

March 2024 update

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It's time for a Carbon Emissions Land Tax

johnmuirtrust.org/celt



Carbon Emissions Land Tax: locking up carbon, boosting biodiversity and strengthening rural communities

A John Muir Trust policy proposal.

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Key points

- Scotland is rich in low productivity land that can be used to lock up huge quantities of carbon, while contributing to biodiversity and rural community regeneration.
- The potential is enormous. By acting now, we could realistically remove six million tonnes of greenhouse gases from our atmosphere annually by 2040 – the equivalent of removing the pollution caused by every home boiler in the country.
- Expansion of native woodlands and peatland restoration have many additional public benefits: increased biodiversity; new jobs and increased economic activity in sparsely populated areas; reduced flooding and better water quality; more attractive and productive landscapes.
- Supplementing existing incentive schemes for peatland restoration and woodland creation with a Carbon Emissions Land Tax levied on major landowners can unlock change at the pace and scale required to reach Scotland's climate and nature targets.
- The Carbon Emissions Land Tax is based on two powerful principles: large landowners have a responsibility to act for the climate, nature and communities, and polluters should pay.
- Revenues generated will provide significant additional revenue streams for local authorities, which can be used to fund local carbon reduction and nature restoration projects.

For more information, contact us at policy@johnmuirtrust.org



Introduction

Scotland is famed worldwide for its scenic grandeur. Yet alongside our dramatic mountain ranges and spectacular coastlines lie unimaginably vast expanses of land in poor condition. Bare, overgrazed hillsides. Drained, burnt moorlands. Eroding, degraded peatlands.

These damaged landscapes should look, sound, and feel more alive. They should be places where communities thrive alongside vibrant natural woodlands, open meadows, pristine peatlands, birds, mammals, insects, wildflowers, and fungi.

They should be places that ceaselessly remove destructive greenhouse gases from the atmosphere and store them in the soils and vegetation, while providing us with an abundance of renewable materials and services in perpetuity.

Our proposal has been developed as a contribution to Scotland's response to the global climate emergency and the associated biodiversity crisis. It is not presented as an alternative to phasing out fossil fuels as rapidly as possible; it is a recognition that we *also* need to harness the immense potential of our land to lock up carbon while boosting biodiversity and strengthening rural communities.

The John Muir Trust has been developing this policy since 2021, when it was first presented and endorsed by Scotland's Climate Assembly. Now the policy is backed by over 50 organisations, NGOs, trade unions, churches, businesses, and coalitions. This group represents over a million people in Scotland.

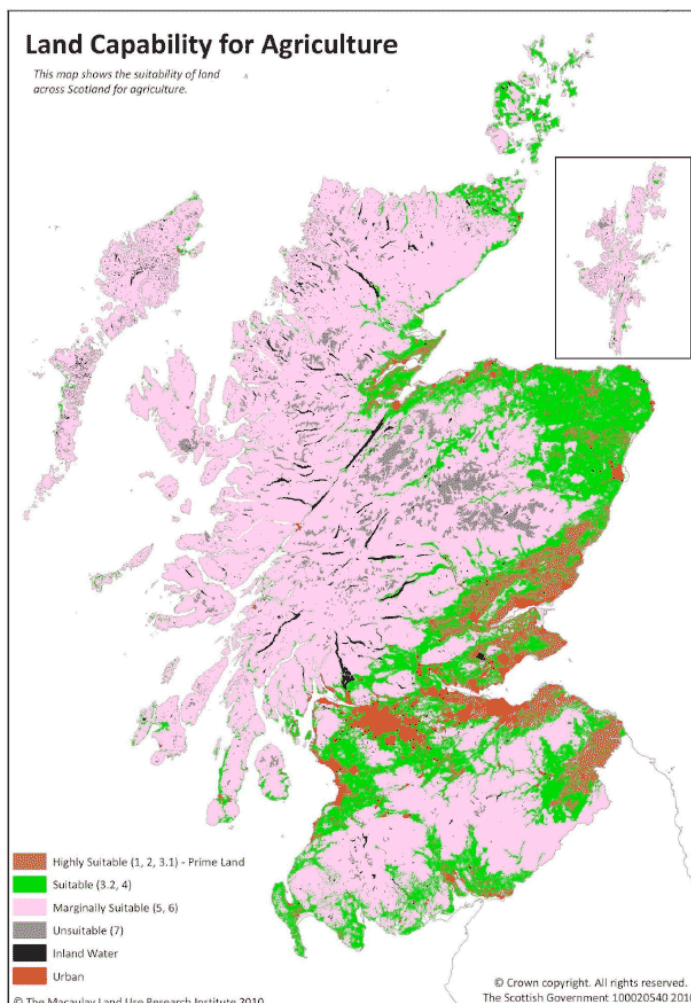
This update includes an alternative model to implement CELT. We have decided to publish both versions side-by-side to allow readers to compare and decide which one they find to be most powerful.

