner, through early action**

We have set a date of 2045 to achieve *net zero emissions*\*, but through regular review and continued investment we hope to bring that date forward if practicable.

- **Work beyond the formal boundary of net zero**

We will make changes to reduce emissions associated with all of the activities we carry out. This will apply even if we cannot yet measure them accurately and/or they are indirect and beyond our immediate control.

- **Pursue nature-based solutions**

We will invest in our forests and land to deliver nature-based projects which deliver multiple benefits for climate, people and nature. We will work with partners to help them offset genuinely unavoidable emissions and implement landscape scale change.

- **Embed our climate change ambition across the whole organisation**

We will ensure that adaptation, emissions reduction and carbon capture are embedded in our policies and the culture of the whole organisation. The deep connection with protection of biodiversity and the environment must also be recognised and acted upon.

- **Support people, partnerships, suppliers and customers to drive change**

We will collectively build motivation and drive positive and co-ordinated climate and biodiversity action through all of our work and our relationships with business, partners and communities. We will look to support green jobs and build community wealth through our action.

- **Be evidence led and share our learning**

Our actions are grounded in data and insights. We will continuously review our impact as we seek to improve further. We will share our evidence and learning with others to drive more effective action.

We are using Adaptation Scotland's [Capability Framework for a Climate Ready Public Sector](#) to help us develop the strengths we need.

The diagram overleaf summarises our climate change journey. The subsequent sections provide more detail about the key steps we are taking to reduce emissions, capture carbon and adapt to change.

\*Definitions of terms such as *zero direct emissions*, and *net zero emissions*, can be found at the end of this document.



# Forestry and Land Scotland's Climate Change Journey

*We will put protecting biodiversity and developing nature-based solutions at the heart of our forward-thinking, innovative approach. Our aim is to adapt how we manage our land, reduce our emissions and capture more carbon – leading the way for the land-based sector.*



# Key steps on our journey:

## 1: Reduce emissions

In support of Scotland's world-leading emissions reduction targets, we're focussing on two key areas:

- reducing emissions from our own travel, buildings, waste and operations<sup>1</sup>; and
- reducing Scotland's overall emissions by facilitating renewable energy developments to decarbonise the energy sector.

We aim to achieve zero 'direct' (Scope 1) emissions from the sources we own or control by 2045. This includes our fleet, buildings and operations.

- We will move to using the public cloud for the storage of our electronic data and records by 2023 and explore options for further digitization of our paper records.
- We will identify a minimum 25% reduction in our building portfolio by 2024 as part of a rationalisation programme.
- We will improve the energy efficiency of our residential properties to minimum EPC Ratings by 2025.
- We will eliminate emissions from the use of combustible fuel in heating by 2030.
- We are planning for a national charging infrastructure to support the replacement of our fossil-fuelled light vehicle fleet with electric vehicles. Our objective is to phase out the need for all new petrol and diesel vehicles by 2030.

- An energy efficiency survey is planned for all buildings to ensure that heating and ventilation of all buildings can be powered by renewable energy sources by 2030.
- Few viable carbon alternatives options currently exist for our 'operational' fleet (e.g. harvesters, front loaders etc.). We will work closely with the forestry sector and machinery suppliers to encourage alternatives, and source them when we can.
- We are implementing 'smarter working' in all our offices and using 'blended working' to support a reduction in emissions. We will continue to explore options to use technology more effectively to communicate, limit the need for staff to travel and reduce our resource consumption and waste footprint.

We are working hard to reduce our indirect emissions – both from purchased electricity (known as Scope 2 emissions) and all other sources – such as business travel, procurement, supply chains, waste and water (Scope 3 emissions). We are working with our suppliers and contractors to reduce the emissions from supplied goods, services and works. Significant effort is required to establish a baseline for emissions generated by our supply chains, and to agree targets for reducing these in future years. Work will be prioritised over a number of years, identifying and targeting high-risk categories first such as harvesting, civil engineering, ground preparation and haulage.

We are working with Zero Waste Scotland to update and develop guidance on our approach to waste management, following the waste hierarchy of 'Refuse, Reduce, Refill, Reuse, Repair and Recycle'. We will

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<sup>1</sup> Our emissions baseline year is 2019-20, when our total measured emissions were 3,494.80 tCO<sub>2</sub>e. For more details, see our Baseline Report.

develop a waste management strategy in 2022/23 to inform future procurement activities.

Work is being progressed with our main water supplier to ensure that measurements are captured correctly and action plans will be developed to reduce water consumed in our buildings.

### Case study: Buildings that support climate action

As a land-based organisation, our buildings are much more diverse than simply offices. Some of our buildings are deer larders - a vital component of our deer management effort, allowing us to process carcasses before onward transport. These deer are turned into high quality venison products – a meat with a much lower carbon footprint than beef or lamb.

