Northumberland
County Council

Climate Change Action Plan 2024-26

Contents

1. Introduction

1.1. Northumberland – Background and Context

Northumberland County Council's (NCCs) vision is to make sure Northumberland is, and remains, a place of great opportunities for all our residents. Climate change mitigation, adaptation; and the protection, repair and enhancement of ecological systems, is critical to the realization of this vision.

The climate and ecological crises threaten; the chances of all Northumberland's residents having the building blocks for a good life, health and wellbeing, the prosperity of the county, and the Council's ability to be able to continue delivering efficient and effective services.

The Council wants Northumberland's residents and environment to thrive and flourish, now and into the future. The Climate Change Action Plan 2024-2026 is an integrated policy that supports this vision.

Bringing together three strategic themes, 'Society', 'Emissions' and 'Environment' to facilitate a holistic understanding of the interconnectivity of these issues, and their solutions, as shown in Figure 1. Utilising the strategies and actions outlined in the 'Society', 'Emissions' and 'Environment' sections, the Climate change action plan 2024-2026 outlines the Council's aims to enhance ecosystems and biodiversity alongside just and equitable mitigation and adaptation to climate change, as…

"The choices and actions implemented in this decade will have impacts now and for thousands of years[1]"

Intergovernmental panel on Climate Change, 2023

Figure 1 – The three main strategic themes in the Climate change action plan 2024-2026

The deeply interconnected issues around climate change, environment (ecology), and human systems require measures that produce positive benefits in both the environmental and climate spheres[2]. Ignoring one or delivering measures that are only positive for one sphere, at the expense of the other, will ultimately undermine all efforts across both spheres. Likewise supporting the human systems that facilitate these efforts, and the delivery of just and equitable climate and ecological transitions, is the only route to success.

The climate emergency, declared by NCC in 2019, and the ecological emergency, declared by NCC in 2023 are inextricable. The importance of wider environmental and ecological concerns amongst Northumberland's residents and visitors has been made clear to NCC. Bringing together climate change, ecological systems, and human systems, follows best practice recommendations from experts[3] such as the

[1] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf Page 24
[2] https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf & https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_FullReport.pdf
[3] Planetary boundaries - https://www.stockholmresilience.org/research/planetary-boundaries.html Doughnut Economics - https://doughnuteconomics.org/about-doughnut-economics#what-is-the-doughnut

UK climate change committee[4] and the Intergovernmental panel on climate change[5] (IPCC) who…

"*…recognizes the interdependence of climate, ecosystems and biodiversity, and human societies; the value of diverse forms of knowledge; and the close linkages between climate change adaptation, mitigation, ecosystem health, human well-being and sustainable development…*[6]"

The Climate Change Action Plan 2024-2026 will sit alongside wider 'environmental[7]' strategies including NCCs Environmental Policy Statement[8] which recognises the interwoven issues and need to take a holistic view across both the natural environment and the climate change (net zero) targets. The council is committed to preserving and enhancing our natural environment and this is supported by the climate change action plan 2024-2026.

Northumberland County Council declared a climate change emergency in 2019 in acknowledgement of the global climate change[9] trends seen over the past decades and the UK government's own targets, now enshrined in law, to reach net zero as a country by 2050.

Following the declaration of a climate change emergency, the Council has published a series of increasingly detailed strategies[10] to address climate change in Northumberland, aligned to the targets the Council has set itself and the wider County. This is the fourth such strategy and is the most in depth to date. The County Council now has a dedicated team working specifically towards the climate change targets. The team works with partners across the organisation, the wider county, and the region to implement a range of projects to reduce emissions, improve sustainability, protect the environment, reduce inequalities and drive green economic growth. This action plan builds on the previous *Climate Change Action Plan 2021-23* and directly reports on progress against the targets and projects set out in that plan.

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[4] https://www.theccc.org.uk/wp-content/uploads/2023/06/CCC-Adaptation-and-the-nature-emergency.pdf and

[5] https://www.ipcc.ch

[6] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf page 3

[7] 'Environment' as a term can mean many things. The Environment section within the climate change action plan 2024-2026 refers to the following areas:
• Ecosystems and Biodiversity
• Agriculture
• Forestry and other Land use (formerly 'sequestration')
• Pollution and waste management

[8] https://northumberland.moderngov.co.uk/documents/s16884/03%20Environment%20Policy%20Statement.pdf
This statement outlines the work that NCC does, and will continue to do, across; climate change, nature recovery and biodiversity, heat and renewable energy, sustainable waste management, travel and transport, water quality, parks, and green spaces, and safeguarding public health and wellbeing.

[9] https://www.metoffice.gov.uk/weather/climate-change/what-is-climate-change

[10] Responding to Climate Change,.2019, 42500_M9487.pdf (moderngov.co.uk). Climate change Action Plan 2021-2023, 2021, https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/About-the-Council/Climate%20change/Climate-change-action-plan-2021-23.pdf

During the last three years, many new technologies, understanding of data and cultural shifts have ensured that the work set out in the previous plan needs reviewing and updating. This plan will address the international, national, regional and local context in which it sits and will propose a strategy for addressing climate change in Northumberland over the next three years and beyond.

1.2. Targets

At the heart of this action plan are the key targets set out, originally in the cabinet paper of 11th June 2019 *Responding to Climate Change*[11] and more recently in the cabinet paper of 7th November 2023 *Setting the Scope and Targets for the Climate Change Action Plan 2024-26*[12]. The key targets the County Council is pursuing in relation to reducing emissions in Northumberland, as set out in these papers, are as follows:

<u>County of Northumberland</u>

- Original 2019 target: 'Northumberland County Council pledges to work with the Government to make Northumberland carbon neutral by 2030 whilst appreciating that this will require a concerted national shift in behaviours and significant technological advancements.'
- Updated 2024 targets: 'Northumberland County Council pledges to work with the Government to make Northumberland carbon neutral (in relation to carbon dioxide emissions) by 2030 and to achieve net zero for all greenhouse gases for the county of Northumberland by 2040, whilst appreciating that this will require a concerted national shift in behaviours and significant technological advancements'.

<u>Northumberland County Council</u>

- Original 2019 target: 'Northumberland County Council commits to halving the carbon footprint of the County Council by 2025, from the levels measured in 2010 with this target being kept under annual review with the ambition of continually improving its pace and scale.'
- Additional updated 2024 target: 'Northumberland County Council commits to becoming a carbon neutral organisation by 2030'.

1.3. Structure

This plan is set out across three overarching strategic themes. Within each of these themes are key action areas where projects have been or are being developed and delivered. This is the structure through which the programme of work will be delivered over the next three years with resource allocated respectively. This is shown in Figure 2.

[11] 42500_M9487.pdf (moderngov.co.uk)
[12] 08. Corporate Report Template August 2019.doc (moderngov.co.uk)

Society - engage, inform, connect and support, for equitable change	Environment - repair, improve and maintain	Emissions - reduce greenhouse gas emissions and energy waste
Policy and governance	Ecosystems and biodiversity	Northumberland county council's own emissions
Public Health & wellbeing	Agriculture	Renewable energy generation
Planning	Trees, woodlands & forests	Heating and powering buildings
Adaptation and resilience	Peatland restoration	Transport
Engagement & partnerships	Waste management	

Figure 2 - structure for climate change delivery at Northumberland County Council

This structure has been developed in line with best practice[13] to ensure that the various competing aspects of the climate change agenda are treated with due consideration. Resource and delivery will naturally be focussed where funding can be found and will be led by national policy.

2. Society

2.1. Policy and Governance

This action plan sets out how Northumberland County Council hopes to achieve a fundamental shift in societal norms in order to reach net zero as a County by 2040. This can be achieved through the delivery of infrastructure, technology, community action, investment, education, natural resources and more. Fundamental to the success of this action plan though is ensuring that the framework is in place to allow this delivery, across so many areas to take place. Decisions need to be streamlined, funding directed and communication targeted. Thus, the policy landscape to which this programme of work is subject, at a national and local level[14], underlies all the actions set out throughout the plan.

2.1.1. National Legislation, policy and governance

[13] https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/, https://doughnuteconomics.org/about-doughnut-economics#what-is-the-doughnut, https://www.stockholmresilience.org/research/planetary-boundaries.html, https://www.who.int/news-room/questions-and-answers/item/one-health, etc…

[14] International policy, guidance, and targets also have a role to play in national and regional policy.

Throughout this action plan, national legislation will be set out within its relevant section, alongside the work that NCC are doing. It should be noted that while this document will give a good overview of the national legislative and policy landscape, this landscape is ever-changing and therefore regular reviews and updates[15] will be required.

There are three main pieces of legislation that have the most, over-arching effects on NCCs work on climate change mitigation and adaptation, together with the environment. These are: The Climate Change Act 2008, The Environment Act 2021, and the Levelling-up and Regeneration Act 2023.

The Climate Change Act 2008 – Requires that Carbon Dioxide and other greenhouse gas emissions are reduced, and that the UK adapts to climate change risks. It forms the base plan for how the UK will tackle and respond to climate change.

The Environment Act 2021 – Enshrines in law the protection and enhancement of the environment. The Act creates new powers and binding targets for the improvement of Air and Water quality, biodiversity, and waste reduction[16].

The Levelling-up and Regeneration Act 2023 – This act is, in effect, a new framework for the planning system. Ensuring developments result in more local infrastructure and enhanced environment. The Act prioritises regeneration in 'left-behind-communities[17]' and commits to addressing inequality. The Act also empowers local councils and communities and ensures devolution deals for all areas of England that seek one[18].

Table 1 below summarises the key elements of these three crucial pieces of legislation and how they impact Local Authorities in delivering climate change actions.

[15] The CCT will aim to produce annual climate change action plan updates.
[16] https://www.gov.uk/government/news/world-leading-environment-act-becomes-law
[17] https://www.gov.uk/government/news/new-laws-to-speed-up-planning-build-homes-and-level-up
[18] https://www.gov.uk/government/news/new-laws-to-speed-up-planning-build-homes-and-level-up and https://www.local.gov.uk/pas/our-work/levelling-and-regeneration-bill

Legislation	Scrutiny	Outputs of most relevance to NCC	How does it apply to NCC?	Relevant sections in Climate Change Action Plan
The Climate Change Act (CCA) - 2008	Climate change committee - independent, statutory body (established under climate change act 2008)	The government has a legal duty to act upon climate change by reducing UK GHG emissions and ensuring the UK is adapting to climate risks. The act is a framework for the delivery of these requirements.	The CCA Goal - Government to reduce UK greenhouse gas (GHG) emissions to at least 100% below 1990 levels before 2050 (e.g., net zero GHG emissions) The CCA Pathway - Carbon budgets and National adaptation programme. The CCA Toolkit - Government must bring forward policies. Monitoring of the above - the Climate Change committee	Throughout the action plan - especially 'emissions' and adaptation.
Levelling-up and Regeneration Act 2023	Levelling up, housing and communities committee - commons select committee (a cross-party group of current MPs, from the house of commons, used to hold government to account)	North East Combined Authority (NECA) Rural Growth and Stewardship Board Local Nature Recovery Strategy & Local Investment in Natural Capital pilot. Urban Green Space improvements.	Part 6 - Environmental outcomes reports	Environment - ecosystems and biodiversity Society - Planning
			Part 7 - Nutrient Pollution Standards	
			multiple funding streams	
			empower local leaders and communities to reimagine their urban green space and improve access for communities who lack it	
			The North East Devolution deal - and the NCC priority portfolio 'Environment, Coast and Rural'	The North East Devolution deal

Environment Act 2021	The Office for Environmental Protection - independent public body (established under the Environment Act 2021)	Legally binding environmental targets. New obligations on Local authorities; * Must publish Biodiversity report every 5 years * 10% Biodiversity Net Gain from planning. Simpler Recycling – requires provision of enhanced kerbside recycling services to cover a wider range of materials including glass, plastics, cartons & food waste.	Part 3 - Waste and resource efficiency	Environment - Waste
			Part 4 - Air Quality and environmental recall - Schedule 11 Local air quality management framework	Environment - pollution control (additional relevant legislation discussed in this section)
			Part 5 - Water	Environment - pollution control (additional relevant legislation discussed in this section)
			Part 6 Nature and Biodiversity - Biodiversity gain in planning. Biodiversity objective and reporting. Local nature recovery strategies. Conservation. Habitat regulations. Tree felling and planting.	Environment - ecosystems and biodiversity

Table 1 - Summary of key legislation impacting local authority climate change action authors own.

There are a number of key bodies set up to ensure that these pieces of legislation are being delivered successfully.

The office for Environmental Protection (OEP)[19] was created in November 2021, as part of the Environment Act 2021. The OEP are an independent public body with the powers to hold government and public authorities to account for their legal responsibilities to the environment. They also scrutinise environmental, laws, improvement plans, and targets; and provide advice to government.

The Climate Change Committee (CCC)[20] was established under the Climate change act (2008), they are an independent statutory body. They advise the government and report to parliament, regarding the progress the UK is making towards its legally binding climate change mitigation and adaptation targets.

In 2023 the Climate Change Committee published their report to parliament entitled *'Progress in reducing UK emissions'*[21]. The report contains 9 key messages for Government[22]:

- **A lack of urgency.** While the policy framework has continued to develop over the past year, this is not happening at the required pace for future targets.
- **Stay firm on existing commitments and move to delivery**. The Government has made a number of strong commitments, these must be restated and moved as swiftly as possible towards delivery.
- **Retake a clear leadership role internationally.** The UK will need to regain its international climate leadership.
- **Immediate priority actions and policies.** Action is needed in a range of areas to deliver on the Government's emissions pathway.
- **Develop demand-side and land use policies.** The Government's current strategy has considerable delivery risks due to its over-reliance on specific technological solutions, some of which have not yet been deployed at scale.
- **Empower and inform households and communities to make low-carbon choices.** Despite some positive steps to provide households with advice on reducing energy use in the last year, a coherent public engagement strategy on climate action is long overdue.
- **Planning policy needs radical reform to support Net Zero.** The planning system must have an overarching requirement that all planning decisions must be taken giving full regard to the imperative of net zero.
- **Expansion of fossil fuel production is not in line with Net Zero.** As well as pushing forward strongly with new low-carbon industries, net zero also makes it necessary to move away from high-carbon developments.

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[19] https://www.theoep.org.uk/
[20] https://www.theccc.org.uk/
[21] https://www.theccc.org.uk/wp-content/uploads/2023/06/Progress-in-reducing-UK-emissions-2023-Report-to-Parliament-1.pdf
[22] https://www.theccc.org.uk/publication/2023-progress-report-to-parliament/

- **The need for a framework to manage airport capacity.** There has been continued airport expansion in recent years, counter to our assessment that there should be no net airport expansion across the UK.

In January 2024 the Office of Environmental protection (OEP) published its annual report entitled *Progress in improving the natural environment in England 2022/2023*, in this report the OEP assess the Government's *Environmental Improvement Plan 2023* (EIP23) which forms part of the government's overarching 25-year Environment Plan. In this report the OEP states:

"*While government is largely off track to meet EIP23 ambitions, Environment Act targets and other commitments, these prospects are not fixed. There are many clear opportunities to change trends, make progress towards targets, and deliver significant environmental improvements.*[23]"

2.1.1.1. National Governance

Progress and governance of policy at a national level is important for the context of this action plan. Northumberland County Council stated when it declared a climate emergency in 2019, that it *'pledges to work with the Government to make Northumberland carbon neutral by 2030 whilst appreciating that this will require a concerted national shift in behaviours and significant technological advancements*[24]*'.* In its more recent update, which set out the scope and framework of this climate change action plan, NCC agreed '*a new target to work with Government and other key stakeholders to achieve net zero for all greenhouse gases for the county of Northumberland by 2040*[25]*'.* It should therefore be noted that progress towards Northumberland County Council's goals, can be best achieved with the support and collaboration of National Government.

The government's 2021 Net Zero strategy was judged by the High Court, to be deficient in detail and failing to comply with the Climate Change Act[26]. As such in 2023 government published additional detail in *The Carbon Budget Delivery Plan*[27]'.

In scrutinising the *Carbon Budget Delivery Plan*, the CCC continue to state a lack of confidence that the UK will meet its medium-term targets for emissions reduction[28]. It is stated that this is due to the government: continuing to delay policy development and implementation. The substantial lead times for many of the key actions (e.g., hydrogen storage, carbon capture etc…). The slow progress in areas such as low-

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[23] *Progress in improving the natural environment in England 2022/2023*, Page 13, Presented to Parliament pursuant to section 28(7)(a) of the Environment Act 2021, January 2024.

[24] https://northumberland.moderngov.co.uk/Data/Cabinet/201906111000/Agenda/42500_M9487.pdf

[25] https://northumberland.moderngov.co.uk/documents/s17415/04%20Setting%20the%20Scope%20and%20targets%20for%20Climate%20Change%20Action%20Plan%20202426.pdf

[26] https://hansard.parliament.uk/Lords/2022-07-21/debates/8622F9F7-D802-4FD0-9AD2-8AFD092510EA/NetZeroStrategyHighCourtRuling

[27] https://assets.publishing.service.gov.uk/media/6424b2d760a35e000c0cb135/carbon-budget-delivery-plan.pdf

[28] Progress in reducing UK emissions - 2023 Report to Parliament (theccc.org.uk)

carbon heating and tree planting. The CCC highlight that there needs to be a more realistic approach to delivery, a broadening of solution approaches and high-carbon activities need to be reduced.

Northumberland County Council will continue to work with government to deliver schemes to reduce emissions and adapt to climate change in Northumberland. The Council will also continue to respond to consultations and lobby for strong policy and funding to deliver on our climate change ambitions.

2.1.2. Regional Policy and Governance

Northumberland is in the unique position of being part of both a new devolution deal in the form of the North East Combined Authority, and a cross-border inclusive growth deal in the form of the Borderlands Inclusive Growth Deal.

Both deals have priority themes or objectives that complement and boost the aims of this Action Plan, a summary of each programme follows. In general, both programmes facilitate the flow of more investment and decision-making power into the North East and Borderlands regions.

2.1.2.1. Borderlands Inclusive Growth Deal

Established to unlock the potential for sustainable and inclusive economic growth, the Borderlands Partnership covers the local authorities in the south of Scotland and North of England which adjoin the border between the two nations. Its aim is to utilise approximately £452 million (of UK and Scottish Government funding) across the region and deliver towards the following themes: Improving places. Supporting businesses, innovation, and skills. Enabling infrastructure. Encouraging green growth[29] (summary shown in Figure 3).

The Borderlands programme has already funded projects in Northumberland such as:

- £5 million (total project value £15) towards the 'Lilidorei' playground at Alnwick Gardens
- £3 million (total project value £10.5 million) for Ad Gefrin Distillery
- £1.1 million Borderlands energy masterplan[30]. This 'Energy Investment Programme' is due to begin delivery from 2024 onwards
- 'Place programme', investing into towns and places across the borderlands based on the needs and vision of individual places
- Borderlands Digital Voucher Scheme – allowing 3283 properties to receive improved connectivity

[29] https://www.borderlandsgrowth.com/about
[30] https://f9fe864f-60e2-4750-8e30-6292bac0f6fe.usrfiles.com/ugd/785f79_2ec48506d448484aabc73f98c16a638a.pdf

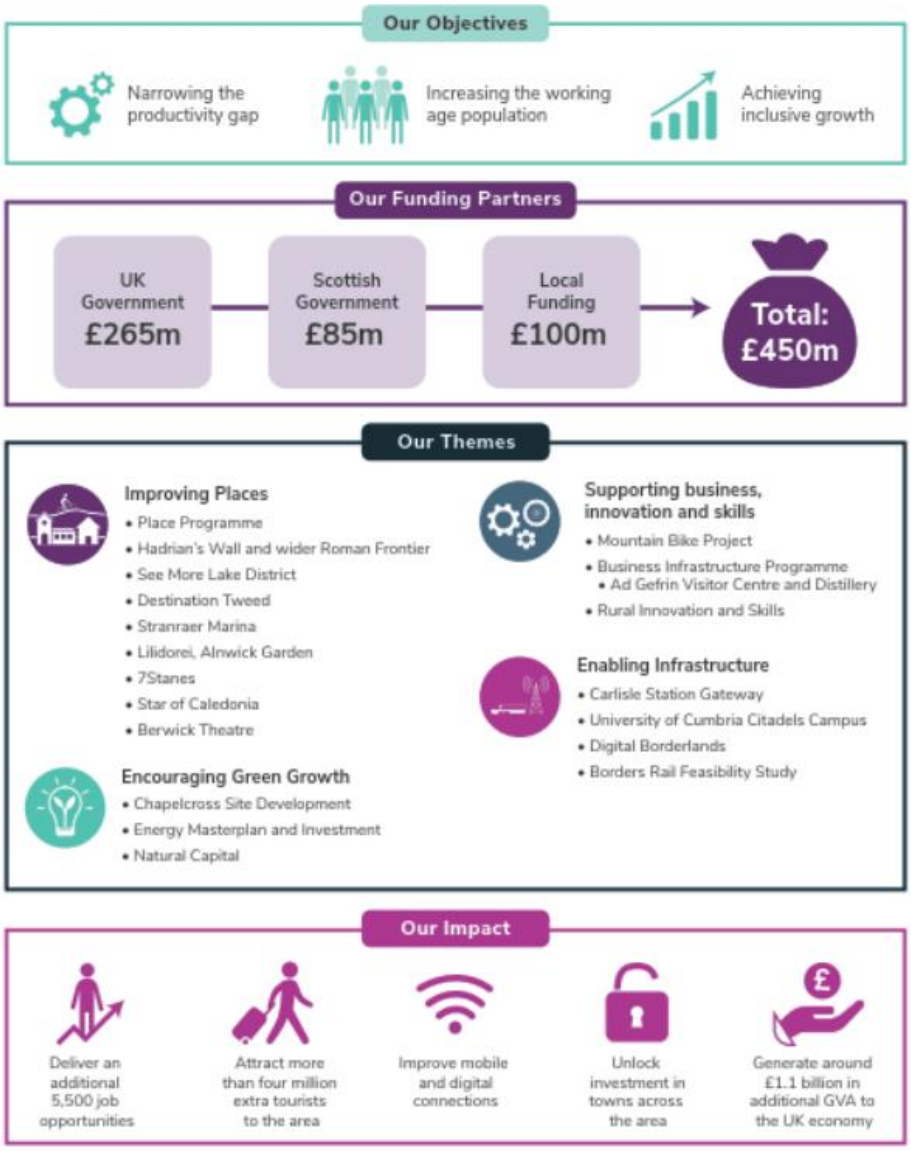

Figure 3 - summary of the Borderlands Inclusive Growth Deal, objectives, funding, themes and impacts.

2.1.2.2. The North East Devolution Deal

In 2018 the North of Tyne combined authority (NoT) devolution deal was formalised, followed by mayoral elections in 2019. The North of Tyne combined authority is a partnership of three local authorities, Newcastle, North Tyneside, and Northumberland and a directly elected Metro Mayor. The NoT is governed by a cabinet, made up of the mayor and elected representatives from each of the councils. Each member of the cabinet has a specific portfolio. The current representatives from NCC are Councillor Glen Sanderson, NCC Leader, Portfolio; Culture, Creative and Rural, and Councillor Richard Wearmouth, NCC Deputy leader, Portfolio; Clean Energy and Connectivity.