This paper and its related FAQs incorporate practical and technical advice received from tax experts, lawyers, academics, policy makers and scientists. We are keen to continue working closely with interested parties to progress this proposal further. If you are interested in finding out more, please get in touch.

Background

Proportionate to our population Scotland has an exceptionally large landmass. We have six and a half times more land per head of population than our nearest neighbour England. The geographical Highlands, which accounts for more than half of Scotland's total landmass, is the most sparsely populated region in Europe apart from northern Scandinavia. Consequently, Scotland is in a stronger position than most to deliver large-scale carbon sequestration and biodiversity recovery by transforming the way we manage our land.

While we need farmland to produce food, much of Scotland consists of agriculturally less productive uplands and peatlands. For tens of thousands of years, these areas – apart from the highest, rockiest mountain tops – were home to extensive pristine woodlands and peatlands which locked in colossal quantities of carbon and provided a rich abundance of wildlife habitats. The geographic extent of this area is illustrated in the map to the right in pink.



Scotland's land should be a net carbon sink, removing millions of tonnes more greenhouse gases than it produces. Instead, because of the way it is used and managed, our land (excluding agriculture) is a net polluter, emitting 400,000 tonnes CO₂ equivalent more into the atmosphere than it removes.¹

In Scotland's vast area of moorland, uplands and peatlands, the natural removal of carbon by our trees (including commercial plantations) and shrubs is more than cancelled out by our extensive expanses of degraded peatlands.

Our land is punching well below its weight. By acting now to restore peatlands at scale and to allow natural expansion of native woodlands, our lower productivity land can by 2030 start to become a net carbon store, followed by cumulative, year-on-year gains up to and beyond 2045.

By using every means at our disposal to propel land use change, Scotland can become a global leader in natural solutions to climate change.

¹ Including emissions from agriculture, our land emits more than 8 million tonnes CO₂ equivalent. See Scottish Government (2023). Scottish Greenhouse Gas Statistics 2021.



How can Scotland's land remove 6 million tonnes of greenhouse gases from the atmosphere?

Peatlands and wetlands

Scotland's blanket bogs and lowland raised bogs cover more than 20 per cent of our total landmass. They are our largest terrestrial carbon store, holding about 1.6 billion tonnes of carbon in the ground – equivalent to over 180 years of Scotland's entire greenhouse gas emissions at current rates.²

Over 80 per cent of our peatlands are damaged or degraded.³ Recent estimates by the Scottish Government suggest that these damaged peatlands release around six million tonnes of greenhouse gases (6 MtCO₂e) every year – exactly equivalent to the total emissions from Scotland's 2.6 million residential households.⁴

As Professor Dieter Helm explains, these degraded peatlands are the equivalent of immense power stations, discharging destructive emissions into the air every second of every day. If greenhouse gases were visible to the naked eye, most of our peatlands would be permanently swathed in a dense smog rising from the soils to the skies.⁵

A recent study by experts at Stirling University set out a range of ambitious but realistic targets, including a 'pragmatic scenario' for the restoration of 75 per cent of Scotland's damaged peatlands.⁶ We could therefore expect that completing this realistic peatland restoration programme would achieve a reduction in greenhouse gases equivalent to 4.5 MtCO₂e per year.