Deer management enables us to bring down deer numbers to sustainable levels – the kind of population we could have expected when lynx and wolves roamed Scotland. Deer management improves the resilience of habitats, giving them a better chance to thrive, even in a changing climate. It protects newly planted trees that help us to capture carbon, and it allows us to establish a wider range of species that can cope with the changing climate.

## Other emissions

Consistent with the approach of other Public Bodies who manage land, we are separating the emissions calculations from our vehicles, buildings, waste and water from our calculations of land-based emissions.

However, we know that the greenhouse gas emissions from the 620,000 hectares of land that we manage will dwarf those associated with running the business.

Safeguarding land-based carbon stores is vital. The soils of Scotland's national forests and lands hold around 700 million tonnes of CO<sub>2</sub> equivalent, while the standing trees hold around 100 million tonnes more. As yet, we do not know enough about the scale of potential emissions from the land – such as from degrading peatlands, other soil degradation and wildfire.

We are already taking steps to minimise our impact – not just on carbon, but also on the associated biodiversity. For example, we:

- have reduced the intensity of ground preparation works when we establish trees
- have reduced the use of tree shelters, fuels, oils and chemicals
- are minimising the length of essential new forest roads through good planning
- are restoring land-based carbon stores such as peatlands
- Have participated in the Cairngorms Connect – a landscape scale nature restoration project.

Our current priorities are to continue to:

- implement measures to reduce our impact, ensuring consistency across all our teams.
- improve our knowledge and understanding of land management emissions, so that we are able to report on these in future.



## Renewable energy generation

To help decarbonise Scotland's energy supply we have installed more than one gigawatt of wind and hydro capacity, in some 80 hydro schemes and 22 windfarms. More schemes are currently under construction and will help us achieve our aim of 2 gigawatt of installed capacity.

We require developers to minimise the loss of woodland when they plan their turbine layouts. Their Environmental Impact Assessments must show how they will manage habitats within each development area. We are exploring how to mandate 'net gains for biodiversity' in developments on Scotland's national forests and lands, to increase the overall contribution of renewable energy developments to Scotland.

We are also investigating how we can work with developers to supply renewable energy directly to FLS, to help us reduce our direct emissions.

### Case study: Reducing emissions, adapting to change

We work closely with developers and communities to create small-scale hydro schemes for renewable energy. Some of these are even in nationally sensitive areas such as Glen Affric. The impact is minimised through careful design and implementation. It's likely most visitors would not even realise they were there!

To reduce the chance of trees falling on power-lines in extreme weather, we work with utilities companies to remove trees or switch to lower-growing shrubs. We are also working with developers to convert cleared 'wayleaves' into networks of shrubs and open ground, to allow more species to thrive.

## 2: Capture carbon

We use nature-based solutions to capture carbon. This helps us provide a huge range of 'ecosystem services' for Scotland, such as flood prevention, slope stabilisation, shelter or soil improvement – and in doing so, they help us to reverse the decline of biodiversity. These projects are also creating quality jobs, often in rural areas, in the expanding 'green economy', and creating the kind of landscape scale change that the biodiversity and climate emergencies require.

Creating new woodland will continue to be a major focus of our carbon capture efforts. We aim to establish another 650 hectares in 2021/22 alone, using tree species that will thrive in the climate of the future. This will ensure we can continue to grow sustainable timber supplies, create habitats and provide places for people to visit.

Our peatland programme is increasing in scale, as well. In 2020/21 we restored 900 hectares, putting Scotland's peatland back on track to move from a net source of carbon to becoming a net 'sink'. By 2025 we expect to be restoring some 3,000 hectares annually, creating valuable habitats for threatened peatland wildlife in the process.

We harvest three million tonnes of timber each year, much of it used in construction where it will continue to lock up carbon long-term. We will use our timber marketing hierarchy to optimise the carbon value of our timber, reduce our global environmental footprint, and supply the emerging bio-economy of the future. We replant around 23 million trees each year to replace those that we fell, as part of a sustainable cycle.

#### Case study: Multiple benefits from riparian woodland

We are developing buffer zones of native tree species along watercourses. Healthy riparian and aquatic habitats are vital for iconic species including otter, osprey and Atlantic salmon. They provide shade to keep salmonid spawning areas cooler in the changing climate - vitally important for salmon fisheries, as well as other fish and insects that cannot cope with higher water temperatures.

As they grow, these new woodlands will help to capture carbon. They also act as a buffer, helping to prevent siltation from any ground disturbance from nearby forestry work. This helps to ensure threatened species, such as freshwater pearl mussels, are protected from any potential harm.