The NoT positioned itself to become a national exemplar for rural growth and stewardship. This led to the creation of the *North of Tyne Stewardship and Rural*

Growth Investment Plan[31], which was launched in early 2023. A summary of the vision, strategic outcomes, programmes, and activities planned under the Stewardship and Rural Growth Investment Plan is outlined in **Error! Reference source not found.**. There are many cross-cutting objectives between this programme and the NCC Climate Change programme and corporate plan.

North of Tyne Stewardship and Rural Growth Investment Plan					
Vision: By 2027 Northumberland will be seen as the UK's lead demonstrator of what clean, inclusive growth looks like in a thriving rural context. Our fresh approach will show how targeted investment in our environmental, economic and cultural assets can drive levelling up in rural communities. Delivering high quality jobs and opportunities for people from all backgrounds, and reduce the wealth and productivity gap. While simultaneously enhancing the natural environment and delivering a great quality of life for current and future generations. We will demonstrate how rural areas can lead the way in providing solutions to the key UK and global challenges of our age. Including climate change, nature recovery, food and energy security, health and wellbeing and levelling up wealth and opportunity.					
Strategic Outcomes: SO1 - levelling up prosperity and opportunity SO2 - Achieving Net Zero Carbon Growth SO3- Supporting a Place-based approach to Land Management SO4 - Improving wellbeing and quality of life		**SO1**	**SO2**	**SO3**	**SO4**
Programmes:	**Activities:**				
1. Decarbonisation, Biodiversity and Resilience	1.1. Advice, support and investment for land-based industries to change land use, adopt low carbon measures, support biodiversity, and address resilience (agriculture, forestry/woodlands). 1.2. Northumberland green finance plan. 1.3. Net Zero visitor attractions and transport. 1.4 Carbon reduction and biodiversity demonstrators (model farm; woodland; home)		■	■	
2. Rural Energy	2.1. Advice, support, investment for rural households and businesses to transition to renewable energy. 2.2. Retrofitting rural homes and businesses. 2.3. Community energy projects and district heat networks.	■	■		■
3. Skills and Jobs	3.1. 'Green skills' needed to deliver decarbonisation and land use change. 3.2. Rural sector skills pathways (land-based, tourism). 3.3. Employability and in-work support reaching all rural communities	■	■	■	■
4. Business Growth	4.1. Rural Enterprise Support (growth, sustainability, start-up, scale-up). 4.2. Business collaboration and clusters.	■			
5. Rural Innovation	5.1. Businesses and communities collaborating to solve rural specific challenges and opportunities ('rural sectors' and 'place' specific). 5.2. Advice collaboration, investment to help rural businesses adopt latest technologies.	■	■	■	
6. Quality of Place	6.1. Infrastructure investment in rural places (e.g. businesses accommodation; visitor infrastructure; cultural and heritage assets; community infrastructure; public realm; skills facilities).	■			■
7. Physical Activity and Wellbeing	7.1. Scaling-up wellbeing activities: volunteering; outdoor activities and exercise; social networks; social and green prescribing (for Northumberland and NoT residents). 7.2. Campaign to attract younger, working age people to Northumberland (quality of life).	■		■	■
8. Community Housing and Transp	8.1. Bringing together rural communities and housing associations to encourage and plan investment in house building in specific places. 8.2. Innovation challenges to solve transport problems; testing solutions from other areas.	■			■
9. Rural Evidence Base	9.1. Enhancing the rural evidence base to support evidence-led investment (including targeted research, evaluation, dissemination, learning from other areas).	■	■	■	■

Table 2 -Summary of North of Tyne Stewardship and Rural Growth Investment Plan, authors own.

In April 2024, the North of Tyne Combined Authority will cease to exist, and the region will become part of the larger, North East Combined Authority. This devolution deal will transfer powers and a £1.4 billion investment fund (over a 30-year period) from central government to the seven north east Local Authorities.

There are ten priority areas identified for the new devolved administration.

[31] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Economy-and-Regeneration/RAMP/231102-RAMP-Call-Specification-and-Guidance.pdf

Seven of these priorities make up dedicated portfolios, allocated to each of the respective Council leaders. There are also three cross-cutting issues; net zero, digital, and public sector reform[32].

Northumberland County Council will lead the portfolio of 'Environment, Coast and Rural', which will be owned by the leader of the Council.

This portfolio will allow Northumberland, and the wider North East region, to continue with the ambitions reached and delivered under the North of Tyne Stewardship and Rural Growth Investment Plan. Further complementing the overarching aim for the region; to become a UK rural exemplar, where rural growth and environmental stewardship are placed at the heart of the region's growth.

The ambition of the 'Environment, Coast and Rural' portfolio is to accelerate investment into the region's natural assets and deliver environmental, social, and economic benefits. Providing targeted mitigation and adaptation strategies for the major challenges and risks facing the region. These risks stem from the interconnected issues of; climate change, nature recovery, food, energy and levelling up prosperity.

A summary of the priorities for action and investment, from both the Environment, Coastal and Rural portfolio, and other portfolios, is summarised in Table 2.

Priorities for the Environment, Coast and Rural Portfolio	
Investing in nature and biodiversity	Utilising a unified approach to the development and implementation of Local Nature Recovery Strategies, sharing expertise, good proactive and resources.
Targeting our coastal and associated freshwater areas	Taking a coordinated approach to boosting resilience in the face of climate change whilst unlocking the low-carbon economic opportunities of the sea and our rivers.
Supporting rural business growth	Developing rural-specific solutions to growth challenges. For example, rural hubs where homeworkers and microbusinesses can access high quality broadband. Skills for rural businesses and workforce, etc...
Improving food security	Identifying opportunities to improve the local supply chain from field to fork whilst extending consumption choices to improve diets and reduce food waste.
Promoting wellbeing and a sense of place	Adopting innovative, place-based approaches that optimise the value of our unique natural and cultural assets and thereby improve the opportunity and prosperity within our communities.
Relevant priorities from other NEMCA portfolios	
Rural Infrastructure	Ensuring specific solutions for rural housing, transport and digital infrastructure are addressed and prioritised in NEMCA's infrastructure portfolios.

[32] North East Deeper Devolution Deal (publishing.service.gov.uk)

Visitor economy	Investing simultaneously in the regions urban, rural and coastal visitor offers and infrastructure, recognising the importance of rural and coastal areas in the overall appeal of the region.
Economic growth and investment	Ensuring the rural economy receives investment and support as an integral and essential asset in the regional economy and isn't seen as separate to, or less important than, the urban economy.
Quality of place	Ensuring rural and coastal towns and villages are prioritised for place-based and regeneration investment alongside urban areas.
Net zero and decarbonisation	A fully integrated role for nature or the environment, and rural and coastal areas, in decarbonising the North East.

Table 2 - relevant priorities for action and investment under the North East Mayoral Combined Authority devolution deal

2.1.3. Northumberland County Council Policy, Strategy and Governance

Embedding climate change mitigation and adaptation together with the environment throughout all NCC working is key to successfully achieving the goals of this action plan. This will be achieved through robust and relevant policy and governance, to guide decision making and actions, while also helping to hold decision makers to account.

2.1.3.1. Policy and governance 2021-23

Northumberland County Council underwent a process of review and restructure of its senior management between 2021 and 2023. This was largely driven by the recommendations of the *Independent Governance Review* completed in Spring 2022 ('The Caller Report')[33]. During this time, officers continued to deliver exemplary levels of service to Northumberland's residents, as highlighted within the report. Indeed, the climate change programme achieved many successes during this period. There were, however, unforeseen impacts on the Policy action area of the previous *Climate Change Action Plan 2021-23*[34].

Northumberland County Council has begun a new period of stability, executive leadership and enhanced transparency which will benefit the aims of the *Climate Change Action Plan 2024-26*.

2.1.3.1.1. Climate Change Policy Thematic Group

The Climate Change Policy Thematic Group (CCPTG) met on a regular basis throughout 2021-2022. As outlined in the previous *Climate Change Action Plan 2021-23*, their role was to provide insight and advice on policy development. The CCPTG aimed to ensure a consistent and ambitious approach to tackling climate change, and make sure that core climate ambitions were built into all new policy.

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[33] https://northumberland.moderngov.co.uk/documents/s11106/02.2%20NCC%20Governance%20Review%20finalwatermarkcopy.pdf

[34] https://www.northumberland.gov.uk/Climate-Change/Climate-Change.aspx

The CCPTG helped create a platform for cross-organisational collaboration and information sharing on sustainability and climate change issues. As the climate change programme has evolved it was found that specific areas of policy development were better targeted in a more focused manner while the climate change programme was in its development phase, as such the policy group was discontinued having fulfilled its initial objectives.

Specific working groups or points of contact have now been set up which ensure climate change is considered and embedded in strategically important areas of the organisation such as planning, public health, rural growth and energy.

2.1.3.1.2. Carbon Impact Assessments

In 2020 NCC Cabinet agreed that "*In order to ensure Councillors make informed decisions when considering the climate change implications of a proposed policy coming to cabinet and full council, it will be necessary to undertake a carbon assessment for each policy decision*[35]."

The climate change team have strived to ensure that this policy was implemented. Between 2021 and 2023, 47 carbon Impact Assessments were completed, either for changes in existing policy, or new policies. Whilst helpful in ensuring informed decision making, this is a small proportion of all policy decisions covered by cabinet.

During the period covered by the previous *Climate Change Action Plan 2021-23*, the role of carbon impact assessments at NCC has required a necessary evolution. The following barriers were discovered:

- officers are unaware of carbon impact assessments and therefore didn't complete them
- lacking governance processes to check that they are done, followed up etc
- requirements on officers to complete multiple impact assessments when developing policy and projects

To counteract the barriers found in delivery of carbon impact assessments, NCC has decided to trial and implement 'integrated impact assessments' (see section 2.2.1.2 for more detail).

By adopting this approach, the following can be achieved:

- policy and projects to be viewed holistically
- leverage gained from cross-department thinking and working
- less work and confusion for completing officers

To streamline the process of impact assessing the hope is that projects will be viewed in an increasingly holistic way. By combining emissions reduction, adaptation, environment, health and wellbeing and inequalities into an Integrated Impact Assessment Tool. This will equip officers and councillors to better understand

[35] http://committeedocs.northumberland.gov.uk/MeetingsDocs/47740_M10833.pdf

the co-benefits, consequences, risks, and interactions, resulting from policies and projects.

Consideration of climate change and the environment will be built into the integrated impact assessment process from 2024 onwards.

2.1.3.2. The Northumberland County Council Corporate Plan

The 2023 to 2026 corporate plan[36] is the council's main strategic planning document and is a clear statement of the vision, strategic aims and policy priorities of the authority. NCCs plans, priorities, outcomes, and values are outlined in Figure 1. The three corporate priorities for NCC are:

- achieving value for money
- tackling inequalities
- driving economic growth

Climate change adaptation, mitigation, and the environment, intersect all three priorities and provide key pillars of support for their achievement.

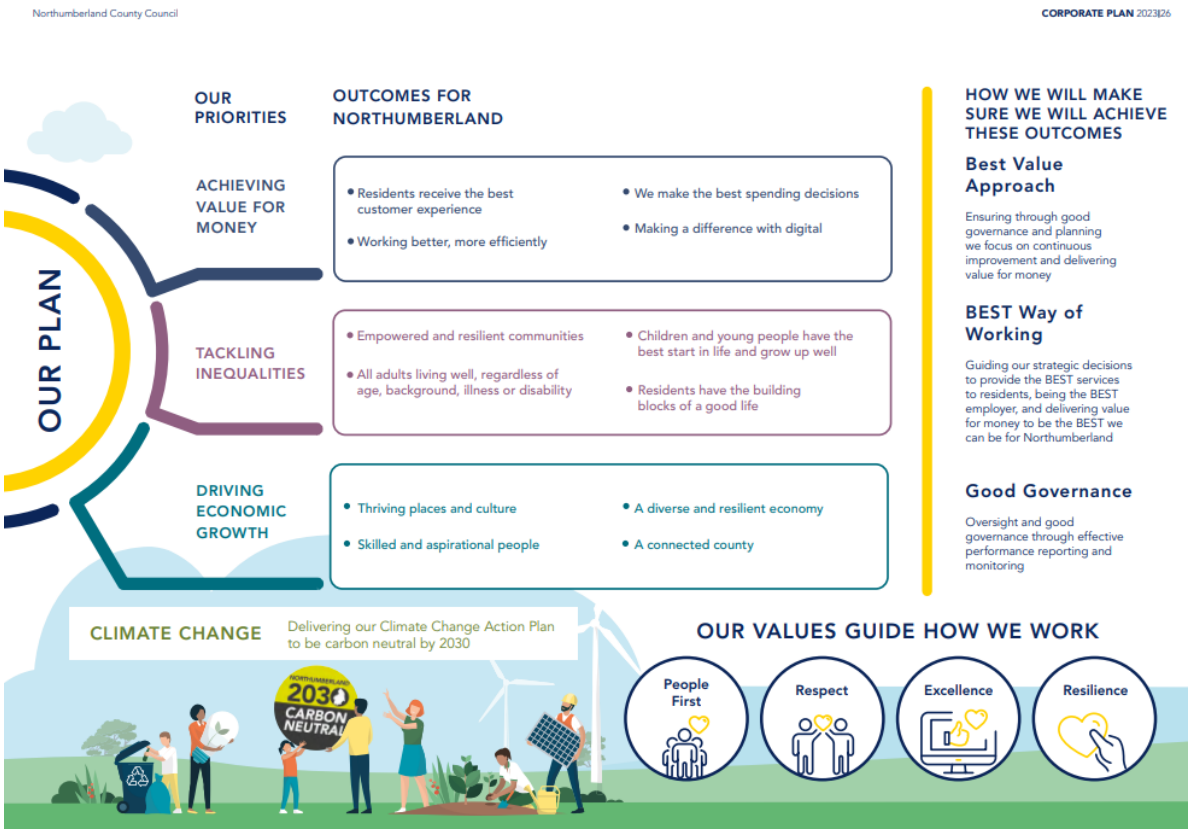

Figure 1 - Northumberland County Council Corporate Plan 2023-26 overview.

Climate change and the environment are embedded throughout the three corporate priorities, ensuring that the ambitions of both this Action Plan and the aligning plans for the environment, are considered at the highest level of planning for the authority.

[36] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/About-the-Council/Policy%20and%20priorities/CORPORATE-PLAN-2023-26.pdf

A summary of the interactions between the corporate priorities and climate change can be found in the following Tables 4,5 and 6.

Corporate priority - Value for Money. Continually looking for opportunities to make more impact and create more value from all our decisions.		
Net Zero, sustainability and climate change As one of the largest employers in Northumberland, NCC can become a leading example on low carbon approaches.		
What we will do	**Impacts**	**How to measure progress?**
1.1 reduce energy use across NCC estate	NCC provide practical examples of how to become a Net zero employer- which can be replicated by other employers in the county. Contributing to the decarbonisation of the grid by renewable energy generation Fulfilling out obligations as a landlord to ensure our buildings reach regulatory standards for energy efficiency.	Measure and reporting the amount of Gas and Electricity used across the NCC estate. Measure and reporting the electricity generated by the council estate. The energy efficiency ratings of buildings across the estate. Number of staff completing climate change training. Number of electric vehicles n the fleet. Reduction in single use plastic and other disposable items.
1.2. All new NCC buildings built to net zero operation as a minimum standard where possible retrofit existing NCC properties to net zero operation		
1.3 Ensure all NCC properties meet the regulatory energy performance standards and are ready for low carbon heating solutions.		
1.4 Ensure our land, buildings and communities are able to withstand the impacts of climate change.		
1.5 Increase the amount of energy generated across the council estate.		
1.6 Introduce changes to salary sacrifice scheme to incentivise take up of low carbon technology.		
1.7 Ensure any council woodland lost to re-development is replaced twofold, and managed effectively to provide the maximum carbon and biodiversity net-gains.		

Table 4 summary of pages 16-23 of NCC Corporate Plan 2023-26[37], authors own.

[37] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/About-the-Council/Policy%20and%20priorities/CORPORATE-PLAN-2023-26.pdf

Corporate priority - Tackling inequalities NCC want to reduce the gap in experiences our residents have across health, education, employment and social outcomes.		
Net zero, sustainability and climate change Climate change threatens to disproportionately affect out poorest area,, and climate policies which are too burdensome for the poorest in society could have an unwelcome effect on inequality. Mitigating and adapting to climate change is a necessary condition for sustainable improving living standards.		
What will we do?	**Impacts**	**How to measure progress?**
2.1. Engage with communities, working with them to identify and deliver solutions that reduce carbon emissions and adaptations that reduce the impact of changes to our climate. 2.2. Help residents with the greatest need to reduce energy and heating costs through retrofit and home improvements. 2.3. We will prioritise residents who are eligible for national government funded grants (e.g. HUG, SHDF, ECO). In time we hope this will also be able to help residents who want to fund their own home improvements. 2.4. Introduce changes to salary sacrifice scheme to incentivise take up of low carbon technology. 2.5. Ensuring any council owned woodland lost to re-development is replaced twofold, and managed effectively to provide the maximum carbon and biodiversity net-gains.	Improved energy performant of social housing stock. Improved energy performance of privately owned housing stock, including privately rented properties. Access to affordable low carbon heating solutions.	Improvement in average energy performance ratings for domestic properties. Number of home upgrades and retrofits completed. Number of homes using a low carbon heat source.

Table 5 summary of pages 24-33 of NCC Corporate Plan 2023-26[38], authors own.

[38] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/About-the-Council/Policy%20and%20priorities/CORPORATE-PLAN-2023-26.pdf

Corporate priority - Driving Economic Growth To benefit everyone across Northumberland's making the county a great place to live with opportunities for all residents, in both towns and countryside.		
Net zero, sustainability and climate change Net zero is the growth opportunity of the 21st century. Northumberland can get a huge boost from the low carbon economy, and we are already creating the foundations as we work to become carbon neutral. We are uniquely placed to lead the way for the UK as a rural county with an industrial heritage and emerging low carbon economy.		
What will we do?	**Impacts**	**How to measure success?**
3.1. Deliver district heating solutions for our eight major towns through a private sector partnership. Helping to secure investment from the established Northumberland business community, especially those focused on manufacturing and power generation. 3.2. Create a new wave of low carbon employment needed to design, build, operate and maintain our district heating infrastructure. 3.3. Build community partnerships that are empowered to 'design, build, operate and maintain; community owned district heating solutions. Specifically targeting rural communities that are not on the Gas-grid. 3.4. Continue to build accessible electric vehicle charging infrastructure. 3.5. Support improvements to the county's infrastructure as we adapt to changes in the climate.	Providing additional opportunities for economic growth and stability of the county's largest employers. Providing access to the low carbon economy for new entrants to the county and existing small/medium enterprises who will need to pivot into the low carbon economy. Providing accessible low carbon heating solutions for businesses and residents as fossil fuel heating solutions are phased out by central government. Encouraging residents and visitors to make the switch to electric vehicles, helping to reduce tail pipe emissions and facilitate access to the rural economy.	Number of large employers engaged in district heating schemes. Number of off gas grid communities engaged in district heating schemes. Number of households and businesses that will be in scope for district heating solutions as they are rolled out. Carbon dioxide savings that can be targeted through district heating schemes. Electric vehicle charger usage.

Table 6 summary of pages 34-41 of NCC Corporate Plan 2023-26[39], authors own.

2.1.3.3. BEST Transformation

As shown in Figure 1, which summarises the corporate plan; 'how' NCC will make sure to deliver on its priorities and changes is through the BEST transformation work. BEST is the NCC approach to make sure that all services delivered by NCC also deliver best value and impact for Northumberland's residents. This approach is made up from seven workstreams:

- BEST services to customers
- BEST use of assets
- BEST value for money
- BEST use of technology
- BEST in class commissioning (procurement)
- BEST talent and opportunities
- BEST use of resources

In the previous *Climate Change Action Plan 2021-23*, the role of service reviews was highlighted as a policy route towards the embedding of climate change mitigation and adaptation throughout Councils; by making sure policy, spending and functions are aligned with Net Zero strategy.

[39] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/About-the-Council/Policy%20and%20priorities/CORPORATE-PLAN-2023-26.pdf

Service level planning is key to achieving BEST value. As set out in the corporate plan…

> "*Service plans set out clear accountability for how service priorities, improvements and delivery will achieve the council's strategic priorities. They are a cornerstone of delivering value for money and effective performance management as they cover how impact will be measured to ensure we are using our resources, finances, people, skills, and assets efficiently and effectively. Performance and impact are regularly reviewed and reported in the Council Performance Reports providing a mechanism by which managers, members and officers can focus on performance and improvement, and track progress.*"
>
> *NCC, Corporate Plan 2023, pg.14*[40]

As BEST is taken forward through various workstreams and activities, such as Service Reviews and Value for Money Assessments, the need for climate change mitigation, adaptation and alignment with Environmental policy remains a key priority.

2.1.3.4. Procurement

Northumberland County Council's procurement corporate social responsibility (CSR) policy was introduced by the procurement team in 2021[41]. As highlighted in the previous *Climate Change Action Plan 2021-23* this policy helps NCC to realise its ethical and moral responsibilities to help mitigate against the climate and environmental emergencies.

Northumberland County Council spends a significant amount of money each year on procured goods, services and works. The CSR supports the council to achieve value for money, on a whole-life cost basis. Generating greater benefits for Northumberland's society and economy, while also reducing damage to the environment.

The Corporate Social Responsibility policy provides guidance and decision-making tools for NCC officers who are procuring goods, works or services. Officers can employ the six CSR commitments to make sure that NCC procures sustainably in terms of social, environmental, and economic measures and benefits. NCC's six core social responsibility commitments are shown in Figure 2.

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[40] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/About-the-Council/Policy%20and%20priorities/CORPORATE-PLAN-2023-26.pdf

[41] https://www.northumberland.gov.uk/Business/Suppliers/General.aspx#:~:text=This%20Council%20has%20recently%20approved,creating%20an%20improved%20social%20impact.

Figure 2 - NCC's corporate social responsibility commitments[42].

2.2. Public Health and Wellbeing

The climate change and the ecological crisis are also public health issues. How these sectors interact at NCC will be discussed in the following section.

Public health[43] can be defined as "*The science and art of promoting and protecting health and wellbeing, preventing ill-health and prolonging life through the organised efforts of society*" (UK faculty of Public Health[44]). The various strands of work done by Public Health services can be split into[45]:

- **Improvement** – supporting people to live longer and in better health, through changes to lifestyles and reducing inequalities.

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42 https://northumberland365.sharepoint.com/sites/StaffPortal/Shared%20Documents/Forms/AllItems.aspx?id=%2Fsites%2FStaffPortal%2FShared%20Documents%2FProcurement%2FProcurement%20CSR%20Policy%20APPROVED%2Epdf&parent=%2Fsites%2FStaffPortal%2FShared%20Documents%2FProcurement&p=true&ga=1

43 The UK has two main governmental public health bodies. The UK Health Security Agency (UKHSA) and Office for Health Improvement and Disparities (OHID). In general, the HAS deals with acute health risks or threats, and the OHID deals with chronic risks to health and wellbeing.

44 https://www.fph.org.uk/what-is-public-health/

45 https://www.local.gov.uk/sites/default/files/documents/resource-sheet-2-understa-b9d.pdf

- **Protection** – being prepared for emergencies, environmental or health hazards and protection from infectious disease.
- **Services** – providing and planning health care, and services, for the population.