² SEPA (2019). Scotland's Soils: Peatland Restoration; Scotland's Environment Web

³ Scottish Government (2018a). Climate change plan: the third report on proposals and policies, 2018–2032

⁴ Scottish Government (2023). Sources of Scottish Greenhouse Gas Statistics 2021

⁵ Helm D. (2022). In conversation with John Muir Trust policy team, 25 October 2022

⁶ Horsburgh N., Tyler A., Mathieson S., Wackernagel M., Lin D. (2022). Biocapacity and cost-effectiveness benefits of increased peatland restoration in Scotland

While Scotland is famous for its peatlands, we also have other types of wetlands, mainly around our lochs, rivers, and coastline. As well as playing a vital role in flood defence, our swamps, fens, salt marshes, wet grassland, wet woodland, and wet heathland are vital carbon stores.

Coastal wetlands such as salt marshes, although smaller in scale than peatlands, have the highest rates of carbon sequestration per hectare of all our natural systems. Yet these and other sensitive wetlands are under constant threat of damage and destruction, from built development, agricultural drainage, vehicle damage and climate-related rising sea-levels.⁷

Repairing Scotland's damaged wetlands, starting with our degraded upland blanket bogs, would also make a huge contribution to combatting the global biodiversity crisis by revitalising the habitat of some of our rarest and most endangered plant and insect species.

Woodlands

A recent study focused on Scotland's uplands by the School of Earth and Environment at the University of Leeds has demonstrated the exceptional potential for carbon sequestration through natural woodland regeneration. By reducing grazing pressures and carrying out some judicious planting to provide seed sources, native woodlands could start to spread across an additional 3.9 million hectares of the Scottish uplands, removing an average of 6.96 Mt CO₂e a year.⁸

This figure represents a hypothetical assumption of the maximum potential expansion of native woodlands expansion over the next century, divided by 100 to arrive at an annual average. The methodology is robust and based on the Native Woodland Model – a detailed analysis of soil and land cover published by Nature Scot and the James Hutton Institute.

The authors of the study envisage a mosaic of denser woodlands and more open landscapes interspersed with scattered trees and shrub, with canopy cover ranging from 10 to 80 per cent depending on soils, climate, elevation, and gradient.

A conservative target of achieving just 20 per cent of that potential would mean quadrupling our native woodlands and sequestering nearly 1.4 million tonnes of CO₂e annually from the atmosphere by 2040.

Scotland's land can remove 6 million tonnes of carbon from the atmosphere

Restoring 75 per cent of our damaged peatland and allowing our native forest cover to expand to 20 per cent of its maximum capacity in the uplands would therefore take out around 6 MtCO₂e annually – more than is produced today by all of the fossil fuel cars in Scotland.⁹

⁷ Rogers, K., Kelleway, J.J., Saintilan, N. et al. (2019). Wetland carbon storage controlled by millennial-scale variation in relative sea-level rise. *Nature* 567, 91–95

⁸ Tasmin I. Fletcher, Catherine E. Scott, and Dominick V. Spracklen (2020). The Carbon Sequestration Potential of Scottish Native Woodland. Environmental Research Communications 3.

⁹ Scottish Government (2023). Sources of Scottish Greenhouse Gases Statistics 2021

A note on grasslands and farmland

Additional carbon reductions and biodiversity improvements could be achieved by better management of these habitats.