We know we need to understand more about the carbon balances of what we do – so that we can increase the amount we capture, and reduce losses from the operations (such as harvesting and ground preparation) that are involved. We are currently considering how best to do this, looking at options such as low emission fuels and reduced ground disturbance. This work is in its early stages.

### 3. Adapt to change

We recognise that even with global efforts to reduce emissions and capture carbon, we will have to adapt to a certain level of global warming – 1.5°C in a best case scenario. We also understand that there is no viable pathway to keeping 1.5°C in reach that does not involve protecting and restoring nature on an unprecedented scale. The natural environment removes around half of man-made greenhouse gas emissions from the atmosphere each year, and so we rely on the resilience of nature to keep absorbing the emissions we produce.

#### Case study: Peatland Restoration

Peatland is an internationally threatened habitat. By restoring it we are protecting biodiversity while allowing peatlands to turn from 'net sources' of emissions to 'net sinks'. These functioning ecosystems also hold vast quantities of fresh water, purifying it for drinking, and slowing its movement helping to protect against flooding events.

We are working with contractors to develop innovative ways to restore peat. With the Scottish Government and private companies making significant investments, we are creating a large number of 'green jobs' as we tackle all of the degrading peatland on the land we manage.

At COP26 Scotland's First Minister formally endorsed the Leaders' Pledge for Nature, further embedding Scotland's place among nations with the highest environmental ambition. In support of this, we will seek to play a leading role in Scotland's goal of halting the ongoing loss of nature by 2030, and will increase the overall biodiversity value of our national

forests and land. We will seek to move past conservation into active restoration and regeneration of nature. This will include:

- work to protect, maintain and enhance designated sites and other areas of high conservation value
- work with partners to deliver conservation action at the landscape scale
- targeted conservation work for priority species and habitats
- participate in and lead nature restoration and regeneration projects

Recently we have published information about how we expect the changing climate in Scotland to impact on different areas of our work. This will help our staff understand where their part of the business needs to adapt. We have also undertaken internal communications to encourage each team to build their knowledge; and to propose bold and proactive changes that will help us transform what we are doing.

Our next steps are to:

- help staff to learn about Scotland's changing climate and the likely impacts and effects on their activity – and to consider what they can do to tackle climate change and the biodiversity crisis;
- train our staff to factor climate change and biodiversity goals into the development of our Land Management Plans, and develop these plans to set out an integrated response;
- continue to invest in key adaptation actions to build the resilience of Scotland's national forests and lands – such as thinning and continuous cover forestry; deer management; removing invasive species; forest diversification; and infrastructure improvements;

- respond to, and prepare for, the impact of pests and diseases – especially *Phytophthora ramorum* on larch, Red-band Needle Blight on pine, and *Chalara* on ash.

We are working with Adaptation Scotland to understand our current capabilities and prioritise our development. Benchmarking exercises in 2019 and 2021 have shown that capabilities vary considerably across Forestry and Land Scotland. Collectively, we have assessed ourselves as being at the 'Starting' stage, although many teams are developing their capabilities beyond this.

We are continually developing our approach but we expect our next steps towards 'Maturity' will involve:

- undertaking a strategic climate change risk assessment;
- developing 'adaptation leaders' who can help support and inspire the entire organisation;
- developing organisational capability across all teams.

## Further information

For more information about our climate change and biodiversity work, contact our Climate Change Manager at [FLSCorporate@forestryandland.gov.scot](mailto:FLSCorporate@forestryandland.gov.scot)

## A note on 'zero emissions' terms

This document uses certain terms relating to emissions reduction. In the context of FLS's work:

- *Zero direct emissions* refers to our 'Scope 1' emissions from fleet, buildings and operations, over which we have direct control. For example, the fleet of FLS vans used by our staff. By switching these to electric, they can be described in emissions reporting terms as having zero direct emissions. At this time, in common with other Public Bodies, we are not including emissions from the land in our formal 'reporting boundary', because the methodology to calculate these has not been agreed.
- '*Net Zero*', used with capital letters in this document, refers to the Scottish Government's ambition for Scotland's total greenhouse gas emissions to be balanced completely by carbon capture, thereby resulting in no net emissions overall, by 2045. FLS can contribute to Scotland's Net Zero ambition both by reducing our emissions and increasing our carbon capture.
- Within FLS we are striving towards an internal '*net zero emissions*' approach, whereby any remaining unavoidable emissions from our activities are fully balanced by carbon capture that we undertake ourselves – taking account of all emissions sources including those we don't yet fully understand or know how to measure, such as losses from soils or supply chain emissions. We want to achieve this state of balance as soon as possible, ideally well before 2045.

For more information and definitions of our operational boundary, see our Baseline Emissions Report.