The delivery of Public Health services is a statutory duty for local authorities in the UK. These duties stem from more than 24 different legislative Acts[46]. In Northumberland the public health service helps the people of Northumberland to stay healthy and avoid getting ill, while also reducing health inequalities in the county[47].

The ethos, aims and priorities of public health services, climate change action and the protection of our environment, are aligned. Figure 3 shows the inter-connectedness of human health and wellbeing and the risks caused by the climate change and ecological crises.

Figure 3 - climate, ecosystems and human society as coupled systems[48] - from the Intergovernmental panel on Climate Change.

The UK association of directors of public health describe climate change as…

> "…*the single biggest health threat facing humanity. It is endangering the environment around the world and causing damage to the economy. It is*

[46] https://www.gloucestershire.gov.uk/council-and-democracy/data-protection/service-specific-privacy-notices/legislation-used-in-public-health/
[47] https://beta.northumberland.gov.uk/public-health
[48] https://www.ipcc.ch/report/ar6/wg2/downloads/report/IPCC_AR6_WGII_SummaryForPolicymakers.pdf

affecting the present and future and environmental determinants of good health – shelter, water, and food supply.[49]"

They also highlight the transboundary nature of climate change as a public health crisis[50].

One Health is a unified approach, supported by the world health organisation[51], that recognises that human, animal, and ecosystem health is closely interlinked[52]. As such, people and sectors working in these fields must work together closely, share information, and coordinate their activities. The One Health approach is part of international agreements[53] that include the UK. The One Health approach has also been adopted by NCC, in the Environmental Policy Statement 2023[54], and in this *Climate Change Action Plan 2024-2026*.

There are many co-benefits from climate change mitigation and adaptation, for human, planetary and environment health, for example:

- decreasing inequalities
- increased resilience to extreme weather stresses
- increased resilience to infectious diseases, antimicrobial resistance and insect borne diseases.
- decreased pollution of our air, land, and water
- food security and good quality nutrition for everyone
- comfortable homes and reduced fuel poverty
- increased active travel.
- allowing people to age well[55]

Northumberland County Council is committed to tackling inequalities within the county's population, this is one of the main priorities of the Corporate Plan and the public health team[56]. In 2022 an Inequalities plan[57] for Northumberland was agreed[58]. This plan brings together NCC, the NHS, third sector and business, to work together to tackle inequalities in Northumberland. This plan provides targeted

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[49] https://www.adph.org.uk/wp-content/uploads/2023/06/Formatted-FINAL-Climate-Change-Policy-Position-Statement-1.pdf
https://www.imperial.ac.uk/media/imperial-college/grantham-institute/public/publications/briefing-papers/Co-benefits-of-climate-change-mitigation-in-the-UK.pdf
[50] https://www.who.int/news-room/fact-sheets/detail/climate-change-and-health
[51] https://www.who.int/news-room/fact-sheets/detail/one-health
[52] https://post.parliament.uk/research-briefings/post-pn-0701/
[53] Sustainable Development Goals - https://wedocs.unep.org/handle/20.500.11822/43772 and
[54]https://northumberland.moderngov.co.uk/documents/s16884/03%20Environment%20Policy%20Statement.pdf
[55] https://beta.northumberland.gov.uk/documents/d/guest/director-of-public-health-annual-report-2023 (Aging well in Northumberland)
[56] Public Health - Northumberland County Council
[57] 03 Northumberland Inequalities Plan V04.pdf (moderngov.co.uk) & https://unfccc.int/process-and-meetings/the-paris-agreement
https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Health-and-social-care/Public%20Health/_Northumberland-Public-Health-Strategic-Plan-on-a-Page-2020-2023-V2.pdf
[58] Northumberland County Council - Partners sign up to Inequalities Plan

routes to deliver the main themes outlined within the Northumberland joint health and wellbeing strategy[59] 2018-2028, (JHWS).

The aims and work being completed around the CCAP, complement many of the themes and priority areas highlighted within the JHWS, e.g. Fuel poverty[60], sustainable transport, and resilient communities. It is this conflation of policy aims where, currently there is the most interconnectivity between these two teams.

2.2.1. Current and future focus

Throughout the *Climate Change Action Plan 2021-2023* the climate change team have worked closely with the public health teams where relevant. This included a working group around fuel poverty and warmer homes for Northumberland, where multiple NCC teams regularly met and worked with other stakeholders (including third sector) from Northumberland. With the new corporate plan, and other key policies such as the health and wellbeing strategy, the working relationship between the climate change team and public health teams will become stronger. Several collaborative areas of work have already commenced:

2.2.1.1. Health and Wellbeing Board

As of 2024 an officer from the climate change team now attends the Health and Wellbeing Board.

This will ensure that the officers with expertise in the current and future climate risks, emissions reduction methods etc. are available to support and shape decisions made by the board.

The new Climate Change Action Plan 2024-26 will be introduced to the Health and Wellbeing Board once approved.

2.2.1.2. Integrated Impact Assessments.

The public health priority to reduce health inequalities is interconnected with key aims of this climate change action plan in terms of environmental inequalities[61], and the unequal effects of climate change on UK households[62].

NCCs public health team published the *Northumberland Inequalities Plan 2022-2032*[63], which is a statement of intent to work on reducing inequalities in Northumberland across the next 10 years. The decision to begin the creation of a new system to help decision making and governance processes at NCC around inequalities, stems from the report principles:

- 1. Looking at everything through an inequality's lens.
- 4. Enhancing services to ensure equity in access to opportunity.

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[59] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Health-and-social-care/Public%20Health/Northumberland-CC-Health-and-Wellbeing-17-12-19-2.pdf
[60] JSNA 2022 v1.0 | Tableau Public

[61] https://www.gov.uk/government/news/environmental-inequality-must-not-be-ignored
[62] https://link.springer.com/article/10.1007/s11356-023-27342-1
[63] 03 Northumberland Inequalities Plan V04.pdf (moderngov.co.uk)

Alongside these principles is theme four[64] of the report's action plan. Specifically, action 4.2 "Equity reviews as part of all action plans, strategy development, work programme. Adapt service delivery according to results (move beyond only equality impact assessment)"[65]. Many aims of this report suggested that a new tool to aid decision making around inequality and equity was needed.

As the public health team were exploring new ways to foreground equity in decision making, the CCT were experiencing challenges with the Carbon Impact Assessments (described in section 2.1.3.1.2.). A combination of the barriers to engagement with CIAs, and the Public Health team's new inequality aims, led to the proposal for NCC to start exploring integrated impact assessments as a tool to deliver many of these actions and aims.

Streamlining the process of Impact assessments, will allow projects to be viewed in an increasingly holistic way.

By combining emissions reduction, adaptation, environment, health and wellbeing and inequalities into an Integrated Impact Assessment Tool, officers and councillors will be better equipped to understand the co-benefits, consequences, risks, and interactions, resulting from policies and projects.

NCC are now in the process of introducing a new Integrated Impact Assessment (IIA) tool into the decision making and governance processes at the council. The project is being led by the public health team with support from the climate change team, Northumberland communities together, the children, young people and families service, community services, finance, strategic change and service improvement, Welfare rights team, and the Human resources team.

The IIA tool will help centre equality and equity considerations at the heart of council working. Ensuring that council strategies, policies, services, and functions deliver as intended, and for everyone. The IIA will build on and encompass the existing Equality Impact Assessments (EIA) and Carbon Impact Assessments (CIA). IIA assessments will allow for informed reviews of the potential impacts of NCC activities on inequalities (e.g. will the activity reduce or widen inequality?) The IIA will look at the impacts on:

- the public sector equality duty
- the United Nations universal declaration of human rights
- other groups experiencing inequalities
- socio-economic and digital inequalities
- population health and health inequalities
- environment, climate, and sustainability

The process of undertaking an IIA (and the available training to facilitate this) will help NCC staff make equitable decisions. By recognising that each person, and/or

[64] 03 Northumberland Inequalities Plan V04.pdf (moderngov.co.uk)

[65] Page 13 - 03 Northumberland Inequalities Plan V04.pdf (moderngov.co.uk)

community exists within a specific set of circumstances, which require different levels of resources, and/or opportunities, to make sure that all people can achieve equal outcomes in life.

The IIA will not eliminate all impacts on inequality, climate change and the environment, however it will ensure that these crucial factors are given due consideration. This will help NCC improve and develop its decision-making processes. By fostering the development of an organisational 'inequalities' lens, that shapes council activities using intelligence, insight, and evidence. Helping NCC assess impacts and better understand potential positive, negative, or neutral impacts and to then become a better employer, service provider and civic institution.

The climate change team will continue to work closely with public health and the other internal teams supporting the creation of the new IIA tool.

2.3. Planning

The planning system manages the development of land and buildings. It has a crucial role in ensuring that land use and development is sustainable and contributes to the mitigation of and adaptation to climate change.

As the local planning authority for the area of the county outside of the Northumberland National Park, Northumberland County Council is responsible for administering the operation of the planning system across this area. These responsibilities include preparing and implementing a Local Plan, supporting communities to prepare neighbourhood development plans, and determining planning applications for new development.

2.3.1. The Northumberland Local Plan

The Northumberland Local Plan[66] forms part of the statutory development plan for the County alongside the Neighbourhood Plans prepared by the Town and Parish Councils. It guides the type and location of new development and is used in making decisions on planning applications.

Local planning authorities are bound by the legal duty in Section 19 of the 2004 Planning and Compulsory Purchase Act[67] (as amended) to ensure that, taken as a whole, local plan policies contribute to the mitigation of, and adaptation to, climate change.

The Northumberland Local Plan takes a proactive approach to mitigating and adapting to climate change, considering the long-term implications for flood risk, coastal change, water supply, biodiversity and landscapes, and the risk of overheating from rising temperatures.

There are several policies in the plan supporting the future resilience of communities and infrastructure to climate change impacts. Detail will be given as to how the plan aligns to each of the priority action areas below.

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[66] https://www.northumberland.gov.uk/Planning/Planning-policy/Plan.aspx

[67] https://www.gov.uk/guidance/plan-making#:~:text=Section%2019(1B)%20%2D%20(,(taken%20as%20a%20whole).

2.3.1.1. Location of new development and transport

The policies in the Local Plan seek to direct new development to accessible locations that reduce reliance on travel by private car and which are likely to maximise sustainable modes of transport, including walking, cycling and the use of public transport. This will also help to ensure that NCC make best use of existing facilities and infrastructure, including through the re-use of existing buildings and previously developed land.

The policies also support the provision of additional electric vehicle charging infrastructure. Developers are encouraged to ensure that, early in the design process, they consider the routing for the future cabling of off-street household charging points in safe and accessible locations, to avoid costly and disruptive retrofitting.

Key Local Plan policies – Policy STP 1 (Spatial strategy) and Policy TRA 1 (Sustainable connections).

2.3.1.2. Sustainable design and construction of new buildings

The Local Plan (Policy STP 4) sets out that when determining planning applications, consideration will be given to how development proposals both mitigate climate change and contribute to reduced greenhouse gas emissions through reducing energy use, resource consumption and incorporating decentralised, renewable and low carbon energy where possible.

Policy QOP 5 of the Local Plan specifically addresses sustainable design and construction of new development. Development will be supported where it can address the various opportunities identified in the policy, such as:

- passive design measures, which respond to climatic conditions
- using locally sourced, recycled and energy efficient building materials
- measures to reduce waste during construction and providing space for the segregation of waste for re-use and recycling during the life of the development
- incorporating small-scale low carbon or renewable energy generation
- connecting to district energy networks, where feasible and viable to do so

In addition, the plan supports the re-use and renovation of existing buildings.

Key policies - Policy QOP 5 (Sustainable design and construction), Policy HOU 1 (Making best use of existing buildings), Policy STP 3 (Sustainable development) and Policy STP 4 (Climate change).

2.3.1.3. Renewable energy

The Local Plan has policies dealing specifically with renewable and low carbon energy generation developments. The policies are applicable to a range of renewable and low carbon energy technologies, including anaerobic digestion, biomass, heat pumps, hydro, onshore wind and solar photovoltaics.

The plan supports such developments, whilst ensuring that the objective to maximise the generation of renewable and low carbon energy is balanced with other planning considerations such as the need to protect Northumberland's environment, communities and businesses from any adverse impacts associated with development. Policy REN 2 of the Plan recognises the particular sensitivities associated with onshore wind energy development and the approach in national planning policy.

In addition, the Local Plan supports development that incorporates small-scale renewable and low carbon energy generation. This could include, for example, incorporating solar photovoltaics and/or heat pumps into the development to supply it with renewable energy. It could also include connecting to a district heat energy network.

Key policies - Policy REN 1 (Renewable energy), Policy REN 2 (onshore wind energy), Policy QOP 5 (Sustainable design and construction) and Policy STP 4 (Climate change).

2.3.1.4. Protection of carbon sinks

The Local Plan recognises that natural habitats such as peat bogs and woodlands provide important carbon sinks. The policies in the Local Plan seek to protect and enhance these habitats. In relation to peat extraction, the Local Plan does not support any future extraction in order to protect peat habitats for their nature conservation value and their role as a carbon store.

Key policies - Policy ENV 2 (Biodiversity and geodiversity), Policy MIN 13 (Peat extraction) and Policy STP 4 (Climate change)

2.3.1.5. Building resilience and adapting to climate change

The Local Plan includes policies to support future resilience to climate change and adaptation. This includes, for example, taking account of the long-term implications for flood risk and coastal change in considering the location of new development.

In addition, new developments are required to consider how they can:

- incorporate the use of sustainable drainage systems to minimise and control surface water run-off
- incorporate multi-functional green infrastructure which can help reduce the heating of the urban environment and manage flooding
- reduce demand on water resources
- incorporate design measures which respond to anticipated climatic conditions to ensure efficient heating, cooling, and ventilation

Key policies - Policy STP 3 (Sustainable development), Policy STP 4 (Climate change), Policy STP 6 (Green infrastructure), Policy QOP 5 (Sustainable design and construction), Policy WAT 3 (Flooding), Policy WAT 4 (Sustainable drainage systems) and Policy WAT 5 (Coastal change).

2.3.2. The role of neighbourhood plans

Neighbourhood planning was introduced by the Localism Act in 2011[68]. It allows Parish and Town Councils to produce neighbourhood plans for their areas, which can put in place a strategy and planning policies to guide future development.

Parish and Town Council's can decide whether or not they wish to prepare a neighbourhood plan and the planning matters that their plan can address. Neighbourhood plans may deal with a wide range of social, economic and environmental issues (such as housing, employment, design, heritage and transport) or it may focus on one or two issues only.

Whilst the Local Plan covers the whole county, a neighbourhood plan will be focused on the needs of the specific neighbourhood area and allows the local community to specify what they expect from development. There is scope for neighbourhood plans to have locally specific policies to address climate change and add value to those policies in the Local Plan.

Examples of how they can do this include:

- identify specific sites for renewable energy schemes, such as a solar PV development, wind turbine or hydro-power projects
- protecting and enhancing local green infrastructure
- policies on building design to support measures that maximise thermal efficiencies and use renewable energy
- policies to support the prioritisation of walking and cycling in new developments
- policies to support public transport infrastructure, space for cycle parking and provision of EV charging

There are currently 24 made[69] neighbourhood plans in the County[70]. These plans have been brought into legal force by the county council. Planning decisions in these areas must be made in accordance with their policies unless material considerations indicate otherwise. Many of these include policies to ensure that development is sustainable, and the natural environment is protected and enhanced. It is possible for neighbourhood planning groups to revisit and update their made plans, if they wish to imbed more up-to-date sustainability thinking.

There are another 31 emerging neighbourhood plans in the County. The climate change team are consultees in the development process for these plans and are able to support the provision of relevant policies within the development process.

2.3.3. Future focus

During 2021-2023 the planning and climate change teams have collaborated closely. This has included quarterly meetings. This multi-disciplinary working has assisted with information and knowledge sharing, learning from best practice and exploring

[68] https://www.legislation.gov.uk/ukpga/2011/20/contents/enacted

[69] 'made' is the term used when a plan has been adopted by NCC, and formally becomes part of the statutory development plan (alongside the Local Plan). This happens following a successful process of examination and referendum.

[70] https://www.northumberland.gov.uk/Planning/Neighbourhood-Planning/Neighbourhood-Plans.aspx

how we may innovate, and raising awareness of current issues of relevance to planning in relation to the implementation of the climate change action plan. Jointly the teams are considering how future iterations of the Local Plan, or other planning and policy guidance, can further the councils net zero and environmental aims.

The Planning team offer support and advice to climate change team for projects and initiatives where planning consent may be required, including for example the Warmer Homes project.

The Climate change team providing support to planning in relation to:

- the preparation of a design code and design guidance, particularly in relation to sustainable and energy efficient design principles
- input to emerging Neighbourhood Plans and providing comments on draft neighbourhood plans where relevant to climate change issues
- the monitoring of the implementation of policies in the Northumberland Local Plan and input into any future review of the plan
- reviewing and providing comments on relevant planning applications

This cross-team support and collaboration will continue, and hopefully increase.

2.4. Delivery of NCC Net Zero Programme

Delivering the actions set out in this plan, will require collaboration with teams across Northumberland County Council, as well as with stakeholders across the wider county and region. Details of this collaboration are set out throughout the action plan in the relevant areas. At the core of the plan's delivery, however, is the Climate Change team which is responsible for the plan's evidence base, design, progress, financing and reporting.

2.4.1. The Climate Change Team at NCC

Following publication of the previous *Climate Change Action Plan 2021-23,* it was acknowledged that delivery of the plan could not be achieved without dedicated resource within the County Council. To this end, a project team was recruited, made up of project managers, business intelligence analysts and project support staff. The team is led by the Climate Change Team Manager under the direction of the Director for Environment and Transport. The climate change team organisation is shown in Figure 7.

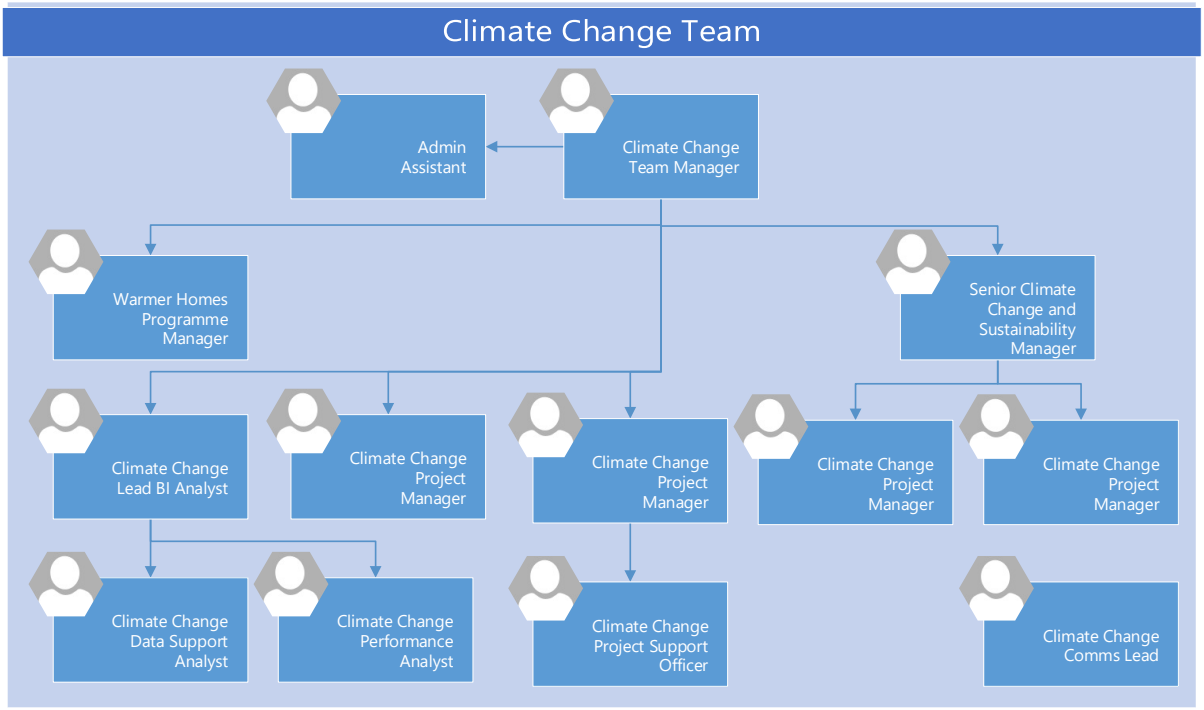

Figure 4 - Climate change core team organisation chart 2024.

2.4.2. Governance

This Climate Change Team continues to work within the governance model outlined in the previous *Climate Change Action Plan 2021-23* as shown in Figure 8.

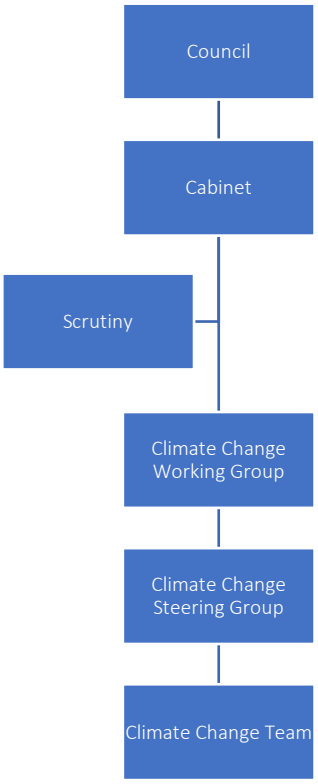

Figure 5 - hierarchy of governance for climate change at Northumberland County Council

2.4.3. Programme Design

The delivery of the climate change programme follows the layout of this action plan. Projects are separated by their themes of Society, Emissions and Environment and the sub-categories of heat, transport, partnerships etc.

Delivery of projects is managed using PRINCE2 methodology and tools such as Microsoft Project and Power BI. Risk is managed using the NCC corporate risk framework and assessed according to need.

Whilst the Climate Change team are responsible for the overall delivery of this action plan, projects are often delivered elsewhere in the organisation with the team's involvement. Key teams such as strategic transport, highways, neighbourhood services, housing, property services and education are all crucial to the delivery of this programme. The climate change team will continue to operate in a collaborative way, identifying opportunities and commissioning work as appropriate.

2.4.4. Funding and Finance

The Climate Change team is funded primarily through base budget provision but has, over the period of the previous *Climate Change Action Plan 2021-23*, been successful in bidding for more than £28m of funding towards the projects described in this action plan. Funding primarily comes from government grants. Having a dedicated team in place is essential to being able to identify and win this funding as well as to deliver the associated projects. The climate change team will continue to identify and bid for relevant funding as set out in this action plan in order to demonstrate value for money.

2.4.5. Evidence, Data and Performance

The business intelligence element of the Climate Change team is essential in providing Northumberland County Council with the ability to identify and analyse the complex datasets which underpin this programme of work. These include emissions data at both a county and Council level, transport trends and energy consumption data. Project and programme progress is also monitored through delivery milestones which are reported to the team manager and when appropriate, through the governance structure set out above.

2.4.6. Reporting and Transparency

Delivery of key milestones should be reported externally more regularly. Development of a new climate change website is currently being finalised and will create a platform for progress against both decarbonisation targets and project delivery targets. The website will allow for increasingly regular reporting.