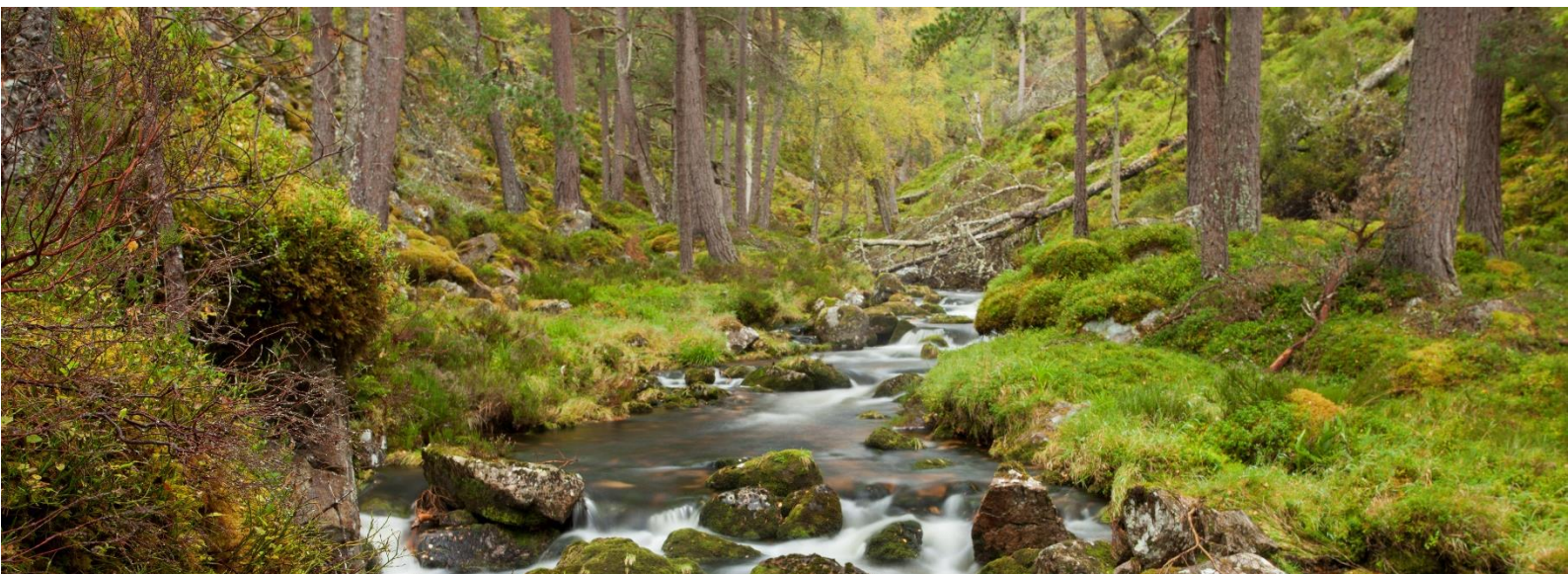
Scotland's has lost much of its carbon-rich grasslands because of centuries of ever-intensifying agriculture. Yet that damage can be reversed through better managed farmlands – for example, by returning to rotational grazing. Our remaining healthy grasslands survive only in places where lower intensity, nature-friendly traditional farming and crofting is practised.¹⁰

With the end of the Common Agricultural Policy, the future of Scottish farming may best be secured by embracing change. As Jonathan Hedges, Chair of the Scottish Crofting Federation, pointed out: “A significant proportion of high nature value areas in Scotland are under crofting tenure, for example the machair, known for its incredible biodiversity, and peatlands, which are the best ecosystem for sequestering carbon. Crofting is starting from a good position, but we can always do more to reduce our greenhouse gas emissions, measures such as restoring degraded peatland, extensive mixed grazing and planting low-density woodland.”¹¹



¹⁰ Scottish National Heritage (2001). Grasslands: Scotland's Living Landscapes

¹¹ Scottish Crofting Federation. (2023). Crofting Federation appoints new Chair



What can we do to enable Scotland’s land to lock up carbon, boost biodiversity and strengthen rural communities?

The John Muir Trust proposes that the Scotland Parliament legislates to introduce a new local Carbon Emissions Land Tax. To comply with current devolved powers, this tax would be administered by rural local authorities and rests on two powerful principles:

1. Large landowners have a responsibility to act in the public interest: for climate, nature, and communities.
2. Polluters should pay for the damage they cause.

We are advocating for a Carbon Emissions Land Tax as part of a wider package of policies to deliver a Just Transition in wild places and beyond.¹²

Councils would retain all revenues from the tax, which could be used at their discretion to fund a range of local carbon reduction initiatives such as home insulation, extended concessionary public transport and nature restoration projects.

How would a Carbon Emissions Land Tax work?

We propose two models of a Carbon Emissions Land Tax for consideration. We are always eager to hear constructive feedback and alternatives to our versions.

To keep the tax anchored in its two principles (large landowners have responsibilities to manage the land for climate, nature and communities, and polluters pay), we propose that the final version of a Carbon Emissions Land Tax includes the following:

First, to safeguard local autonomy, the tax should be discretionary with no council obliged to introduce the tax.

¹² See for example the publications listed in Annex 3.

Second, to balance local autonomy with consistency, fairness and simplicity, a national framework should be put in place to assess tax liability, led by a relevant public agency (e.g. NatureScot or SEPA).