2.4.7. Summary

Over the period covered by the previous *Climate Change Action Plan 2021-23*, the climate change team has become established and embedded in the organisation. A cross-organisational operating model has been developed which is offering value for money and is successfully delivering project outcomes. In order to reach the targets, set out in this plan however, the pace and scale at which projects are delivered will need to increase. The climate change team will continue to identify, bid for and win

funding to deliver key projects in Northumberland. The team will also improve transparency to ensure the key outcomes are reported more regularly and visibly.

2.5. Adaptation and Resilience

2.5.1. Adaptation and Resilience introduction

Adaptation as a distinct section of the Climate Change Action Plan is new to Northumberland County Council. The Council already does lots of work to build resilience in communities. However, new forms of resilience and adaptation are now needed in relation to climate and ecological emergencies.

When facing climate change and its effects there are two main routes of action. Mitigation and adaptation. The C*limate Change Action Plan 2021-2023* concentrated mostly on mitigation via projects to reduce greenhouse gas emissions (although many mitigation actions, have adaptation co-benefits[71]). In this Action Plan, an approach to adaptation will also be addressed.

The effects of a changing climate are already being experienced with annual average temperatures increasing[72] and a higher frequency of extreme weather events. As such, only working towards mitigating climate change, to limit these changes[73] [74], is not enough. Adaptation is essential for resilience against the impacts of the changing climate. The negative effects and costs of not preparing for a risk or hazard, are greater in the long term than upfront costs for adaptation and mitigation measures[75]. Climate change adaptation can learn from general disaster risk reduction[76]. Investments in risk reduction and prevention save up to 15-times more than investments needed for post disaster recovery[77]. A lack of climate change adaptation is, and will continue to be, costly[78].

Local authorities are at the forefront of resilience work with communities, this includes looking after infrastructure, flood mitigation and flood management. Along with the day-to-day work that LAs do to support communities with education, care, public health, waste services etc. These are all things that help to keep individuals and communities as cared for, prepared and resilient as possible. This section will look at how NCC can work to further increase the resilience of our communities, residents and the Council's own operations and services.

2.5.2. International Adaptation Policy and Guidance

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[71] For example – retrofitting buildings to reduce energy waste and GHG emissions, can also create buildings that are more tolerant to temperature extremes or continued high rainfall.
[72] https://climate.copernicus.eu/warmest-january-record-12-month-average-over-15degc-above-preindustrial
[73] https://www.metoffice.gov.uk/weather/climate-change/effects-of-climate-change
[74] https://www.science.org/doi/10.1126/sciadv.adh2458
[75] https://webarchive.nationalarchives.gov.uk/ukgwa/20100407163608/http:/www.hm-treasury.gov.uk/d/Summary_of_Conclusions.pdf
[76] https://www.undrr.org/implementing-sendai-framework/what-sendai-framework
[77] 'Investing in resilience' https://www.undrr.org/our-work/our-impact#:~:text=Every%20US%241%20invested%20in,%2415%20in%20post%2Ddisaster%20recovery.
[78] https://www.eea.europa.eu/publications/assesing-the-costs-and-benefits-of

Internationally, work towards understanding climate change impacts and risks, and what can be done towards mitigating and adapting to these risks is done by the Intergovernmental Panel on Climate Change (IPCC[79]). As an international body, the IPCC can draw from a global pool of experts, governments, and knowledge. The two most recent relevant reports from the IPCC are the Climate Change 2023 Synthesis Report[80] and Climate Change 2022: Impacts, Adaptation and Vulnerability.[81]

There are two main points to take forward from these reports in relation to this Climate Change Action Plan. Both highlight the crucial need for government (national, regional, local) to support both mitigation and adaptation. The reports recognise…

"…*the interdependence of climate, ecosystems and biodiversity, and human societies; the value of diverse forms of knowledge; and the close linkages between climate change adaptation, mitigation, ecosystem health, human well-being and sustainable developments, and reflects the increasing diversity of actors involved in climate action*[82]." (see *Figure 6*)

An interpretation of these interdependencies has been echoed within this action plan. There are multiple other sources of essential information available to NCC from the international sphere, all of which are key to guide NCCs decision making around climate mitigation and adaptation strategies[83].

Climate Change mitigation strategies are generally approached from a 'top-down' perspective, where international coordinated actions, bring about governmental policies to reduce GHG emissions inside countries. Adaptation can be brought about using a different approach. Applying, local coordinated 'bottom-up' action, making sure that communities and individuals are able to advocate for their needs, in their area[84] as set out in **Error! Reference source not found.**.

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[79] The United Nations body for assessing the science related to climate change - https://www.ipcc.ch/about/

[80] https://www.ipcc.ch/report/ar6/syr/

[81] https://www.ipcc.ch/report/sixth-assessment-report-working-group-ii/

[82] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_SPM.pdf (page 3)

[83] Home - Interconnected Disaster Risks (interconnectedrisks.org), Chart of the Sendai Framework for Disaster Risk Reduction 2015-2030 | UNDRR, Lancet Countdown report calls for climate-driven health action (who.int), Emissions Gap Report 2023 | UNEP - UN Environment Programme, Provisional State of the Global Climate in 2023 (wmo.int), Global Risks Report 2024 | World Economic Forum | World Economic Forum (weforum.org). https://sdgs.un.org/goals

[84] https://academic.oup.com/pnasnexus/article/1/1/pgac009/6540642 Regina R Rodrigues, Theodore G Shepherd, Small is beautiful: climate-change science as if people mattered, *PNAS Nexus*, Volume 1, Issue 1, March 2022, pgac009, https://doi.org/10.1093/pnasnexus/pgac009

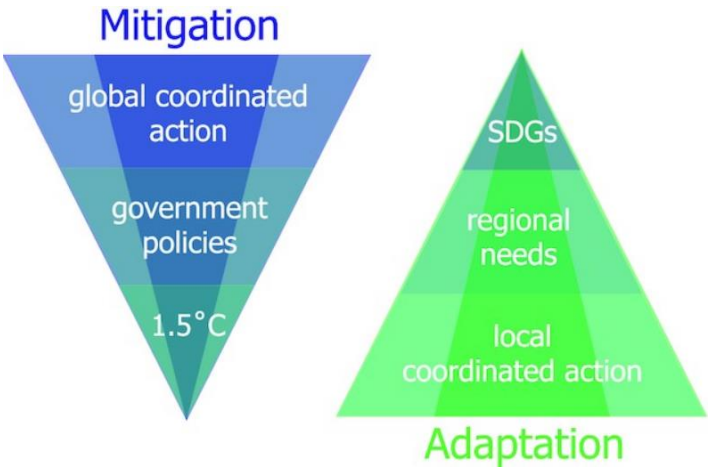

Figure 9 Showing contract between 'top-down' mitigation, and 'bottom-up' adaptation, Rodrigues & Shepherd, 2022[85].

2.5.3. National and Regional Adaptation Policy

The UK government published the UKs third climate change risk assessment in 2022[86] (as part of a five-year cycle). The climate change risk assessment identified sixty-one cross-sector climate risks for the UK, all of which are relevant to Northumberland. Figure 6 shows the eight priority risk areas, which will need the most urgent work between 2022 and 2024[87].

[85] https://academic.oup.com/pnasnexus/article/1/1/pgac009/6540642 Regina R Rodrigues, Theodore G Shepherd, Small is beautiful: climate-change science as if people mattered, *PNAS Nexus*, Volume 1, Issue 1, March 2022, pgac009, https://doi.org/10.1093/pnasnexus/pgac009

[86] https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf

[87] Pg 14-15 – (https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf)

Priority Risk Area	Magnitude of Risk	Key policy areas
Risks to the viability and diversity of terrestrial and freshwater habitats and species from multiple hazards.	High	Biodiversity Soil and water protection and restoration Environmental land management Sustainable farming and forestry Net Zero Green finance
Risks to soil health from increased flooding and drought.	Medium but will increase to high by 2050.	Biodiversity Soil and water protection and restoration Environmental land management Sustainable farming and forestry Net Zero Green finance
Risks to natural carbon stores and sequestration from multiple hazards leading to increased emissions.	Medium but will increase to high by 2050.	Biodiversity Soil and water protection and restoration Environmental land management Sustainable farming and forestry Net Zero Green finance
Risks to crops, livestock and commercial trees from multiple hazards.	Medium but will increase to high by 2050.	Biodiversity Soil and water protection and restoration Environmental land management Sustainable farming and forestry Net Zero Green finance
Risks to supply of food, goods and vital services due to climate-related collapse of supply chains and distribution networks	Medium but will increase to high by 2050.	Public procurement Business resilience Environmental land management Trade
Risks to people and the economy from climate-related failure of the power system	High	Infrastructure Energy Net Zero
Risks to human health, wellbeing and productivity from increased exposure to heat in homes and other buildings	High	Building regulations and strategies Planning reform
Multiple risks to the UK from climate change impacts overseas	High	National resilience Overseas aid Research and capacity building

Figure 6 - Priority risk areas from the UK climate change risk assessment 2022.

The UK climate change risk assessment recognises that adaptation in the UK must go "further and faster[88]", and that adaptation needs to be mainstreamed, more holistically, throughout government policy. This includes the integration of adaptation into mitigation work[89]. However, there are limitations "…*in information and awareness of climate risk, lack of clarity on ownership of risks and responses, and the complexity of adapting for a future which contains innate uncertainty*.[90]"

In the summer of 2023 the Department for Environment, Food and Rural Affairs (DEFRA) published the third national adaptation programme (NAP3) and the fourth

[88] https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf – page 4

[89] https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf - page 4.

[90] UK Climate Change Risk Assesment 2022 (publishing.service.gov.uk)

strategy for climate adaptation reporting[91], which sets out the UK government's planned actions for adaptation over the next five years, and the beginning of a programme of work to achieve…

"*The UK government's vision for adaptation is for a county that effectively plans for and is fully adapted to the changing climate, with resilience against each of the identified climate risks[92]*."

Within this document the UK government highlight the important role that local authorities must have in future adaptation strategies. Table 7 provides a summary of the planned actions that will be undertaken with Local authorities.

Summary of Chapter 7: Working together	
Local Government - plays a vital role in climate change adaptation, both proactively through strategic planning, and reactively through resilience and recovery.	
Actions Needed	
Local government and UK government collaboration	Emergency response Adaptation reporting power (one year pilot with 35 LA's) Local Adaptation advisory panel
Access to information and data	UK climate projections climate risks data (due for publication in 2027) Local authority climate service (pilot)
Empowering local government	Devolution Local nature recovery strategies; appointment and funding of responsible authorities (£14million across England) UK shared prosperity Fund Local Investment in Natural capital (LINC) programme funding (Borderlands has up to £1 million of funding) Strengthening local resilience forums (LRFs) as set out in 2022 UK government resilience framework

Table 7 - Summary of Chapter 7: Working together – NAP3 & Fourth strategy for climate adaptation reporting.

Within chapter 8: Strategy for the fourth round of climate adaptation reporting[93], is the recommendation that local authorities should be included as reporting bodies for adaptation. As LAs already have responsibilities for planning, local resilience, and

[91] The Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting (publishing.service.gov.uk)
[92] The Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting (publishing.service.gov.uk)
[93] The Third National Adaptation Programme (NAP3) and the Fourth Strategy for Climate Adaptation Reporting (publishing.service.gov.uk) Page 137

local transport, alongside the many areas of local authority remit which will be impacted by future changes in climate (health and social care, education, waste services, infrastructure etc.) A pilot project is currently being run with volunteer local authorities and DEFRA, the results of which will be evaluated once the pilot ends at the end of 2024.

The last two National Adaptation Programmes were found by the climate change committee to be inadequate. Figure 11 shows an overview of each of the assessed adaptation outcomes, the inner rings represent policy and plans, and the outer rings represent delivery and implementation. There are only a few flashes of the colour green, which denotes 'credible policies or plans'. The CCC produced three key messages from this report[94]:

- the second National adaptation programme has not adequately prepared the UK for climate change
- the impacts from extreme weather in the UK over 2022-2023 show how urgent climate change adaptation is
- the next national adaptation programme must make a step change

The Climate change committee has produced an initial assessment[95] of the third (and most recent) National Adaptation Programme (NAP3). They state that:

"*NAP3 falls far short of what is needed… Slow progress across three NAPs shows that the current approach is not working, and that change is needed… An urgent refresh of NAP3 and adaptation governance should be undertaken in the new parliament… The UK has lost its place as a leader in climate adaptation… We cannot assess progress without monitoring and evaluation*.[96]"

[94] Progress in adapting to climate change - 2023 Report to Parliament - Climate Change Committee (theccc.org.uk)
[95] https://www.theccc.org.uk/publication/independent-assessment-of-the-third-national-adaptation-programme/#introduction
[96] https://www.theccc.org.uk/wp-content/uploads/2024/03/Independent-Assessment-of-the-Third-National-Adaptation-Programme-NAP3.pdf Page 4

Figure 7 - Progress in adapting to climate change - 2023 Report to Parliament - Climate Change Committee[97].

As the World Economic Forums (WEF) global risk report for 2024 shows, not only is environmental risk once again the most likely risk for 2024, but environmental risks[98] also dominated the risk landscape for the short-, medium- and longer-term outlooks.

The importance of early and embedded climate change adaptation strategies that align with mitigation, is a recurring and crucial theme. As summarised by the Environment Agency's press release – adapt or die[99].

2.5.4. Adaptation and Resilience in Northumberland

[97] Progress in adapting to climate change - 2023 Report to Parliament - Climate Change Committee (theccc.org.uk)
[98] Page 102 - WEF_The_Global_Risks_Report_2024.pdf (weforum.org)
[99] Adapt or die, says Environment Agency - GOV.UK (www.gov.uk)

Northumberland County Council has a responsibility of care to our residents, visitors, and the environment. This duty is particularly important during emergency situations. NCC plan and prepare for emergency situations with several other key organisations (e.g. the emergency services and NHS). This is one of Northumberland County Councils legal duties under the Civil Contingencies Act 2004 [100]. The likelihood and types of possible emergencies are identified and recorded in risk registers.

The UK has a national risk register[101], a national climate change risk assessment[102], and more specific regional risk registers. Northumberland County is included in the Northumbria Local Resilience Forum (which is based on the Northumbria police area) and is covered by the Northumbria Community Risk Register (NCRR)[103]. Some of the risks included within this community risk register are expected to happen with increasing severity and frequency as the climate crisis develops further and include:

- flooding
- adverse weather
- human disease
- industrial accident and environmental pollution
- animal disease
- wildfires
- cyber and malicious attacks
- utilities failures

The national risk register (NRR) highlights that the risks contained in the NNR are not the only risks that the UK faces. The NRR looks at 'acute' risks, these are usually isolated events that need an emergency response. However,

"… the UK faces a range of serious 'chronic' risks, which are long-term challenges that gradually erode our economy, community, way of life, and/or national security[104]."

Chronic risks are not included in the NRR, as only focusing on acute risks ensures that the NRR remains a practical document for resilience practitioners. This means that there is currently a gap in the UK measurement and management of chronic risks (of which Climate change and ecological crises can be included). The government is currently creating a new, separate, way to recognise, assess and report these risks.

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[100] https://www.gov.uk/guidance/preparation-and-planning-for-emergencies-responsibilities-of-responder-agencies-and-others and https://www.legislation.gov.uk/ukpga/2004/36/contents

[101] https://assets.publishing.service.gov.uk/media/64ca1dfe19f5622669f3c1b1/2023_NATIONAL_RISK_REGISTER_NRR.pdf

[102] https://assets.publishing.service.gov.uk/media/61e54d8f8fa8f505985ef3c7/climate-change-risk-assessment-2022.pdf

[103] Northumbria_Community-Risk-Register-2021-2022.pdf (northumberland.gov.uk)

[104] https://assets.publishing.service.gov.uk/media/64ca1dfe19f5622669f3c1b1/2023_NATIONAL_RISK_REGISTER_NRR.pdf Page 6

The Northumbria community risk register follows the model of the NRR, focusing on acute emergency risks. Across NCC there are many teams who deal closely with emergency planning, risks, and resilience for our communities.[105] The main NCC teams required for an emergency response in Northumberland are listed below:[106]

- Executive team
- Finance
- Fire and Rescue Service
- Civil contingencies team
- Property team
- Neighbourhood services
- Highways and Transport
- Commercial team (public protection)
- Community and environmental health (public protection)
- Environmental protection (public protection)
- Trading standards and animal health
- Licencing
- Building control
- Pest control
- Housing
- Planning
- Health and Safety
- HR and OD
- Adult social care
- Public health
- Education and Skills
- Childrens social care

As there is no regional or Northumberland specific climate risk register, or adaptation strategy, exactly how future climate and ecological risks will affect the work of NCC, and what NCC needs to do to help communities and residents towards resilience is uncertain. Currently there is only a guide for acute risks, whereas climate change and ecological risks are both chronic and acute. During the climate change action plan 2021-2023 the climate change team undertook a scoping project, to allow for better understanding of the specific climate related risks facing Northumberland, and the main NCC teams that are already involved in current adaptation measures. The climate and ecological emergencies will cause some of the 'acute' risks set out in the NCCR to occur with more frequency, severity, or unpredictability. As such the teams working on these risks are already experienced in both acute and chronic risks. The following teams and the activity they undertake is set out below.

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[105] https://www.northumberland.gov.uk/About/Policy/Civil.aspx

[106] NCC – Emergency Community Assistance Plan - ECAP-v-4-5-Oct-19-word-doc-1.pdf (northumberland.gov.uk)

2.5.4.1. Flood and Coastal Erosion Risk Management Team

The Flood and Coastal Erosion Risk Management (FCERM) team[107] are Northumberland's Lead Local Flood Authority (LLFA) and coastal protection authority (CPA). They are responsible for the management of flood and erosion risks from local sources (e.g. lakes, surface waters, groundwaters). The team also respond to planning applications, source funding for flooding and coastal erosion schemes and provide land drainage consents. The FCERM team undertake a wide range of work[108] that supports flood and erosion mitigation and adaptation, below is a summary of some of these projects.

The FCERM team work to engage with communities across Northumberland to raise awareness of flooding risk and encourage communities, groups and individuals to complete flood action plans[109]. This work boosts resilience to flooding and coastal erosion by increasing awareness of risks, and ways to prepare, plan and mitigate against negative consequences. The plans can also be crucial way to help identify vulnerable groups in need of additional support.

The FCERM team work in collaboration with the Environment Agency (EA) to create the flood action plans. The EA are able to provide expert knowledge on flood risk mitigation and adaptation strategies. The FCERM and EA encourage communities to participate in decision making based on this advice.

The FCERM team have created an in-depth local flood risk management strategy which identifies and considers the flooding and coastal erosion risks to all service areas.[110]

NCC has also been granted funding from the government Flood and Coastal Resilience Innovation Programme (FCRIP) to work on a Next Generation Flood Resilience project. This project focuses on enhancing the flood warning systems for rural communities[111]. This will improve community adaptive capacity.

2.5.4.2. Business Resilience and Emergency Planning team

The business resilience and emergency planning team support the Council's civil contingencies arrangements and identify key risks to our communities and prepare emergency response plans. They also provide protection and support to at risk communities when emergencies occur (like those included in the NCRR). The

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[107] https://www.northumberland.gov.uk/Highways/FCERM.aspx#:~:text=CPA)%20for%20Northumberland.-,Northumberland%20County%20Council%20is%20the%20Lead%20Local%20Flood%20Authority%20(LLFA,flood%20risk%20from%20local%20sources.

[108] https://www.northumberland.gov.uk/Highways/FCERM.aspx#:~:text=CPA)%20for%20Northumberland.-,Northumberland%20County%20Council%20is%20the%20Lead%20Local%20Flood%20Authority%20(LLFA,flood%20risk%20from%20local%20sources.

[109] https://www.gov.uk/prepare-for-flooding and https://www.gov.uk/government/publications/community-flood-plan-template

[110] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Roads-streets-and-transport/coastal%20erosion%20and%20flooding/2015-NCC_LFRMS_Final-approved.pdf

[111] https://engageenvironmentagency.uk.engagementhq.com/innovation-programme

business resilience and emergency planning team works closely with the NCC fire and rescue service.

They work to increase community resilience to risks, via community engagement, support hubs and cross sector working. Community engagement is an important component to climate change adaptation as it provides individuals with locally relevant information on risk. While also providing an opportunity for local residents to provide relative knowledge, or partake in the decision-making process, thus empowering communities to take action.

2.5.4.3. Public Health

The crucial role public health plays in both climate change adaptation, and as a role model for chronic risk reduction, management and best practice, is outlined in section 2.2.

2.5.4.4. Fire and Rescue service

The Fire and Rescue service (F&RS) is responsible for preventing, responding and protecting the local communities, visitors and businesses in Northumberland from current and future risks to 'Make Northumberland Safer'. They are responsible for producing a 'Community Risk Management Plan[112]'. This identifies their analysis of current and future risks within the county, identifies emerging risks and trends, and outlines how the service will balance prevention, protection, and response activities to reduce the impact of risk on communities by making the best use of its people and resources. In addition to dealing with risk of fire, response to road traffic accidents the Fire and Rescue Service also respond to severe weather events including flooding. They also have a long history of helping boost community resilience via engagement and education. One of the main emerging risks related to the climate and ecological emergencies is wildfire, which is listed as one of the nine main risks in the NCRR[113].

The national fire chief's council have produced a 'wildfire prevention toolkit', which the NCC fire and rescue service follow[114]. They provide extensive awareness raising and educational opportunities for the public, communities, youth groups, businesses, and landowners to highlight the risk and impacts of wildfires. The F&RS work with the Northumberland fire group (NFG) to created and identify ways to prevent and limit wildfires, including wildfire risk assessments and wildfire Plans.

2.5.4.5. Planning service

The planning service plays a fundamental role in climate change mitigation and adaptation and are key to supporting these aims. The planning service is responsible for delivering NCC's functions as the Local Planning Authority (LPA), which included

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[112] https://www.northumberlandfireandrescue.gov.uk/_files/ugd/e4be7f_1bc14a048faf41c7908274a5d3ccca19.pdf

[113] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Fire-and-Rescue/Northumbria_Community-Risk-Register-2021-2022.pdf - page 19

[114] https://www.northumberlandfireandrescue.gov.uk/wildfire-toolkit

determining planning applications and preparing a Local Plan. Please see section 2.3 for more information.

There are many other teams and specific projects that are supporting adaptation capacity within Northumberland, from elsewhere in this action plan:

- North East Devolution
- Agriculture
- Environment Section – pollution control (water, air, ground), Trees and woodlands
- Energy
- Heating

2.5.5. Future Focus

By enacting the overarching aims and ambitions of the entire Climate Change Action Plan 2024-2026, NCC are working to deliver both mitigation and adaptation measures. However, there is a need (Figure 12) to create a dedicated NCC policy and strategy to focus and align the essential need for adaptation following the recommendations and guidance set out above. This target is in line with the regional adaptation aims within the new devolution deal[115].

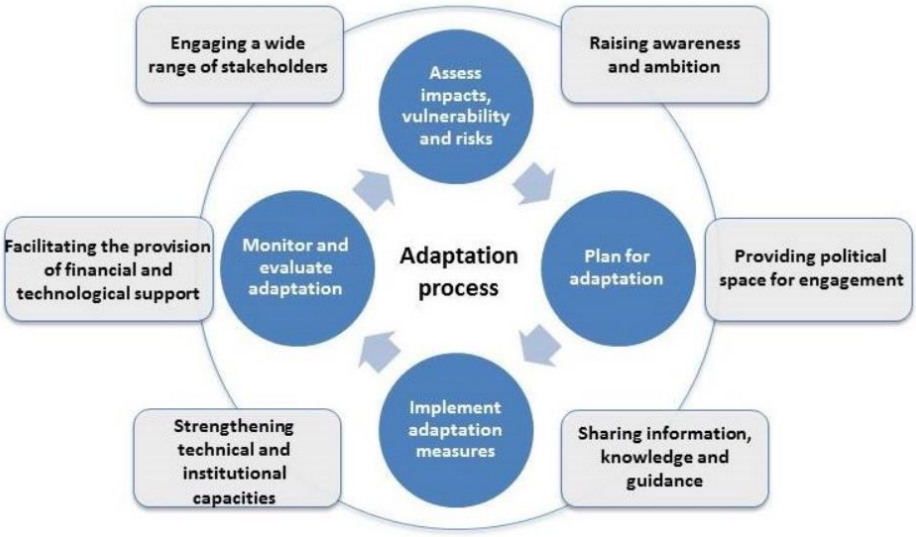

Figure 8 - Adaptation cycle under the UK climate change regime[116]

Based on this need, the County Council will:

- review the gap analysis of current adaptation and resilience work at NCC
- produce its first Climate Adaptation strategy for Northumberland – including a specific climate change risk assessment for Northumberland:
    - develop climate adaptation understanding throughout the council (officers and members).

[115] North East Deeper Devolution Deal (publishing.service.gov.uk)
[116] https://gca.org/what-does-climate-adaptation-and-resilience-look-like/

- embed adaptation needs into council policies and decision making (e.g. via integrated impact assessments).
- review and update the adaptation section of the Climate Change Action Plan in 2025.

2.6. Engagement and Partnerships

2.6.1. Engagement and Partnerships Introduction

For the county of Northumberland to achieve net zero carbon emissions by 2030, and net zero greenhouse gas emissions by 2040, every resident, organisation (public, private and third sector), and business must work together.

Northumberland County Council cannot achieve this huge target on its own. The role of NCC is to facilitate, where possible, the changes needed to reach net zero for Northumberland by 2040, as discussed throughout this action plan.

In the previous *Climate Change Action Plan 2021-23* it was stated that it was essential to help residents, businesses and NCC staff to understand the implications climate change has on our communities, and to provide them with the knowledge and tools to reduce their emissions. The climate change team planned to engage via multi-source communications, community projects and partnership development (with all sectors).

The overarching aim remains the same for this action plan, however, between 2021 and 2023 engagement plans and delivery have evolved and been enhanced.

When the UK government signed up to the Paris Agreement, one of the key aspects of the agreement was to enhance 'Climate change education, training, public awareness, public participation and public access to information[117]'. To empower all members of society to engage in positive climate action, the United Nations framework convention on climate change (UNFCCC) created Action for Climate Empowerment[118] (ACE). ACE outlines a system for engagement centred around 6 main areas: education, training, public awareness, public access to information, public participation, international cooperation (as shown in figure 13).

[117] https://unfccc.int/most-requested/key-aspects-of-the-paris-agreement
[118] https://unfccc.int/topics/education-and-youth/big-picture/ACE#:~:text=The%20over%2Darching%20goal%20of,international%20cooperation%20on%20these%20issues.

Scope	Objectives	
Education	Change habits in the long-term	Foster a better understanding of, and ability to address climate change and its effects
Training	Develop practical skills	
Public Awareness	Reach people of all ages and walks of life	Promote community engagement, creativity and knowledge in finding climate change solutions
Public Access to Information	Make information freely available	
Public participation	Involve all stakeholders in decision-making and implementation	Engage all stakeholders in debate and partnership to respond collectively to climate change
International cooperation	Strengthen cooperation, joint efforts and knowledge exchange	

Figure 9 – adapted 'Action for climate empowerment; guidelines for accelerating solutions through education, training, and public awareness (UNESCO and UNFCCC, 2016)[119]

The delivery of net zero is both a societal and technical challenge[120]. Much of the emission reductions to date (emissions in the UK have reduced 40% between 1990-2018[121]) have been down to technological changes that have not required significant public engagement or societal change, such as the de-carbonisation of the UK electricity supply[122]. However, societal and behavioural changes will be required to deliver the majority of emission reductions required going forward[123] as demonstrated in Figure 10

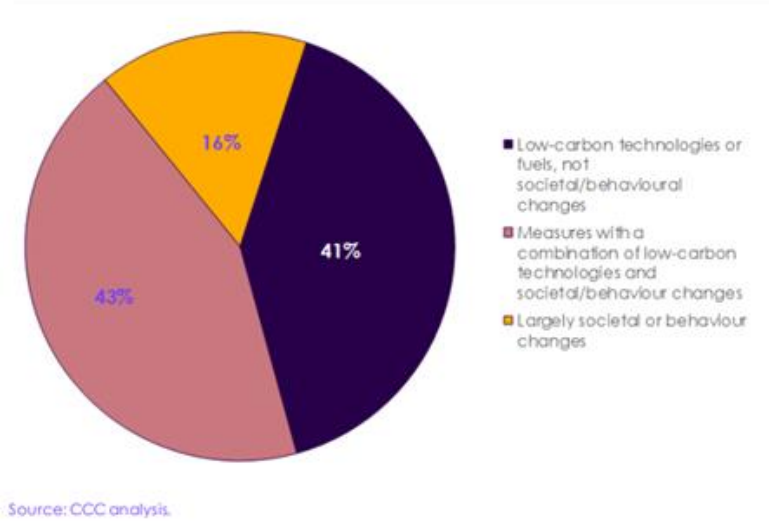

Figure 10 - Role of societal and behavioural changes in the Balanced Net Zero Pathway (2035) – Figure B2.2 - The Sixth Carbon Budget – climate change committee.

119 https://unfccc.int/files/cooperation_and_support/education_and_outreach/application/pdf/action_for_climate_empowerment_guidelines.pdf

120 Public Engagement with Energy: broadening evidence, policy and practice. | UKERC | The UK Energy Research Centre

121 Net zero public engagement and participation: a research note (publishing.service.gov.uk)

122 The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf (theccc.org.uk) & Net zero public engagement and participation: a research note (publishing.service.gov.uk)

123 The-Sixth-Carbon-Budget-The-UKs-path-to-Net-Zero.pdf (theccc.org.uk)

Engagement and behavioural change are identified as key enablers of net zero by the UK government and other parliamentary groups.

In 2022, the House of Lords Environment and Climate Change Committee published *In our hands: behaviour change for climate and environmental goals*[124], which identified societal behaviour change as fundamental to the achievement of net zero and the preservation of a stable, liveable climate for humanity, The report points to the 'gap between estimates of the current average UK individual lifestyle carbon footprint, 8.5 tonnes CO_2 per year, and footprints consistent with emissions reduction targets for 2030 (2.5 tonnes) and 2050 (0.7 tonnes)' as shown in Figure 11 below.

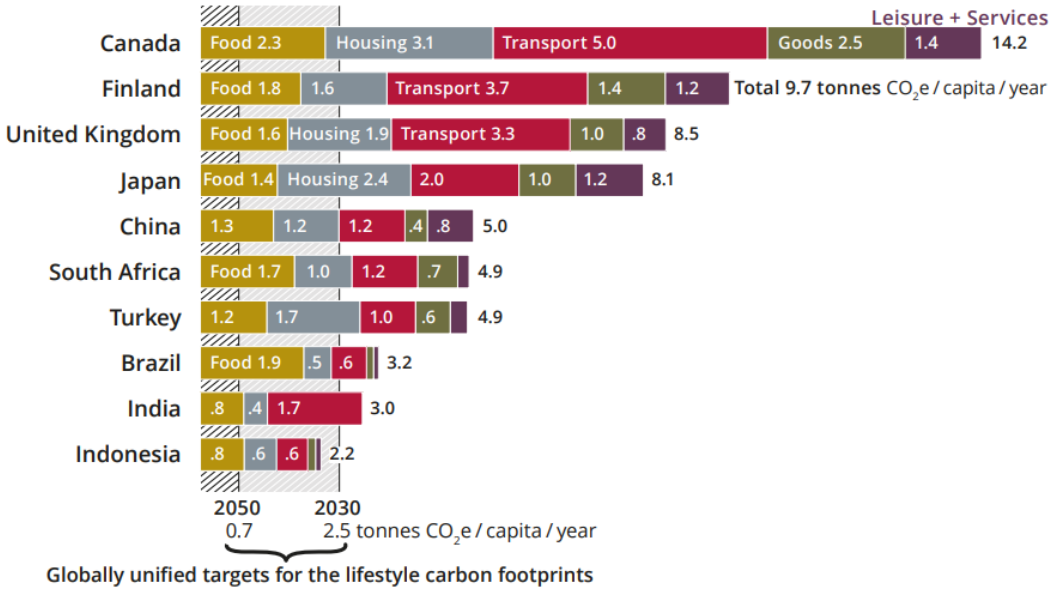

Figure 11 - Average lifestyle carbon footprints by consumption domain.

These international and national guidelines on best practice mirror the work done by the climate change team at NCC. The following section on engagement and partnerships will cover our engagement, internally and externally with six main groups: 'everyone', communities, schools, businesses, public sector, and third sector.

To further summarise, the Council's main objectives regarding climate change engagement between 2021 and 2023 have been: information sharing, encouraging behavioural changes, reporting on progress of climate initiatives.

2.6.2. Strategic Engagement

Much of the focus of Northumberland's climate change engagement is on disseminating information to specific groups, which will be covered below. Fundamentally though, engagement is also about listening and in the development of this climate change action plan, the Council has endeavoured to gather the views of key stakeholders to ensure that the proposed approach considers the needs and opinions represented across the County.

[124] https://publications.parliament.uk/pa/ld5803/ldselect/ldenvcl/64/64.pdf

During 2022 and 2023, the Council hosted a series of four in-person collaborative climate change events across the county. These events were opened by Councillor Glen Sanderson, Northumberland County Council Leader and Cabinet Member for Climate change. They all mirrored a similar event run for Members around three key topics that link to the climate change challenge and solutions facing Northumberland and overlap with other key Council priorities.

The main objective of these in-person collaborative events was to gather the perspectives of residents/business owners/communities within Northumberland regarding how to reach our net zero targets as a county and the complexities and priorities encountered by our residents. The findings of these events have been considered and addressed wherever possible throughout this action plan but can be seen in summary in the event report[125].

2.6.3. External Engagement

This section will look at the engagement projects delivered by the CCT and aimed at external stakeholders, i.e. stakeholders outside of the County Council itself. As outlined in the introduction, there are six main external stakeholder groupings; everyone, communities, schools, businesses, public sector and third sector.

During the period covered by the previous *Climate Change Action Plan 2021-23*, engagement strategies have evolved. The climate change team have adapted to un-planned opportunities whilst simultaneously developing dedicated strategies for engaging certain stakeholder groups.

2.6.3.1. Press and Media

Between 2022 and 2023 77 press releases have been issued relating to the Council's environment and climate change initiatives. Some of the key stories include:

- the Council's solar carport project
- 'Northumberland School's Sustainability Network' launch
- school's climate change resource pack
- 'Free Tree' scheme
- 'Environment Policy' announcement
- environment and climate Fund
- ground source heat pumps for public sector buildings
- district heat network feasibility studies
- increase in EV (Electric Vehicle) charge points

2.6.3.2. Social Media

A significant component of our comms and PR strategy involves active participation on key social media platforms. From 2022 to 2023, our social media posts garnered a total of 180,000 engagements across major platforms including Facebook,

[125] Collaborative Climate Change Event: Feedback (northumberland.gov.uk)

Instagram, X, and LinkedIn. With 86,000 engagements across 2022, and 94,000 engagements throughout 2023.

2.6.3.3. Rebranding for Net Zero

Following the government's inclusion of all greenhouse gases in national data, and the subsequent decision by the County Council to announce a target for the County to become net zero by 2040, the Climate Change Team has opted to rebrand the initiative from Carbon Neutral by 2030 to Northumberland Net Zero 2040. This shift necessitates the development of a fresh communications strategy and targeted audience outreach. Three prominent groups within Northumberland will be specifically identified to launch the campaign, with regular annual reviews planned.

Marketing materials will be updated including, but not limited to:

- updated brand design (across all channels)
- banners
- leaflets
- flyers
- fleet rebranding

2.6.3.4. Website

Between 2021 to 2023 the climate change team have received and listened to feedback from residents, community groups, and other stakeholders. This feedback highlighted that transparency and public access to information required improvement. The current council website has proved an inadequate platform for communicating information about NCC’s work, actions, and guidance in response the climate and environmental emergencies.

In response to this feedback, a bespoke website for climate change and the environment in Northumberland has been developed.

The new stand-alone website is designed to be user friendly and easy to navigate. Providing a hub for climate resources and a space to share information. It will be a place for inspiration and celebration of the amazing climate and environment work happening within our communities; and a place for tailored tips, advice, and resources to empower anyone in Northumberland to take action.

The new climate change website will be launched alongside this climate change action plan in spring/summer 2024. The website will be updated regularly and will be continually improved and developed to ensure that it is meeting stakeholder needs.

2.6.3.5. Free Trees

Every winter since 2020, the council has offered residents and community groups in Northumberland a free tree. Each resident can claim a sapling. Groups, parish councils and schools can claim packs of up to 120 saplings. The saplings are all native species, and there are a variety of species available, to suit different garden sizes.

The free trees scheme has had a great reception from Northumberland's residents, schools, and community groups. This is reflected in the popularity of the scheme as

51,691 saplings have been ordered by residents and groups since 2020. Of these ordered trees, 35,097 were collected. Any trees not collected were planted in woodlands and parks across the county by our neighbourhood services teams.

The free trees project is set to continue until 2030. At this 10-year point 150,000 saplings will have been offered to Northumberland's residents and planted across the county.

The free trees project empowers residents to take action to address climate change, and engage with nature, by planting a tree. The project also enables the County Council to interact and engage with residents through the act of handing out the trees. This creates an opportunity to disseminate information and to discuss wider potential for climate action with residents.

2.6.3.6. Events

Over the course of 2021-23, the Climate Change Team attended over 75 events across the County. These events are fantastic opportunities for officers to meet residents and have meaningful conversations about climate change and the environment. Residents often have questions and feedback or ideas to offer the team. The events allow crucial input from residents to be captured, while also showing what work NCC is currently doing to help.

The climate change team have represented NCC at:

- Northumberland county show
- virtual Q&A events
- parish council events and meetings
- community events and festivals
- school assemblies.
- tree planting events.

It has become clear during the period of the previous *Climate Change Action Plan 2021-23* that the types of climate focused events the team attends, tend to reach the same audiences. Whilst this is a fantastic way of engaging with the change markers in our community that are going out and organising climate action, it is important to engage more widely to reach a broader audience. This will be the remit of the new Northumberland Net Zero campaign, details of which can be found in section 2.6.3.9.

2.6.3.7. Climate Change Newsletter

The Climate Change team are committed to educating, raising awareness, participation, and access to information about the issues around climate change and the environment. To this end, a monthly newsletter has been distributed to subscribers since September 2020.

The newsletter provides subscribers with information about NCC projects, updates about and for community groups, and opportunities for funding, all related to climate change and the environment. Between 2021 and 2023 distribution has grown to 6969 subscribers.

The climate change team will continue to publish the monthly newsletter and grow the subscriber list via the Northumberland Net Zero campaign.

2.6.3.8. Carbon footprint campaign

The previous *Climate Change Action Plan 2021-23* outlined plans for a carbon footprint campaign. This campaign was designed to facilitate behavioural change by providing residents with information about actions that could help reduce carbon emissions. The campaign used leaflets that outlined some small, medium and large-scale changes that people could make. This campaign ran throughout the three years of the action plan (the flyers were updated when needed). The campaign leaflets were distributed alongside the free tree scheme and at climate change events.

In 2021 a Domestic Emissions Dashboard was published on the climate change section of the NCC website. This dashboard was created to help residents calculate their household emissions and offer some easy-to-understand offsets. The dashboard has been useful, however there are now many other superior and free online emissions calculators available online. As such the decision has been taken to prioritise staff capacity for other projects, meaning the Council will no longer update or host the Domestic Emissions Dashboard on the NCC website.

2.6.3.9. Northumberland Net Zero Campaign

Over the course of 2024-26, NCC will develop a strong marketing and comms campaign aligned to this action plan. Due to the breadth of work, decisions must be made in terms of where to focus campaign elements in relation to key projects, stakeholders, and target audiences.

The key themes planned to feature in this overarching campaign are:

- shared vision
- commitment
- ambition
- integration

These will be consistent across the campaign. The campaign will identify and strengthen cross-cutting links and themes across the Council, and the wider county. To better demonstrate the ways in which climate work is about creating a sustainable, liveable and better future for communities, people, the economy and our environment.

The campaign will be supported by the new climate change website which will host much of the associated material and information.

2.6.4. Community Engagement

As well as engaging external stakeholders through the general activity highlighted above, the Council has developed a dedicated approach to engaging communities to take collective action in addressing climate change.

2.6.4.1. Northumberland climate and environment fund

In 2022 the Leader of the Council proposed a funding scheme to support community level climate action across the County. This led to the creation of the Northumberland Climate Change Fund, in 2023 the fund was extended to include a wider range of environmental and nature-based projects and became the Northumberland Climate and Environment Fund. In its first year (2022) £50,000 of funding was made available, in 2023 this was increased to £55,000 of funding.

In the first year the fund received 42 applications from community groups across Northumberland. The project applications were worth over £100,000 in total, so not all could be awarded. Twenty-six applications were successful and received funding. A further eight applications were referred to the Northumberland Community Chest Fund, and three onto the North East LEP Energy Hub. Projects that received funding included:

- community climate change events
- energy audits
- feasibility studies for solar PV and/or decarbonised heating options for community buildings
- tree planting
- EV bikes to encourage active travel

In the second year (2023) the fund received 35 applications. The projects applied for were worth over £129,000 in total, so again not all projects could receive funding. Seventeen applicants were successful and received funding. Another eight were referred to the community chest fund. The projects span a wide range of themes, some of those that received funding included:

- emissions reduction projects
- community engagement and education
- building energy efficiency improvements through insulation and retrofitting
- projects that encourage active and sustainable transport
- projects to upgrade waste solutions and support more reducing, reusing, and recycling

Each project funded over the last two years reflects the Council's commitment to supporting grassroots solutions that contribute to the larger goal of mitigating climate change and promoting sustainable living practices, fostering a sense of shared responsibility among community members.

The Climate Change and Environment Fund will continue throughout this action plan period, offering more support for community climate and environmental action. Projects funded will showcase their successes through events organised by Northumberland County Council and through the new Northumberland Net Zero website.

2.6.4.2. Community Climate Champions

The community climate champions scheme was introduced in the *Climate Change Action Plan (2021-23).* A community climate champion is anyone who has direct

access to residents and/or businesses in Northumberland and is willing to engage with others about climate change. The aim of the scheme is to give residents and community groups the opportunity to educate their own communities and create local scale climate action plans. The scheme empowers individuals and communities alike and cultivates behavioural change via organic networks of communication.

The climate champion scheme began in 2021 as a pilot study with ten environmental and climate action groups. The goal of the pilot was the creation of climate action plans for each of the ten local areas the groups represented. This was achieved; however, it has been challenging both for climate champions to implement their plans and for the Council to track and support progress.

Since the pilot, the scheme has developed into a network of twenty-seven environmental and climate action groups across Northumberland. Each group is represented by one-or-two climate champions. Having a network of climate champions from different groups and areas, allows champions and groups to meet like-minded people, share information, and share ideas. The Climate Change Team are then able to offer the climate champion network support in the form of advice, project support, signposting, sharing funding information, and sharing learning opportunities. In return the Climate Team benefit from the support that the community champions offer. They act as critical friends, providing feedback and advice on projects. They also share information with the CCT about projects, funds and initiatives that may be relevant to NCC.

The County Council will continue to support this network and will look to develop further relationships with relevant community groups to support the delivery of local climate action.

2.6.4.3. Community leaders carbon literacy toolkit

It was identified through the climate champion group that there was a desire for community focused carbon literacy training, specifically created for people involved in community level action across the county. After researching appropriate training provision, it was agreed that the Climate Change Team would work with the Carbon Literacy Trust to create a new tool kit for community leaders.

Officers from the Climate Change Team therefore created a ‘Community leaders’ course for the Carbon Literacy Trust. Once created, NCC and another local authority piloted the course before it was officially launched at an online event in October 2023[126]. The course offers community leaders a day of training, learning and action planning, facilitated by their local authority or another appropriate training provider. This training toolkit will equip community leaders with the knowledge, skills and inspiration to encourage climate action and reduce carbon emissions within their communities.

Northumberland County Council will work with community groups and local stakeholders to support the delivery of this training across the county and to facilitate

[126] CC000441-Community-Leaders-Course-Overview.pdf (carbonliteracy.com)

a ‘train the trainer’ model so that it can be more widely cascaded making the best use of available capacity.

2.6.4.4. Tree Wardens

In 2021 NCC became the ‘tree warden’ network coordinator for the county of Northumberland. This is a role facilitated by The Tree Council[127] who supply and produce learning modules, information and engagement opportunities, that NCC as coordinators, can pass onto the Northumberland tree warden network. Tree wardens[128] volunteer (through the tree council) to care for, plant, and protect trees in their local area.

NCC delivered a pilot scheme with the Rothbury Tree Warden group (who are also a climate champion group) to assess how the scheme would affect the work of the NCC Local Services woodland teams. This was followed by a full launch of the Northumberland Tree Warden’s scheme in 2023. Since then, 23 individuals and 2 groups have joined the Northumberland Tree Warden scheme, their approximate locations (by closest town) can be found in Figure 12.

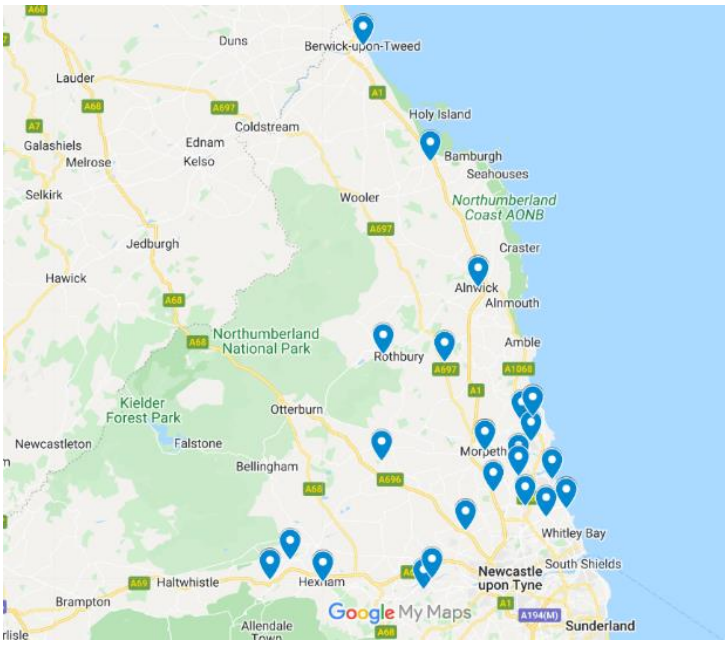

Figure 12 - Location of Northumberland tree warden networks (approximate)

Northumberland County Council will continue supporting the tree warden network as network coordinators.