Third, to maximise ease of administration and impact at pace and scale, the tax should apply to all large landholdings. We propose 1,000 ha as the threshold to qualify as “large landholding”. This threshold would cover 62 per cent of Scotland’s landmass.¹³ Based on the tax’s first principle, we advocate for all landholdings to be liable, whether owned by a private person, a public agency, an NGO, or a business. We advocate for an exemption for community-owned land.

Fourth, the tax should focus on greenhouse gas emissions from the land regardless of land use (i.e. not accounting for structures such as renewable energy developments).

First model: a banded system

In this model, the condition of each habitat on liable landholdings will be measured using remote-sensing technology and existing datasets as much as possible, complimented by ground-truthing where necessary, to provide a detailed map and estimate the amount of polluting greenhouse gases from the different habitats.

Landholdings with habitats in poor condition that release greenhouse gases will fall into different tax bands. Those who pollute the most will fall into the highest tax band, those who do not pollute will be zero-rated.

We suggest that a standardised banding scheme be established nationally, along similar lines to the Council Tax (though not necessarily with same number of bands). Councils who wish to introduce the tax would then set their own rates per hectare.

Liable landowners could move to lower tax bands by changing land use and improving habitat conditions. The assessment for changing bands would be conducted by a national agency and would take place at regular intervals, for example every five years.



Second model: a fixed rate of tax with rebates

In this model, all liable land is taxed the same amount per hectare (fixed rate). This fixed rate will vary depending on land types. Rebates will then be applied depending on management and condition.

¹³ Scottish Parliament Information Centre (2019). Scale and Concentration of Land Ownership - The Elephant in the Room?

There are a range of public datasets for determining land types and subsequently the fixed rates to apply to them. For example, the James Hutton Institute's Land Capability for Agriculture map¹⁴ details areas of rough grazing which could attract a lower rate than areas that are suitable for woodlands.¹⁵

Better yet, the rates could be set based on a combination of databases. Alongside the Land Capability for Agriculture, the Government could consider its equivalent datasets for forestry capability and peatland condition. Together they would provide a comprehensive basis for fixed rates.

These fixed rates are important because depending on current land use, the impact of land use change will differ. To tackle the climate and nature emergencies most efficiently, it makes most sense to target land emitting most carbon (and ultimately most suited for carbon sequestration and biodiversity gains) by assigning a higher tax rate to that land.

Once rates are set, landowners then apply for tax rebates. These rebates are granted to reward land management that restores and protects habitats. As with the first model, this rebate system will be controlled by a national agency and landowners will have the opportunity to apply at a regular interval, for example every five years.

A list of potential condition for rebates can be found in Annex 1.

As well as reducing carbon emissions, the tax has the potential to generate revenues for hard pressed local authorities while the transition to better carbon management is under way. Revenue projections for the Highland Council and the Perth & Kinross Council can be found in Annex 2.

A note on industrial commercial conifer plantations

Industrial-scale planting of rapidly growing, densely packed commercial non-native species such as Sitka spruce involves large-scale soil disturbance during the planting operation followed by clear-felling within a few decades. Both processes change soil dynamics far into the future and ultimately produce a significant loss of carbon.¹⁶