2.6.5. Town and Parish Councils

Northumberland County Council recognises the crucial role of Town and Parish Councils in delivering action at a local level either through informal initiatives or through Neighbourhood Plans. To this end, it has been a priority since the publication

[127] https://treecouncil.org.uk/
[128] https://treecouncil.org.uk/tree-wardens/

of the previous *Climate Change Action Plan 2021-23* to engage with and support Town and Parish Councils to take action to address climate change locally.

Going forward, Northumberland County Council is committed to continuing to work closely with Town and Parish Councils to achieve the aims of this Climate Change Action Plan.

2.6.5.1. Town and Parish Council Survey

In 2021, the Climate Change Team undertook a survey of Town and Parish Councils asking the following questions:

- Has your Town or Parish Council declared a climate emergency?
  - If yes, when?
  - If no, what are the reasons? Are you considering declaring a climate emergency?
- Does your Town or Parish Council have any plans to address climate change and reduce emissions, regardless of whether or not you have declared an emergency?
  - If yes, what plans do you have in place and what do you see as the barriers to achieving them?
  - If no, what support would you need to help develop plans to address climate change?
- Would you like the support of the County Council to help develop your climate change plans?
  - If yes, are there specific things the council could do to help you?
  - If no, what are your reasons?

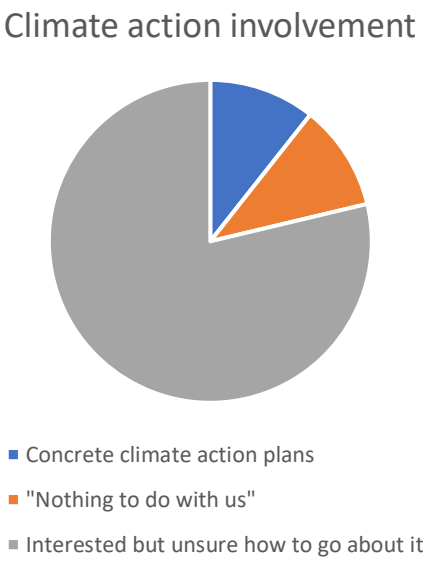

Figure 13 - Response to Town and Parish Council climate change survey.

Of the those who responded, 79% said they would like to take action but were unsure what they could do or how they could go about it (shown in Figure 17). Therefore, the decision was taken to create a resource pack to enable Town and Parish Councils to better understand climate change and the most effective mitigating actions they can take.

2.6.5.2. Town and Parish Council Climate Change Toolkit

In 2022, in response to the survey outlined above, Northumberland County Council published a Town and Parish Council Climate Change Toolkit[129]. This resource allows Town and Parish Councils to understand the basics of climate change, within a local context and sets out possible actions which can be taken to address it. This resource has allowed the team to engage more constructively with Town and Parish Councils.

The Town and Parish Council Toolkit will be reviewed and updated in 2024, and NCC are committed to continuing to work closely with Town and Parish Councils to achieve the aims of this Climate Change Action Plan.

2.6.5.3. Ad Hoc Town and Parish Engagement

Alongside the above engagement methods, the Climate Change team has attended and spoken at many Town and Parish Council events, either at dedicated council meetings or at events such as the annual Town and Parish Council Conference, or gatherings of Town and Parish Councillors organised by Elected Members or other groups such as the Northumberland Coast AONB.

2.6.6. Business Engagement

A business engagement strategy for climate change and sustainability was developed in 2023 and is expected to evolve during the time frame of the *climate change action plan 2023-2026*. The current strategy highlighted the following approaches to engaging and partnering with various types of business across the county.

2.6.6.1. Project Specific Engagement

Much of the climate change focussed business engagement which takes place is driven by specific projects, for example district heat network development, electric vehicle charging or land management and nature restoration. Therefore, it has been necessary to develop a project specific approach to business engagement which ensures that relevant businesses are included in and consulted on decisions made towards the progress and success of the respective projects. Where appropriate, business engagement activity of this type will be set out in the relevant sections of this action plan.

2.6.6.2. General support

When relevant opportunities arise for businesses in Northumberland to take action on climate change measures (e.g. grants or loans), the County Council supports this through the provision of information and guidance distributed through existing networks. This primarily takes place through colleagues at Advance Northumberland

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129 https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/News/2022/April/Northumberland-Town-and-Parish-Council-Climate-Change-Toolkit.pdf

who manage business networks and investment and growth opportunities for the County Council.

2.6.7. The Third Sector

Voluntary and charitable organisations play a huge role in supporting stakeholders across the County to engage with and take action to mitigate climate change. Support can range from energy advice through to tree planting and nature restoration. Northumberland County Council is closely linked with organisations such as Community Action Northumberland (CAN) and Groundworks to ensure that our aims are aligned, and that relevant information is shared. Groundwork represent the third sector on the Climate Change Steering Group, ensuring that the work of the climate change team is considerate of developments within the sector.

2.6.8. Education and Schools

Working together with schools and other education settings to embed climate change action into both the curricular teaching and the fabric of the education settings themselves was set out as a key priority in the previous *Climate Change Action Plan 2021-23.* Since then, much has been achieved and there are now a number of established work streams being delivered with educational establishments.

2.6.8.1. National Policy

In April 2022, the Department for education (DfE) published *Sustainability and Climate change: a strategy for the education and children's services systems*[130]. This government policy paper was created in response to recommendations about the role of the UK education sector in the climate change emergency. The recommendations came from three important sources:

- The Green Jobs Taskforce report[131]
- Climate Change Committee
- The Economics of Biodiversity: The Dasgupta review

> "*Establishing the natural world in education policy is therefore essential. The development and design of environmental education programmes can help to achieve tangible impact, for example by focusing on local issues, and collaborating with scientists and community organisations*."[132]

A summary of the vision, four strategic aims, and five action areas of the DfE strategy are provided in Table 8. The main vision of the strategy is that 'the United Kingdom is the world-leading education sector in sustainability and climate change by 2030[133].'

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[130] Sustainability and climate change: a strategy for the education and children's services systems - GOV.UK (www.gov.uk)
[131] Green Jobs Taskforce report - GOV.UK (www.gov.uk)
[132] The Economics of Biodiversity The Dasgupta Review: Headline Messages (publishing.service.gov.uk)
[133] Sustainability and climate change: a strategy for the education and children's services systems - GOV.UK (www.gov.uk)

Sustainability and climate change: a strategy for the education and children's services systems Department for Education (updated Dec 2023)	
Vision: the UK is the world-leading education sector in sustainability and climate change by 2030	
Strategic Aims	1. **Excellence in education and skills for a changing world**: preparing all young people for a world impacted by climate change through learning and practical experience.
	2. **Net Zero**: reducing direct and indirect emissions from education and care buildings, driving innovation to meet legislative targets and providing opportunities for children and young people to engage practically in the transition to net zero.
	3. **Resilience to climate change**: adapting our education and care buildings and system to prepare for the effects of climate change.
	4. **A better environment for future generations**: enhancing biodiversity, improving air quality and increasing access to, and connection with, nature in and around education and care settings.
Action Areas	
1. Climate education	1. Learning about the natural environment 2. Support for teaching 3. learning in the natural environment
2. Green Skills and careers	1. Net zero strategy 2. Additional support for green jobs and skills 3. Support and guidance for green careers
3. Education estate and digital infrastructure	1. New builds and new blocks 2. Existing estate 3. Resilience, adaptation, access to Nature and environment conditions 4. Heating solutions 5. Water strategy (in partnership with EA, water companies and LA's) 6. Reporting frameworks, reporting processes and targets
4. Operations and supply chains	Introducing people within education systems to more sustainable practices; to inspire and instil habits that can be taken into wider communities and future lives. DfE Corporate Sustainability Strategy - publishing and monitoring progress. Aligning this Sustainability and climate change strategy with the Greening Government Commitments and the DfE overall organisational strategy.
5. International	In achieving the vision of this strategy - go onto inspire and respond to international action and make a difference to children and young people all over the world. Champion education and learning on the global stage Inspire, share and learn Trade and exports

Table 8 - Summary of Sustainability and climate change: a strategy for the education and children's service systems *DfE 2022/2023*

DfE have established 3 initiatives to drive the strategy forward.

- National Education Nature Park: This initiative looks at school's estates holistically. With an overall objective to improve biodiversity, link into the nature recovery networks, and drive climate resilience. It also provides opportunities to connect students with nature. Schools can sign up and receive resources, support, and advice on how to improve their school estates for nature[134].
- Climate Leaders Award: This initiative is a celebration and recognition of the work done by children, young people, and education providers, whose connection with nature is growing, and they are helping create a sustainable future for us all[135].
- Sustainability Leadership: This initiative aims to support senior leadership teams, governors, and sustainability leaders to deliver holistic approaches to sustainability and climate change. The sector has requested more support

[134] Home | Education Nature Park
[135] Climate Action Awards | Education Nature Park

around, access to funding, network development, and best practice sharing. The initiative aims that by 2025 all education sites will have a sustainability lead responsible for the site's climate action plan[136]. In 2024, education providers can access a new support service to help develop these plans through a dedicated website[137].

This is an ambitious policy and there are many potential positive outcomes from each of the action areas. Some of the key outcomes anticipated from the strategy are summarised here, more information is available from the DfE's annual progress reports[138].

Each learning facility will have a sustainability lead who will be responsible for climate action plans, and engagement with climate and nature funding schemes and projects (e.g., the nature park). Schools and early years facilities will be able to report on their emissions[139] via a standardised framework by 2024. A standardised carbon emissions framework is already available for further and higher education institutions[140]. With this knowledge it is hoped that education settings will have the knowledge and tools to aim for net zero between 2025-2035.

An annual climate literacy survey will be introduced to benchmark progress in improving climate knowledge in school leavers. The DfE have recently launched two new qualifications that are essential to support the green transition, a Level 3 in low carbon heating technician and a T Level in Agriculture, land Management and production. Alongside these qualifications the DfE is planning to introduce a new GCSE in Natural History by 2025.

The education sector across Northumberland will have the opportunity to join the National Education Nature Park and Climate leaders' awards. Education facilities will also be required to have a sustainability lead and climate action plan in place by 2025 and to be reporting their emissions to the DfE by 2024. It should be noted that schools will need a level of support in achieving this, some of which can potentially be provided by the County Council.

2.6.8.2. Climate Change for Schools and Education in Northumberland

Across Northumberland many children, young people, adults, and practitioners in education are working hard to deliver climate change and environmentally positive work and projects including; eco-councils, fundraising days, uniform swaps, and sustainability competitions. NCC can help support and share best practice from this type of work across the wider school network. Therefore, the role of the climate change team is not to re-invent the wheel, but to learn from others, promote good

[136] Sustainability leadership and climate action plans in education - GOV.UK (www.gov.uk)
[137] https://educationhub.blog.gov.uk/2023/12/21/climate-change-and-sustainability-in-education-5-steps-were-taking/
[138] Sustainability and climate change strategy: our progress so far, December 2023 (publishing.service.gov.uk)
[139] Energy efficiency: guidance for the school and further education college estate - GOV.UK (www.gov.uk)

[140] Standardised Carbon Emissions Framework (SCEF) | EAUC

work; and where there is a knowledge or resource gap adapt or expand on work to fill it.

The climate change team have worked closely with the education sector in Northumberland to understand where climate change and sustainability support is needed, and what help can be offered. Engagement with education professionals has highlighted challenges staff are facing when trying to mainstream climate and sustainability education. These include:

- staff capacity for engaging with, and searching for, new climate and environment teaching materials
- staff capacity to explore existing climate and environmental materials and align it with curriculum
- lack of knowledge or confidence amongst teaching staff to incorporate climate and environmental topics into their lessons
- scaling up individual teacher practice to whole school practices
- sharing best practice across schools or collaborating across schools

Over the past 3 years the climate change team have worked to help mitigate some of these challenges, as outlined in the following projects.

2.6.8.2.1. Schools Resource Pack

A *Climate Change and Sustainability Resource Pack*[141] has been developed specifically for schools in the county to tell the story of climate change through a Northumberland lens. This has been developed alongside the Ministry of Eco Education[142] to allow teachers to access the free curriculum resources that support these themes. To launch this event, an online resource demonstration was held including a case study from a teacher who had used the resource in their classroom. 43 people registered for the event, with 36 attending on the day. The resource pack has attracted positive feedback and interest from other Councils interested in developing a similar resource.

This resource pack will continue to be updated and new information included. A review will be conducted after one year with feedback sought from users to help improve the pack.

2.6.8.2.2. Youth Voice Event

On the 11th of December 2023, the first Northumberland Climate Change Youth Voice Event took place at County Hall. This was the first climate focused student event held by the Council and was co-designed with students from the King Edward VI School, Morpeth. The event was an opportunity to capture the voice of young people who sometimes have a very different perspective on what priorities the Council should include in the next climate plan compared to other stakeholders. Five schools attended with 40 students from year 9 to year 13.

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[141] https://northumberlandeducation.co.uk/climate/
[142] https://www.ministryofeco.org/

At the event the students' feelings about climate change before and after were captured, as shown in Figure 18.

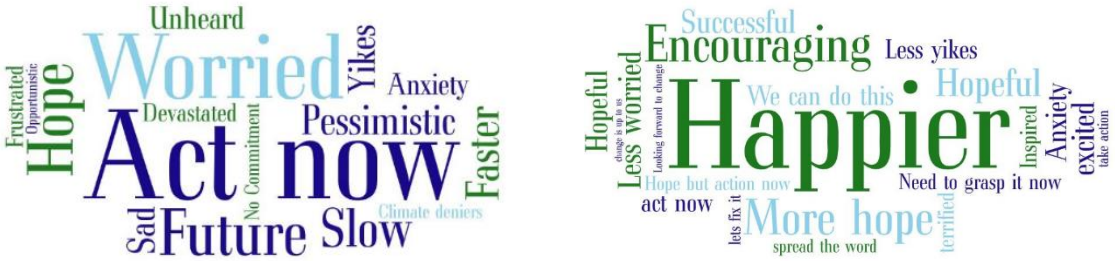

Figure 14 - Feelings related to climate change expressed before (left) and after (right) the Climate Change Youth Voice event 2023.

It's clear that the students gained a huge amount from the event, both learning about the local climate change challenge and solutions and inputting their ideas, as well as skills such as debating, prioritisation, communication, and compromising.

There was some fantastic feedback from the event. One teacher from QEHS commented, '*The students and accompanying member of staff were very positive about everything from the organisation and logistics to the quality of the discussion. It was clearly a worthwhile experience and well received by all*.'

The Council intends to host a workshop or event relating to climate change, sustainability, or the environment at County Hall for students on an annual basis. The success of the first year's workshop demonstrates the importance of working and engaging directly with students.

2.6.8.2.3. Northumberland Schools Sustainability Network

Northumberland County Council's Climate and Education teams are working together with UK Schools Sustainability Network to establish the Northumberland Schools Sustainability Network (NSSN). Within its first year, 2022-23, a network of impassioned and dedicated teachers has developed. The council organises online meetings of our teacher group to provide a space to share ideas, resources and advice between teachers that are pioneering in sustainability and climate education. An online session is held once a half term around a theme, inviting teachers and other school staff that are doing novel work to talk about it and share with others. Across the network, a competition took place last academic year to design the NSSN logo. There are now 41 teachers and education professionals on the teacher network mailing list from 28 different schools.

Going forward, it is the Council's intention to set up a student branch of the network. The UKSSN first started at schools in London with students coming together across schools to plan sustainability and climate action. Within the first year of the Northumberland School's Sustainability Network, it has been a challenge to reach into secondary schools to set up the student side of the network. However, key links with secondary schools have now been established, particularly through the Youth Voice event described above. The Council will build on these links to develop the student NSSN.

2.6.8.2.4. Young Green Briton Challenge

The Young Green Briton Challenge[143] is a year-long journey for whole year groups of students aged 11-14 (KS3) in state schools. It combines climate education with innovation, business and citizenship skills. Students work in teams to identify local climate issues and design entrepreneurial solutions to address them. The most promising teams receive seed funding and mentorship, with the best ideas entering the National Challenge finals.

In the first year, Corbridge Middle School won the event. After a successful first year in the academic year 2023/23, they are now exploring ways to scale the Challenge and bring more schools in through existing networks. The Council is supporting a Northumberland regional version of the Young Green Briton Challenge with three Northumberland middle schools; Corbridge Middle School; Hexham Middle School; and St Joseph's Catholic Middle School. NCC is providing seed funding for each school for the group's projects and will host the regional 'Dragon's Den'. The winning group will then attend the final in London.

Depending on the outcome of this project in 2024, Northumberland County Council will work with Social Innovation for All, who run the YGBC, to determine how this regional challenge will develop and additionally support them or other councils to set up their own regional versions.

2.6.8.2.5. Whole School Approach

Over the last 3 years, the Climate Change Team have been researching and engaging with other pioneering councils and organisations in the climate and sustainability education sector to understand the different approaches being taken to help schools incorporate sustainability and climate action into their business as usual. This means; integrating sustainability at the heart of the school ethos, greening the school curriculum, encouraging student climate action, encouraging closer engagement with nature and environment, and becoming a more energy efficient school with ambitions to become a net zero school. Within these approaches, curriculum, school ethos, community and school estate should be considered holistically. For instance, work to make schools sites more energy efficient also provides a springboard for education and learning.

The Climate Change Team have engaged with councils such as Durham and their Eco2Schools approach and Brighton and Hove's 'Our City, Our World' model to understand how they are supporting their schools. Whilst these models are not directly replicable in Northumberland, learning about best practice has been crucial in paving the way for a future whole school approach that could work for Northumberland. This research and learning from best practice will allow us to understand the options and where the gaps are for future projects to support Northumberland's schools.

Northumberland County Council will develop an approach and pilot a whole school sustainability and climate action strategy with Northumberland Schools.

2.6.8.3. Education and Schools Summary

[143] https://carboncopy.eco/initiatives/young-green-briton-challenge

The County Council wants to ensure that schools are supported to reach the targets set out by the Department for Education regarding climate change and sustainability, as well as continuing to develop and lead locally relevant projects for schools and other education settings. It is the Council's ambition that:

- All schools and colleges across the County have a sustainability lead within their schools by 2025 in line with DfE guidelines and for them to be linked into the NSSN staff network.
- All schools in Northumberland have a climate change action plan written by the end of 2025 in line with the DfE guidelines.
- Environmental issues and climate change become integrated into all aspects of the teaching curriculum in schools across Northumberland by 2030, not just geography and science. Supported by a Council whole school approach.
- Schools across Northumberland aim to become net zero by 2040 in line with the ambitions of this action plan.
- All students and teachers are aware of Northumberland County Council's Climate Commitments – linking in with the Northumberland Net Zero Campaign.
- All teachers feel confident in their understanding of the cause, impacts, and solutions to climate change, and understand where it fits into their teaching subjects, through growth of the NSSN staff group and supporting resources developed by the County Council.
- Students feel empowered to take climate action and make a difference in their local communities, through the development of a student NSSN group.

2.6.8.4. Energy Central Campus

The Energy Central Campus project is part of the Energising Blyth programme[144]. This includes the Energy Central Learning Hub, which features state-of-the-art industrial training, education, and STEM-related skills facilities. The planed second phase of this programme will see the launch of the Energy Central Institute, which will provide higher level skills, research, and innovation, in support of clean energy sector growth. This programme is being funded by National Government's Towns Fund, North of Tyne Combined Authority and Northumberland County Council.

Both facilities will strengthen Northumberland's leading role in driving the clean energy revolution[145]. Equipping young people and adults with the skills[146] needed to take up careers in the sector, enable local companies to grow through access to a skilled workforce and support them to adopt the latest innovations in clean growth technology. It is essential to Northumberland, the region, and the UK that there is a trained workforce ready to help deliver the requirements of a net zero energy transition.

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[144] https://www.northumberland.gov.uk/Economy-Regeneration/Programmes/Town-Centre-Regeneration/Energising-Blyth/Energy-Institute.aspx

[145] Green jobs delivery plans from gov. https://www.gov.uk/government/news/green-jobs-delivery-steps-up-a-gear

[146] Green skills overview - https://post.parliament.uk/research-briefings/post-pn-0711/

2.6.9. Internal Council Engagement

Alongside the net zero targets for the county, NCC aim to become a net zero organisation by 2030. The importance of engagement (as outlined in the introduction) is equally applicable for NCC's own workforce. NCC's net zero targets will not be reached without the support of staff throughout the organisation. In addition to this professional influence, the NCC workforce of approximately 5090 people, all have their own personal lifestyle and behavioural opportunities to make positive climate change.

The *Climate Change Action Plan 2021-23* outlined ambitions to engage NCC staff on climate change. To drive a cultural shift throughout the organisation, whereby staff prioritise climate change mitigating measures across all service areas. This decision was based on recommendations from the Climate Change Committee, that local governments should implement staff training and capacity to deliver on net zero.

The following section outlines the internal council engagement priorities. There are two connected policy initiatives; Carbon and Integrated impact assessments and the climate change policy thematic group, both of which are covered within section 2.1.3.1.

2.6.9.1. NCC Workforce Training

The climate change team developed a module for the internal NCC staff training system 'Learning Together' titled *Introduction to Climate Change*. This short course includes a basic understanding of climate change science, the impacts of climate change (nationally and locally), UK policy context, NCC's net zero targets, and actions that individuals can take to mitigate against climate change.

As set out in the *Climate Change Update* paper approved by Cabinet on 8th March 2022[147], this online module was included in the Council's statutory and mandatory training portfolio. The climate change module went live on the 1st of April 2022, and 4745 employees (90.99%) have completed it.

This introduction to climate change engages all staff in sustainability initiatives and raises awareness of individual actions that can be taken within the workplaces and throughout the wider community against climate change. The hope is that this module acts as an introduction, sparking interest and awareness, which can be followed up with Carbon Literacy Training.

In line with the new action plan, the online training module will be updated during 2024 to reflect any changes or updates and will include additional information about environment and ecosystems. This training will be a source of additional information and training for staff completing Integrated Impact Assessments.

This will allow NCC to embed the aims of both the climate change action plan 2024-26 and environmental policy strategy into the fabric of NCC working. This training will

[147] https://northumberland.moderngov.co.uk/documents/s9649/04%20Climate%20Change%20Update.pdf

be a mandatory requirement for all new Council employees as part of their induction process.

2.6.9.2. Carbon Literacy Training

Carbon Literacy Training is an accredited course, developed by the Carbon Literacy Project[148]. The Carbon Literacy Toolkit for Local Authorities was developed by the Carbon Literacy Project, together with Local Authorities and funded by the government Department for Business Energy and Industrial Strategy (BEIS) to provide the tools and resources needed to allow local authority employees to understand what they can do in their working role to reduce emissions.

Northumberland County Council's policy aims for climate change and the environment, will be easier to implement if officers and members have the necessary knowledge and understanding of these themes. By providing Carbon Literacy Training for as many members of staff and elected members as possible, NCC can develop an organisational cultural change in its approach to the climate emergency. A co-benefit of this training is that the average person completing Cabon literacy training goes on to lower their carbon footprint by between 5-15%[149], meaning that embedded training will not only help the Council reduce its carbon footprint but also individual members of staff.

The importance of using training to build capacity within local authorities was highlighted in the last action plan, as a recommendation from the climate change committee. In the *Climate Change Action Plan 2021-23* the need for 'Carbon Literacy Training' within NCC was approved as a key priority action. Carbon Literacy training provides a more detailed and comprehensive understanding of the causes, impacts and potential solutions of climate change. The following training aims were set out:

- by April 2021 all executives will have completed carbon literacy training
- once all executives have undertaken training, NCC will be accredited as a 'bronze' carbon literate organisation
- roll out training to senior managers and managers in NCC throughout 2021.
- once more trainer capacity is achieved, roll out training across the whole of NCC
- summer 2021 – all elected members will be offered Carbon literacy training. The individual climate action commitments made by each councillor (as part of the training) will be published in the 'county councillor information' section of the website

Carbon literacy training has been made available to all NCC staff since spring 2021.

Between 2021 and 2023:

- 123 members of staff undertook training and are now certified
- two elected councillors have undertaken training, through the staff training route

[148] https://carbonliteracy.com/
[149] Organisation - The Carbon Literacy Project

- no executive directors have completed training

To become a Bronze certified carbon literate organisation board members and leaders must become certified as Carbon Literate. During the last action plan NCC did not reach this target.

The primary reason for not having delivered carbon literacy training to senior and executive staff, is the restructure and recruitment of a new executive team set out in section 2.1.3. Staff capacity can also be a barrier to engagement, as training requires two half day sessions. It should be noted within this context, that delivering training to 123 members of staff is a significant achievement.

Going forward, under the leadership of a new executive team, there is an opportunity for carbon literacy training to be delivered more widely and in particular to senior members of staff. By the end of 2025, all executive directors and cabinet members should have completed carbon literacy training. Additionally, by the end of 2025, senior staff in the following teams, where climate change is especially relevant, should have completed carbon literacy training:

- Planning
- Public Health
- Procurement
- Strategic Transport
- Economy and Regeneration
- Housing
- Finance

To embed Carbon Literacy into its culture, the Council should have ambition to move beyond bronze carbon literacy organisation accreditation, towards Silver, Gold and Platinum; and train as many of its staff to be Carbon Literate as possible.

2.6.10. Conclusion

Everyone is a stakeholder when it comes to climate change, sustainability and the environment. Every person who lives in, works in or visits Northumberland is a stakeholder to NCCs Climate and Environmental aims. It is therefore crucial that the County Council continues to develop its engagement and partnerships with the residents, communities, businesses, third sector organisations, schools and other groups to support the ambitions of this plan. During the period covered by the previous *Climate Change Action Plan 2021-23*, the County Council has successfully engaged and supported many stakeholder groups which were already interested in mitigating climate change. The Council has successfully created networks of otherwise isolated stakeholders and provided resources to support them to take action. The next step is to reach beyond this already engaged group to build momentum at scale.

3. Emissions

3.1. Emissions Introduction

This action plan is driven by the emissions reduction targets set out at the beginning of this action plan in section 1.2. As stated previously, the County Council cannot deliver these targets in isolation. To reach these ambitions, will require appropriate policy development, legislation and funding from national government (top-down) and behavioural change in the way our society works (bottom-up). Alongside these two fundamental enabling strands set out in the 'Society' section above, infrastructure is required to directly reduce emissions at their source. In this section, action areas to directly reduce emissions will be set out. These will focus on energy generation, heat consumption and transport at a county level. Additionally, emissions produced directly by the County Council will be addressed and plans set out to decarbonise in line with the relevant targets.

3.2. Emissions Data

Local authority level emissions are reported on an annual basis by the government Department for Energy Security and Net Zero (DESNZ) via a data set called *UK local authority and regional greenhouse gas emissions national statistics*[150]. This is the source of data by which Northumberland County Council measures progress against the County targets set out at the beginning of this plan. The data published through this source is subject to a two-year lag, meaning the most recent data available at the time of writing this action plan is for the year 2021.

It should be noted that over the period covered by the previous *Climate Change Action Plan 2021-23*, the scope and methodology for the provision of Local Authority emissions data has changed. The key changes are as follows:

- inclusion of methane (CH_4) and nitrous oxide (N_2O) alongside Carbon Dioxide (CO_2)
- changes to the methodology for calculating Land Use, Land Use Change and Forestry (LULUCF) emissions, accounting for the impact of forestry planted on peatland

This means that when comparing the data provided in this action plan with that provided in the previous action plan, it may appear that emissions have risen for the county of Northumberland. This is not the case as the baseline for this data has also been recalculated to account for the changes set out above. Data in the previous climate change action plan should therefore be discounted in favour of the data presented here.

At the highest level, there were 2,713.19 kilotonnes (kt) of greenhouse gases (CO_2 equivalent) produced in the county of Northumberland in 2021. There were also 643.5 $KtCO_2e$ sequestered, i.e. absorbed. That means that the net emissions from the county of Northumberland in 2021 were 2069.69 $KtCO_2e$. These emissions are shown in Figure 19 below.

[150] https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

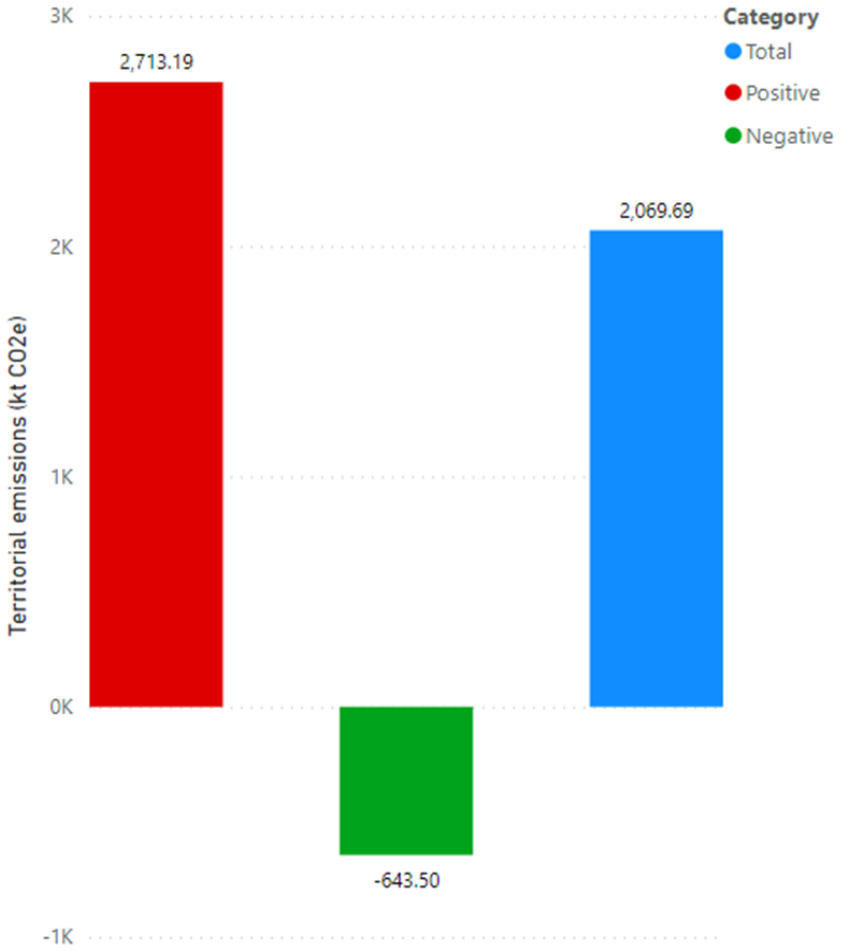

Figure 15 - Greenhouse gas emissions for the county of Northumberland 2021

Emissions have fallen consistently since 2005 when data provision begins. This trend can be seen below in Figure 16.

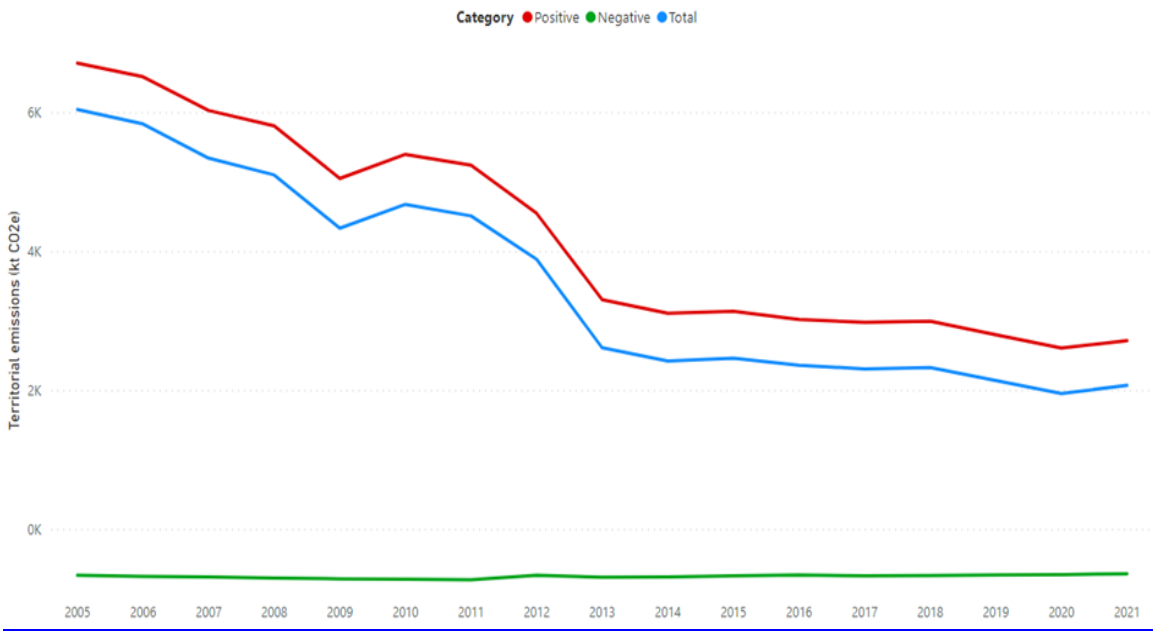

Figure 16 - Greenhouse gas emissions for the county of Northumberland 2005-2021

The steep decline between 2010 and 2013 is due primarily to the closure of large industrial facilities. The dip and subsequent rise between 2019 and 2021 is due to the impact of Covid-19 lockdowns.

The sources of these emissions can be broken down in various ways to correspond with the action areas in this action plan. Detailed analysis of this data is provided in the relevant sections below. Figure 17 below sets out the various sources of emissions calculated for the county of Northumberland in 2021. It should be noted that ‘other’ refers primarily to the use of fuels which are not metered such as heating oil, solid fuel and diesel not used for transport.

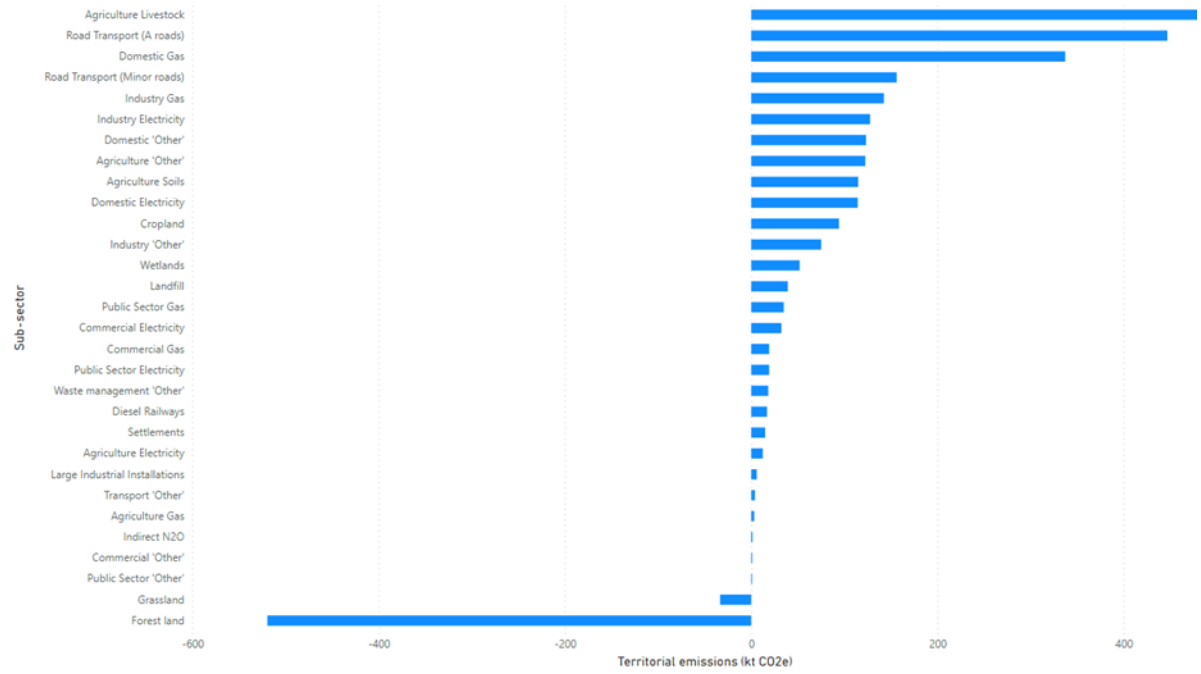

Figure 17 - Greenhouse gas emissions for the county of Northumberland 2021 by source

In the following section, the data set out above will be analysed further and means of reducing these greenhouse gas emissions will be set out across relevant action areas.

3.3. Renewable Energy Generation

3.3.1. National Context

A resilient and low-carbon electricity grid is essential for the transition to net zero, both at a local, and national level. The most effective solutions to decarbonising heat and transport lie with electrification. This means that the generation of renewable energy must continue to increase, leading the national electricity grid to decarbonise. The grid must also be capable of supplying the necessary electricity to the point of use.

On 26th October 2023, the Energy Act 2023 passed into law. It aims to transform the UK's energy system by strengthening energy security, supporting the delivery of net zero and ensuring household bills are affordable in the long term.

The Act focuses on a number of areas relevant to the energy sector, in particular:

- the storage, transport and capture of carbon and the decommissioning of carbon storage installations as well as the possibility of regulations relating to

revenue support contracts being introduced by the Secretary of State in relation to the transport, capture and storage of carbon
- the storage, transport and production of hydrogen as well as the possibility of regulations relating to revenue support contracts being introduced by the Secretary of State in relation to the foregoing
- the establishment of a future systems operator (known in the Act as the Independent System Operator and Planner ISOP) which will have control over the electricity system and gas system. The intention being to create a single body which has whole system oversight of the power network in Great Britain which should enable better co-ordination and systemic planning of the energy network as increasingly electricity and gas become intertwined in the UK's electricity, heating and transport
- granting power to the Secretary of State to institute regulations in respect of heat networks and designated heat network zones
- competition within the electricity and gas markets to better serve the ultimate consumer

The government's summary of the Act promises that it will 'help the government deliver net zero by 2050 in a pragmatic, proportionate and realistic way.' There are various provisions scattered in the Act to help achieve this. These include:

- measures implemented to invest in the development of offshore wind, a sound alternative to the use of fossil fuels and high carbon output models
- imposing a duty on Ofgem to consider net zero targets when making its decisions as a regulator
- the ISOP must carry out its functions with a view to achieving various objectives, including driving net zero outcomes by identifying and creating opportunities to facilitate the transition to net zero

3.3.2. Grid Decarbonisation

The UK set out an ambition in 2021 to decarbonise its electricity system by 2035[151]. This will rely on generation of electricity from renewable sources (onshore and offshore wind, solar, hydro and biomass) together with nuclear. However, in its *Decarbonisation of the Power Sector*[152] report in April 2023, the House of Commons Business, Energy and Industrial Strategy Committee stated that 'At the current pace of change, the UK is set to fail to hit its target of decarbonising the power sector by 2035.'

It is unclear if the Energy Act 2023 will lead to an increase in the pace of grid decarbonisation but the intention in the legislation is clearly to support this transition in practical ways.

In its most recent publication of *Energy and emissions projections 2022 to 2040*[153], updated on 30th November 2023, the Department for Energy Security and Net Zero (DESNZ) states 'We project that the low carbon share of UK electricity generation

[151] Plans unveiled to decarbonise UK power system by 2035 - GOV.UK (www.gov.uk)
[152] Decarbonisation of the power sector (parliament.uk)
[153] Energy and emissions projections 2022 to 2040 (publishing.service.gov.uk)

will rise from 54% in 2021 to 91% in 2040, accounting for EEP-ready electricity supply policies. This is the proportion of all generation from renewables, nuclear or carbon capture, usage, and storage (CCUS) power producers.'

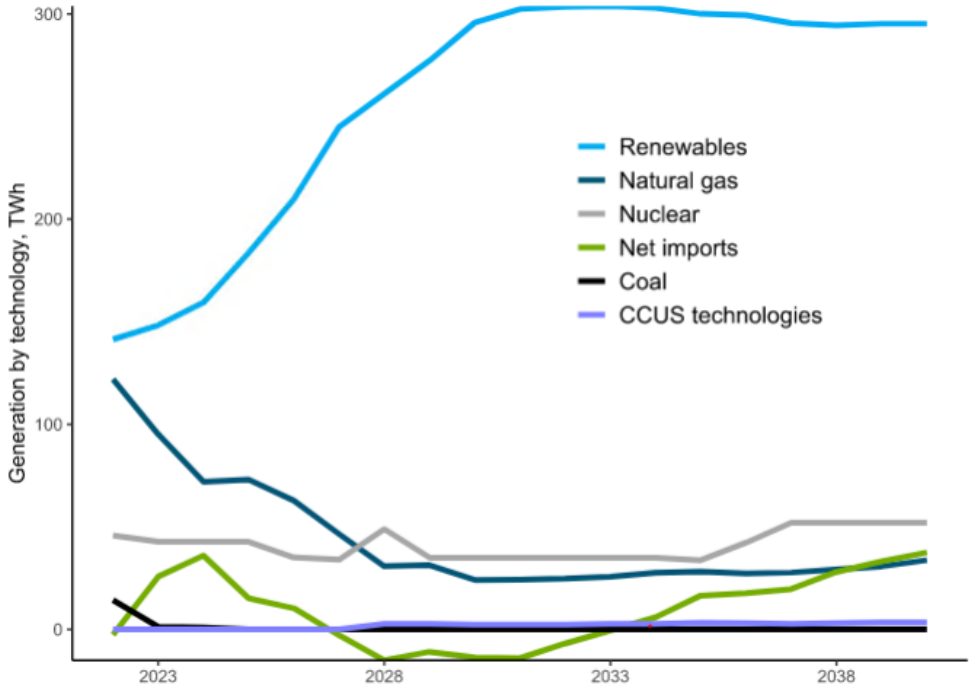

Figure 18 – Projected UK electricity generation by fuel source, TWh.

The Figure 22 shows the projected electricity generation by fuel source up to 2040. As a Local Authority, there are some limited opportunities to support and contribute to this decarbonisation as follows:

- Where possible, develop our own renewable energy generation sites. To increase supply to the grid, or where possible, utilise off-grid projects with battery energy storage systems (BESSs) to reduce demand on the grid.
- Where possible implement energy efficiency measures across the NCC estate to reduce demand on the grid.
- Support our residents, businesses, and communities to develop and realise their own renewable energy generation opportunities. Either to export to the grid or to supply their own needs, alongside energy efficiency measures to reduce their energy consumption.
- Working with the National Grid and District Network Operators (DNOs) to support future demand planning and grid infrastructure developments in Northumberland.

Northumberland County Council commits to contributing to the decarbonisation and resilience of the electricity supply in the five ways set out above across the period covered by this action plan.

3.3.3. Renewable energy generation in Northumberland

Renewable energy is classed by the UK government as energy generated from any of the following sources:

- anaerobic Digestion
- animal Biomass
- cofiring
- hydro
- landfill Gas
- municipal Solid Waste
- offshore Wind
- onshore Wind
- photovoltaics (solar)
- plant Biomass
- sewage Gas
- wave/Tidal

Northumberland contributes significant generation capacity to the UK power grid, particularly through onshore wind and plant biomass. Additionally, Northumberland has an increasing number of solar photovoltaic generation sites contributing to the national grid.

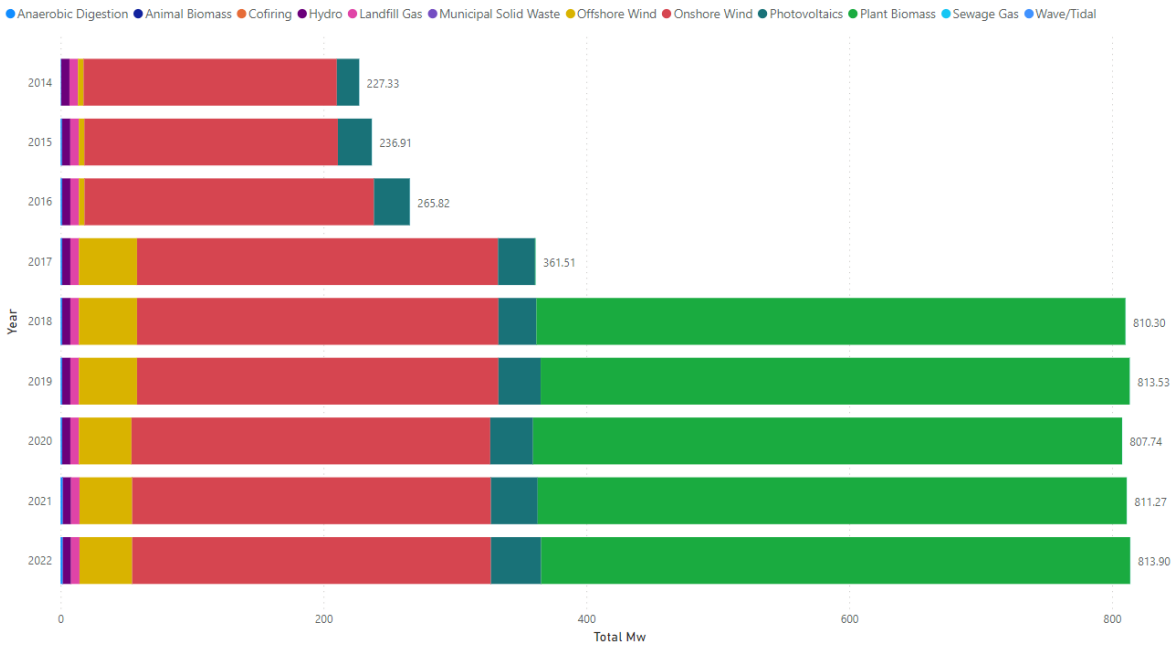

Figure 19 - Renewable Energy Generation Capacity by type and year in Northumberland (MW)

In 2022, according to the Department for Energy Security and Net Zero, renewable energy generation capacity in Northumberland was 813.9 Megawatts (MW)[154] (as shown in Figure 23).

Renewable generation capacity increased substantially in 2018 when the Lynemouth Biomass power station was commissioned.