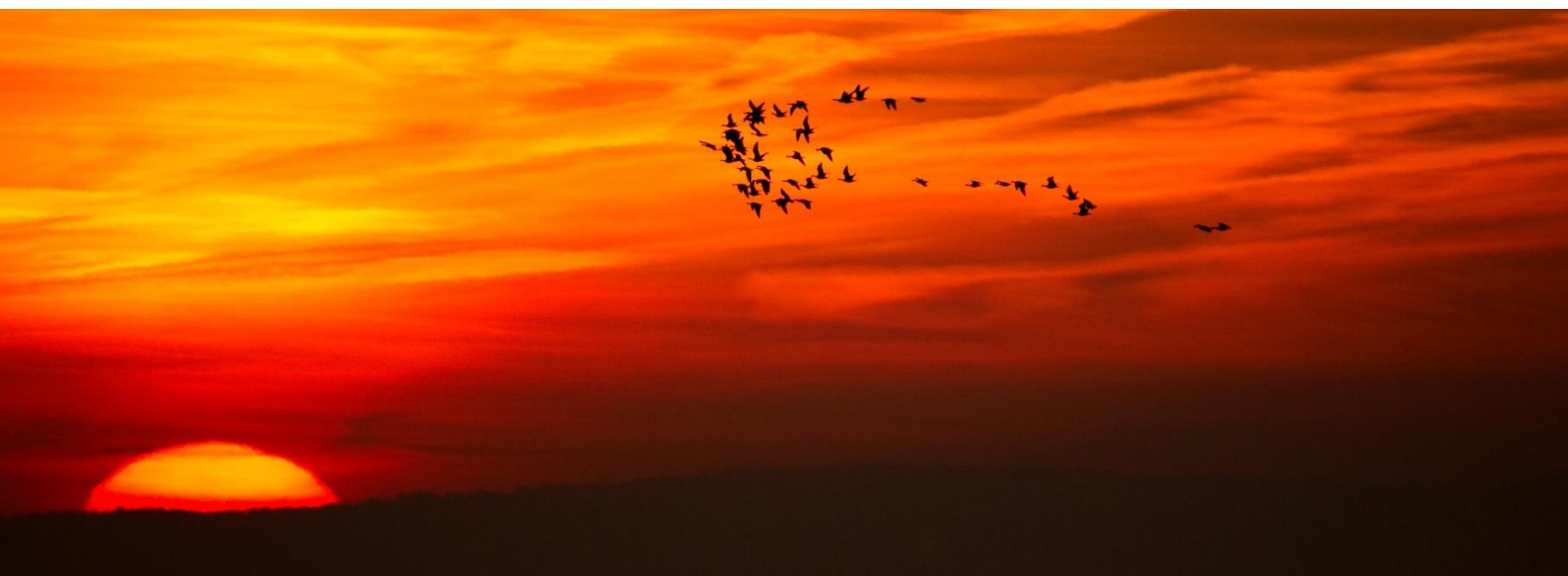
Conversely, recent international research has shown that forests containing a variety of tree species can store twice as much carbon as the average monoculture plantation.¹⁷ And while native woodland generally takes longer to remove greenhouse gases, it can store carbon for many centuries to come, and self-perpetuate through natural regeneration.

¹⁴ The Macaulay Institute (now James Hutton Institute) (2010)

¹⁵ Sing L. & Aitkenhead M. (2020). Analysis of Land Suitability for Woodland Expansion in Scotland: update 2020. ClimateXChange publications

¹⁶ Lacroix E., Petrenko C. & Friedland A. (2016). Evidence for Losses From Strongly Bound SOM Pools After Clear Cutting in a Northern Hardwood Forest. *Soil Science* 181(5): p 202-207

¹⁷ Dunne D. (2018). Planting a Mix of Tree Species 'Could Double' Forest Carbon Storage. *Carbon Brief*, 22 August 2018



Conclusion: a Carbon Emissions Land Tax can change the face of Scotland

We welcome and support the programmes of peatland restoration and native woodland expansion that are already underway.

There are, however, warning signs that progress is stalling. In 2021 Scotland missed its legally binding greenhouse gas reduction targets for the 8th time over the last 12 years.¹⁸

In 2022, the Climate Change Committee – the authoritative and independent statutory body that advises the four governments of the UK – reported: “Peatland restoration rates are less than half of Scotland’s own target of 20,000 hectares per year, which is in turn much less ambitious than our recommendation of 45,000 hectares per year by 2022.”¹⁹

As a nation we need to up our game. We must play our part in delivering environmental, social, and inter-generational justice both at home and globally. We believe it is imperative that the relatively small number of large landowners take their share of responsibility for delivering these necessary targets and achieving a just transition to a net-zero future.

Alongside other initiatives – such as public subsidies and intervention by the Scottish Government to reduce deer grazing pressures and license grouse moors – a Carbon Emissions Land Tax can be a powerful lever to accelerate change, while sending out a strong message to large landowners that in this climate emergency, we cannot carry on with business as usual.

Although as a “behavioural change” tax its main purpose would be to accelerate changes in land use – based on similar principles as taxes and levies on tobacco, plastic bags, or alcohol – it would also have the potential in the short-to-medium term to raise millions of pounds each year in extra revenues for cash strapped rural local authorities.

¹⁸ Keane K. (2023). Scotland misses greenhouse gas emissions target. BBC, 20 June 2023

¹⁹ Climate Change Committee (2022). Progress in reducing emissions in Scotland: 2022 Report to Parliament



The Carbon Emissions Land Tax is an idea whose time has come.

Over the years, our policy proposal has been analysed in several reports, always eliciting a favourable conclusion.²⁰

In August 2023, a YouGov poll (see below) commissioned by the John Muir Trust revealed that **64% of Scots supported the introduction of a tax on large landowners** based on the amount of carbon emissions their land management produces. Only 14 per cent opposed it.

Support for the principles of CELT was even stronger, with 78 per cent saying landowners who produce polluting greenhouse gases should pay for the costs of the pollution.

The poll found a **resounding majority** in favour of the tax across all eight Scottish Parliamentary regions, and all age groups. An overwhelming majority of voters from all parties apart from the Conservatives expressed support for the policy, while even among the latter group, support for the tax outnumbered opposition.²¹

In July 2023 over 30 organisations, community groups, charities and businesses representing around a million Scottish members published an open letter asking the Scottish Government to include the Carbon Emissions Land Tax in the Land Reform bill.²²

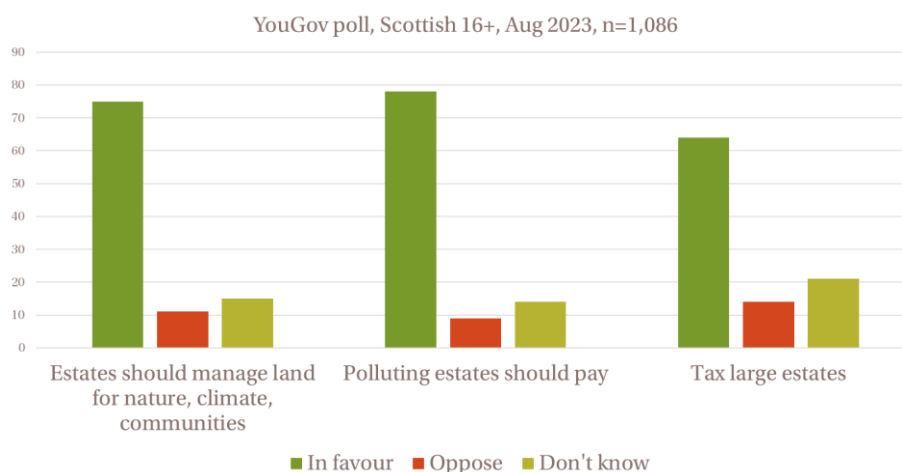
Since then, **the coalition has grown to be over 50 strong**. This is possibly the largest group of organisations to back one specific climate action measure in Scotland, ever.

A Carbon Emissions Land Tax pioneered in Scotland could become an exemplary international model, helping drive forward progressive change in land management on a global scale.

²⁰ See Annex 3.

²¹ All figures, unless otherwise stated, are from YouGov Plc. Total sample size was 1,086 adults. Fieldwork was undertaken between 3rd - 8th August 2023. The survey was carried out online. The figures have been weighted and are representative of all adults in Scotland (aged 16+). Full results are available on the John Muir Trust's website.

²² Hunter R. (2023). Plan for carbon tax on Scotland's largest estates gains momentum. The National, 27 July 2023.



In 2022, addressing world leaders at COP27, UN Secretary General Antonio Guterres said: “We are in the fight of our lives, and we are losing. Our planet is fast approaching tipping points that would make climate chaos irreversible. We are on a highway to climate hell with our foot still on the accelerator.”

A Carbon Emissions Land Tax is our response to Mr. Guterres’ bleak assessment. Scotland can address the joint climate and nature crises. We can implement a tax that will lock up carbon, boost biodiversity and strengthen rural communities. Join us in making this a reality.

“Scotland’s civil society and voters are clear. It’s time for change. It’s time for a Carbon Emissions Land Tax.”

John Muir Trust speaking at the REVIVE Conference in Perth, November 2023

Email policy@johnmuirtrust.org

Sign our [petition](#).²³

²³ The petition is available at www.johnmuirtrust.org/celt

Annex 1: Example proposed conditions for tax rebates

Condition for rebate	Proof	Rebate
Agri Environment Climate Scheme	Government	20%
Organic certification	Recognised certifiers	80%
Pasture for Life certification	Pasture for Life	80%
Preparing for Sustainable Farming	Government	10%
Forestry Grant Scheme type	Scottish Forestry	0-30%
Woodland Carbon Code	Woodland Carbon Code	10%
Habitat type	HabMoS EUNIS Land Cover Scotland	0-50%
Herbivore Impact Assessment	NatureScot	0-50%
Nature Restoration Fund	NatureScot	10%
Peatland Condition Assessment	Peatland ACTION	0-50%
Peatland Code	IUCN	20%
Peatland restoration	Peatland ACTION receipt / private invoice	10%
Peatland habitat condition map	James Hutton Institute	0-100%
NatureScot classification	NatureScot	0-50%
Surface Water Body quality	SEPA	0-100%

We propose that landowners be able to “stack” rebates to encourage positive land management practises. For example, a parcel of land with a low Herbivore Impact Assessment would attract a 50% rebate. If that same parcel of land is carrying out peatland restoration, it is also liable for a 10% discount. The landowner would therefore be able to claim a total of 60% rebate on that parcel of land.

Annex 2: fiscal projections for Scotland and selected rural councils

Fixed rates used for the following projections

Consolidated land types (LCA classes)	Tax rate per ha
Prime Arable (1 to 3.1)	£ 20.0
Mixed Agriculture (3.2 to 4.2)	£ 25.0
Improved Grassland (5.1 to 5.3)	£ 25.0
Rough Grazing (6.1 to 6.3)	£ 12.5
Very Rough Grazing (7)	£ 5.0
In-land water	£ 8.8

Note: because of ease of access, we used the Land Capability for Agriculture dataset from the James Hutton Institute to calculate projections and illustrate the fixed rates and rebates system for the tax. However, we think the proposal would benefit from incorporating other datasets to establish more impactful fixed rates. For example, the Land Capability for Forestry dataset and the James Hutton's latest map detailing peatland condition would make for strong nation-wide criteria to assign fixed rates to parcels and ensure that those with the most potential for carbon sequestration and nature restoration are assigned the highest rates.

Projected annual revenue for Scotland, with exemption for landholdings under 1,000 ha

Rebate	Revenue
0%	£81,561,497
25%	£61,171,123
50%	£40,780,748
75%	£20,390,374
95%	£4,078,074

Note: The revenue varies according to the rebates secured and serves as an illustration of how revenues would diminish as land condition is improved. For example, if on average land in Scotland was eligible for a 25% rebate, the total revenue raised by the tax would be just above £61 million. If all land was in bad condition, the total revenue raise would be approximately £81 million.

Projected annual revenue for Highland Council with exemption for landholdings under 1,000 ha

Rebate	Revenue for Highland Council
0%	£26,770,173
25%	£20,077,630
50%	£13,385,086
75%	£6,692,543
95%	£1,338,509

Note: this table reads the same as above.

Projected annual revenue for Perth & Kinross Council with exemption for landholdings under 1,000 ha

Rebate	Revenue for Perth & Kinross
0%	£6,436,117
25%	£4,824,088
50%	£3,218,059
75%	£1,609,029
95%	£312,806

Note: this table reads the same as above.

Total land area types for Scotland, Highland Council and Perth & Kinross Council calculated using James Hutton Institute LCA classes. Liable land estimated at 60% of total land in Scotland and 69% of total land area based on internal research of estates over 1,000 ha in the Highlands and Perth & Kinross.

Annex 3: the Carbon Emissions Land Tax in external reports

In 2021, **Scotland's Climate Assembly** endorsed the proposal with 81% of citizens representing a cross-section of society voting in favour.

In October 2022, **Stop Climate Chaos Scotland**, a coalition of over 60 civil society organisations campaigning for climate action, included CELT in their report: Financing Climate Justice - Fiscal Measures for Climate Action in a time of crisis.

In December 2022, the **Scottish Trade Union Congress**, representing over 540,000 trade unionists, advocated for CELT in their report: Options for increasing taxes in Scotland to fund investment in public services.

Also in December 2022, anti-poverty charity **Oxfam** included CELT in their report: Time to Tax - The case for fairer taxation in the 2023-24 Scottish Budget and beyond to fight poverty, cut inequality, invest in care, and tackle the climate crisis.

In December 2023, **Future Economy Scotland**, a think tank, assessed our proposal as having "strong merits" in their report: Land Reform for a Democratic, Sustainable and Just Scotland.