154

https://assets.publishing.service.gov.uk/media/6512b64ff6746b000da4b9f7/Renewable_electricity_by_local_authority_2014_2022.xlsx

It should be noted that whilst biomass is classed as a renewable energy source, it relies on burning wood which produces carbon dioxide. This can be classed as renewable if the wood can be traced and its production is managed in a way which ensures that the end-to-end lifecycle (growth, transport, burning) is carbon neutral. Lynemouth Power and other smaller biomass generators in Northumberland ensure that 100% of their biomass meets mandatory sustainability criteria in relation to land usage (including forestry management, use only of timber industry residuals, ecological protection, legality and societal impact) and supply chain greenhouse gas limits.

When considering territorial emissions (i.e. emissions produced in Northumberland), these biomass power plants are net emitters. As the biomass they source is primarily from outside Northumberland and therefore the carbon sequestered in the production of the biomass is not in Northumberland.

3.3.4. Energy (electricity) consumption in Northumberland

Electricity consumption in Northumberland has fallen according to DESNZ figures[155] as can be seen below in Figure 24.

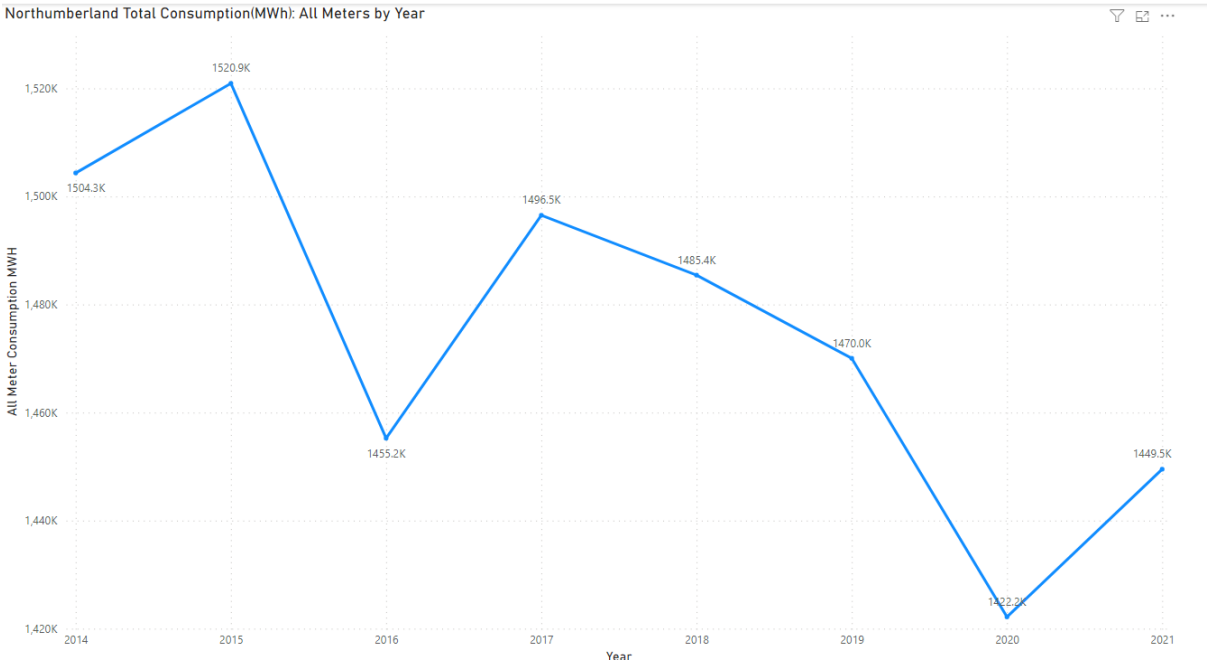

Figure 20 - Total electricity consumption in Northumberland by year (MWh)

When matching this to annual renewable energy generation figures. This shows that **Northumberland generates on average 80% of its electricity needs within the county through renewable sources.**

Whilst the above holds true in theory, this is not in practice how electricity distribution works. Emissions from electricity consumption in Northumberland are calculated using carbon factors which account for the carbon intensity of all electricity in the UK grid, not just from local sites.

[155] https://www.gov.uk/government/statistics/regional-and-local-authority-electricity-consumption-statistics

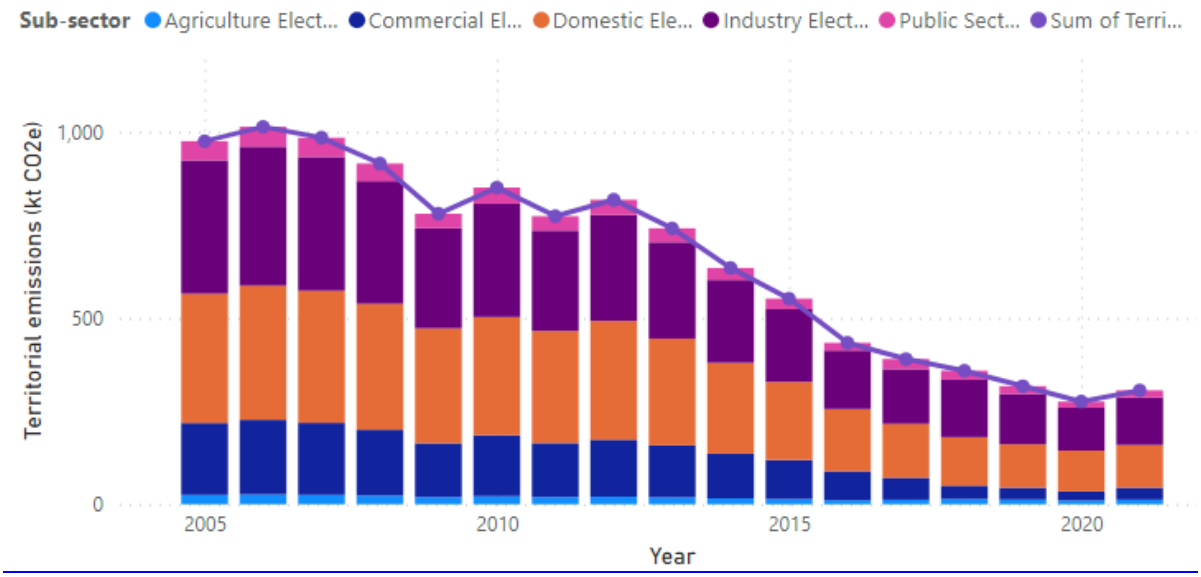

Figure 21 - CO_2e emissions from electricity in Northumberland by year and sub-sector

Emissions from electricity usage have fallen both in line with consumption and also in line with the general trend of decarbonisation across the UK electricity grid (as shown in Figure 25).

To continue supporting this trend, Northumberland County Council will continue both to encourage and educate residents, businesses and communities to reduce their energy use and also to facilitate where possible, the development of additional renewable energy generation capacity within the county.

3.3.5. Local Projects

As set out above, the number of renewable energy generation sites within Northumberland has continued to increase since 2014. In particular the number of solar photovoltaic sites (PV) has increased. Whilst the generation capacity of solar PV in Northumberland is still dwarfed by onshore wind and plant biomass, it is the area with the greatest increase in capacity in recent years and continued potential increase.

During the period of the previous climate change action plan (2021-23), 57 sites with approximately 160MW of generation capacity have been approved by NCC's planning department for development.

This is a demonstration of the support shown within the Northumberland Local Plan for low carbon energy generation developments, which balance other planning considerations such as the need to protect Northumberland's environment, communities and businesses from adverse impacts.

3.3.6. District Network Operator (DNO) Constraints

It should be noted that one of the major dependencies on the reduction of carbon emissions across all sectors, where electrification is the preferred solution; is the

infrastructure of the National Grid and the ability of District Network Operators (DNOs) to connect new projects and distribute electricity to its points of use. As renewable energy generation sites continue to increase and power is needed in new places, it is a significant challenge for DNOs to operate at the pace required. There have been many reports of renewable energy generation sites being built but unable to connect to the grid due to connection delays[156].

In April 2022, the Government announced the *British Energy Security Strategy*[157] which led the National Grid to launch The Great Grid Upgrade[158] which is 'the largest overhaul of the electricity grid in generations'. This upgrade will see new infrastructure and upgrades to the existing grid take place, to bring clean energy from where it is generated to where it is needed.

This strategy paved the way for elements of the *Energy Act,* particularly the establishment of the Future Systems Operator and the new responsibilities of Ofgem which will all contribute to the resilience and decarbonisation of the grid.

Despite the strategies set out above, grid infrastructure, connection lead times and costs remain major issues upon which the success of Northumberland County Council's climate change targets depend.

As set out above, NCC will work closely with the DNOs (Northern PowerGrid and Scottish Power and Energy Networks) to support future demand planning and grid infrastructure developments in Northumberland.

3.3.7. Community Energy

Community energy projects can bring multiple local benefits. Establishing not just additional energy generation but leading to either lower energy costs for a given community, or a revenue stream which can be invested locally.

Northumberland County Council has supported the development of community energy projects across the period of the last climate change action plan. Projects have moved forward in Humshaugh and Norham to develop solar and wind generation plans, the revenue from which will be invested in the local community through the community development trust. These projects will need to secure investment to enable them to progress to delivery.

Funding for these types of projects remains a challenge and NCC has supported this where possible through provision of grants or the waiving of fees for planning pre-application services.

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[156] https://www.ashfords.co.uk/insights/articles/grid-and-bear-it-the-implications-of-grid-connection-delays-for-renewable-energy-developers#:~:text=Currently%20over%2040%25%20of%20grid,approach%20to%20negotiations%20with%20landowners.

[157] https://www.gov.uk/government/publications/british-energy-security-strategy

[158] https://www.nationalgrid.com/the-great-grid-upgrade

It is very welcome that in August 2023, the Government announced a new Community Energy Fund[159] to boost local growth and energy security. The fund is for the development of projects from concept to investment-ready scheme and will replace the Rural Community Energy Fund (RCEF) which was discontinued two years ago.

When investment ready schemes are developed, there is still a challenge for communities to seek and manage the investment required to bring energy projects to fruition.

NCC can support this process by helping communities with the necessary procurement and promoting investment opportunities to appropriate companies.

NCC will commit to supporting communities with local energy projects and to prepare bids for the Community Energy Fund which will run until 2025.

3.3.8. Individual Household Generation

Generating renewable energy at a building-by-building level is important for several reasons:

- it reduces pressure on the national electricity grid
- it reduces bills for consumers
- it makes other low-carbon technologies such as heat pumps and electric vehicles more viable as costs are reduced
- if combined with Battery Energy Storage Systems (BESS) it can provide additional resilience in the event of grid power outages

The easiest way to generate electricity at a building level is with roof mounted solar panels. Northumberland County Council has been facilitating the installation of additional domestic roof mounted solar through its Warmer Homes schemes which are described in the Heating section of this plan. Solar generation is often an integral part of domestic retrofit and is therefore installed as part of a holistic approach to domestic decarbonisation and energy efficiency improvements.

Over the period from 1st January 2021 to 31st December 2023, Northumberland County Council installed more than 150 solar arrays on domestic properties. These have been grant funded and at no capital cost to the homeowner or tenant.

Northumberland County Council will commit to continuing to apply for and access grant funding opportunities and distribute these to eligible properties (as part of a fabric first retrofit process) increasing domestic renewable energy generation across the County and helping to tackle inequality issues.

3.3.9. Off Electricity Grid Properties

Northumberland is home to a disproportionately high number of properties which are not connected to the national electricity grid. In many cases these properties are dependent on diesel generators which are both expensive to run and emit a

[159] https://www.gov.uk/government/news/communities-at-the-heart-of-new-fund-to-boost-local-growth-and-energy-security

significant amount of CO_2. Finding ways to support these properties to access clean and low-cost electricity either through connecting to the grid or generating renewable electricity on-site, is a significant challenge.

Northumberland County Council is a member of an Off-Grid taskforce, led by Community Action Northumberland (CAN). The Council has contributed to the work of this group, primarily by developing data analysis to establish the number and location of off-grid properties in the County.

By matching council tax resident data with customer data supplied by District Network Operators (DNOs), it has been possible to estimate which properties are not connected to the grid.

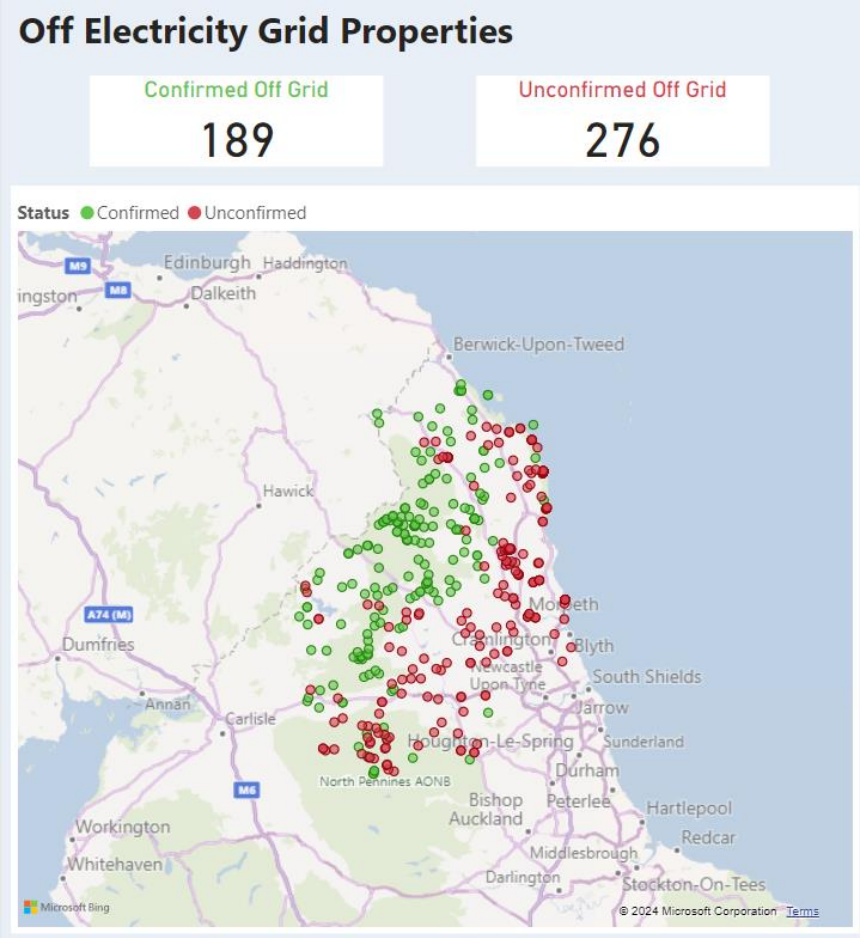

Figure 22 - mapping of known and possible off-grid properties in Northumberland.

Following this analysis, we know there are at least 189 properties in the county with no grid connection. There are 276 additional properties which are possibly off the grid but as yet are unconfirmed (as shown in Figure 26).

There is no ‘one size fits all’ solution to the issue of off-grid properties. In many cases it is prohibitively expensive to connect properties to the national grid and there is no one organisation which holds responsibility. It is possible that through existing or future grant funding schemes, Northumberland County Council can facilitate the improvement of electricity supplies to some of these properties, primarily through

supporting the installation of domestic renewable generation measures such as solar PV and Battery Energy Storage Systems (BESS).

Northumberland County Council will continue to play a proactive role in the off-grid taskforce and to seek and allocate funding where possible and appropriate to both reduce energy costs for these properties and decarbonise their electricity supply.

3.3.10. NCC Projects

Northumberland County Council has invested in a number of renewable energy generation projects across its estate during the period of the last climate change action plan.

At the time of writing the council has the capacity to generate 1,142,857 kw of electricity through solar PV.

Most notable is the solar car port which has been installed at County Hall and which will generate clean, cheap energy for the running of county hall and for charging electric vehicles. More information on this can be found in the NCC Emissions section of this report.

In line with its aims to be a net zero organisation by 2030, Northumberland County Council commits to investing in renewable energy measures across its estate when buildings are due for refurbishment and/or where invest to save business cases can be made.

3.3.11. Future Approach

The route to net zero as a county, is dependent on the supply and distribution of clean energy. Ensuring that the electricity grid decarbonises and upgrades sufficiently and at the required pace is the responsibility of central government and the associated industry bodies who regulate and manage generation and distribution of power. Northumberland County Council can contribute to this in the ways set out above but cannot hold ultimate responsibility.

CO_2e emissions from electricity consumption make up 11% of Northumberland's total greenhouse gas emissions making it the fourth highest sector of emissions. However, renewable energy generation and distribution is far more important than just reducing these emissions as it makes the reduction of emissions from almost all other sectors possible.

Northumberland County Council will focus its efforts in this action area on developing and delivering renewable energy generation projects where grant funding is available and where invest to save business cases can be made. Projects will be focused on delivering benefits not just to the County Council's estate and operations but to wider communities too.

The County Council will also proactively work with stakeholders such as the DNOs, communities and businesses to help develop and accelerate renewable energy generation in Northumberland.

3.4. Heating and powering buildings

Heating buildings in Northumberland is the largest overall source of greenhouse gas emissions in the county, accounting for 31.66% of total greenhouse gas emissions. Domestic heating alone accounts for 16.96% of the county's emissions, when domestic electricity use is included, domestic energy use accounts for 23.18% of Northumberland's total emissions.

Buildings that are not energy efficient and use fossil fuel energy sources for heating negatively impact the environment, human health and wellbeing. Reducing emissions from building use, will help towards the mitigation of climate change while also providing a route to adaptation. A key way to adapt to the future risks of climate change is to future proof buildings. For example, when a building is more energy efficient, it can better withstand extremes of hot and cold temperatures, and it is (relatively) cheaper to run for the inhabitants. Everyone should be able to live, work, learn and receive care in a place that is a comfortable temperature, dry, and free of harmful pollutants.

The current options available to households and building owners to decarbonise their heat rely on electricity as a heat energy source. Changes in heating source mean that energy costs are transferred from one 'heat energy source' to another (e.g., gas-to-electric, Oil-to-electric). The change to electricity as the main heating energy source, relies on the decarbonisation of the grid to ensure that the electricity available to households comes from renewable energy sources. It is by improving overall energy efficiency that financial and emissions savings can also be made. Efficiencies can come from the fabric of a building, the appliances being used, how appliances are used, and maintenance. The energy efficiency of buildings and the decarbonisation of heating are interdependent.

Due to these factors and the current government policy and funding schemes that look at energy efficiency through a whole-building lens (e.g., Energy efficiency certificates, PAS2035 guidance), this section will have elements of both building energy efficiency and heating systems and sources of heating energy. However, for more detail about energy consumption and renewable energy generation see section 3.3.

Many of the changes required to reduce energy waste & consumption rely on behavioural changes. These changes rest with people, businesses, and sometimes national government. NCC can support behavioural change primarily through engagement, education and communications etc. For more details about this see section 2.

This section will cover NCC work and support for material changes – projects that effect the fabric of buildings, or their heating and energy systems.

3.4.1. Heating and powering buildings data

Heating Northumberland's buildings remains the largest overall source of greenhouse gas emissions in the county. In 2021, 859.10 $KtCO_2e$ was emitted, this is 31.66% of all the greenhouse gas emissions in Northumberland in 2021.

Dividing heating emissions by the heating energy source, and the 'use' of the building being heated, as shown in Figure 23 and Table 9 can help create a clearer picture of the sources of heating emissions, enabling targeted action where possible.

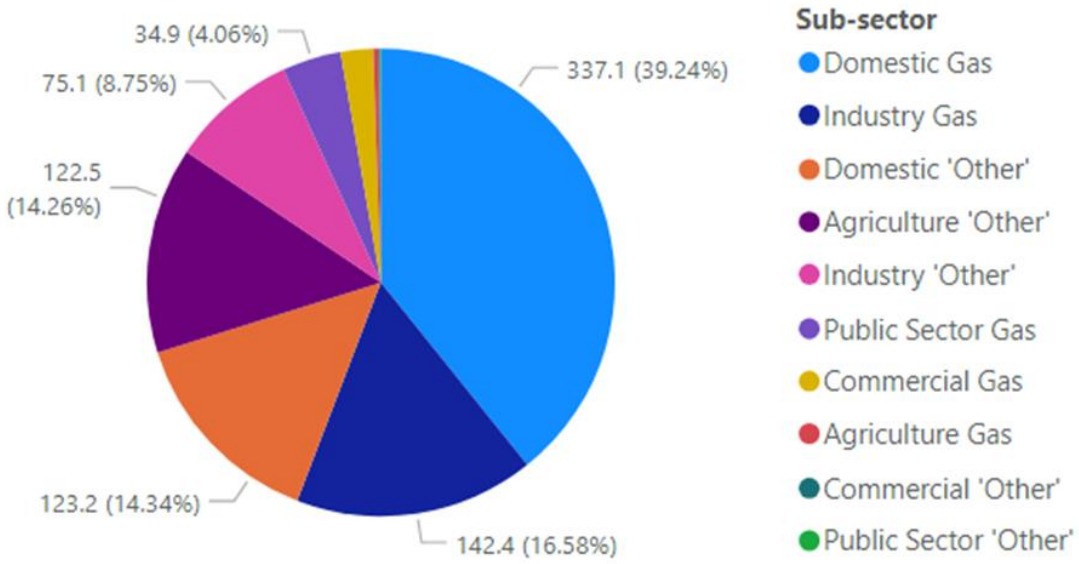

Figure 23 - Proportion of emissions from heating in Northumberland 2021 by building use and energy source ($KtCO_2e$)

Energy source	kt CO^2e -emissions by heating building type, and energy source gas and other ('heating')- 2021				
	Agriculture	Commercial	Industry	Domestic	Public sector
Gas	3.2	19.26	142.44	337.13	34.9
other	122.5	1.08	75.14	123.22	0.23
total	**125.70**	**20.34**	**217.58**	**460.35**	**35.13**
% of energy used	15%	2%	25%	54%	4%

Table 9 - Heating emissions from gas and other sources 2021 by building use.

It is important to note that for the purposes of simplicity 'heating' refers to these emissions. Heating is the main use of gas and other fossil fuels within buildings. If buildings are entirely or partly heated using electricity, then the respective consumption and emissions data are accounted for under electricity use. It is not possible to separate out electricity used for heating and that used for other purposes.

'Other' refers to non-gas fossil fuel usage in buildings. This is primarily heating oil and LPG but may also include solid fuel where this data is available. Northumberland has approximately 21% households that are off the gas grid. This is in comparison with the UK average of 15.1% of domestic properties[160].

[160] https://commonslibrary.parliament.uk/research-briefings/cbp-9838/

To get a full picture of emissions associated with powering and heating buildings in Northumberland, it is necessary to add electricity data to the heating data, as shown in Table 10 and Figure 28.

Energy source	kt CO^2e -emissions by heating building type, and energy source, including Electricity use - 2021				
	Agriculture	Commercial	Industry	Domestic	Public sector
Electric	12.45	32.42	127.63	114.3	19.26
Gas	3.2	19.26	142.44	337.13	34.9
other	122.5	1.08	75.14	123.22	0.23
Total energy	138.15	52.76	345.21	574.65	54.39
% of energy used	12%	4%	30%	49%	5%

Table 10 - Building emissions from electricity, gas and other sources 2021 by building use.

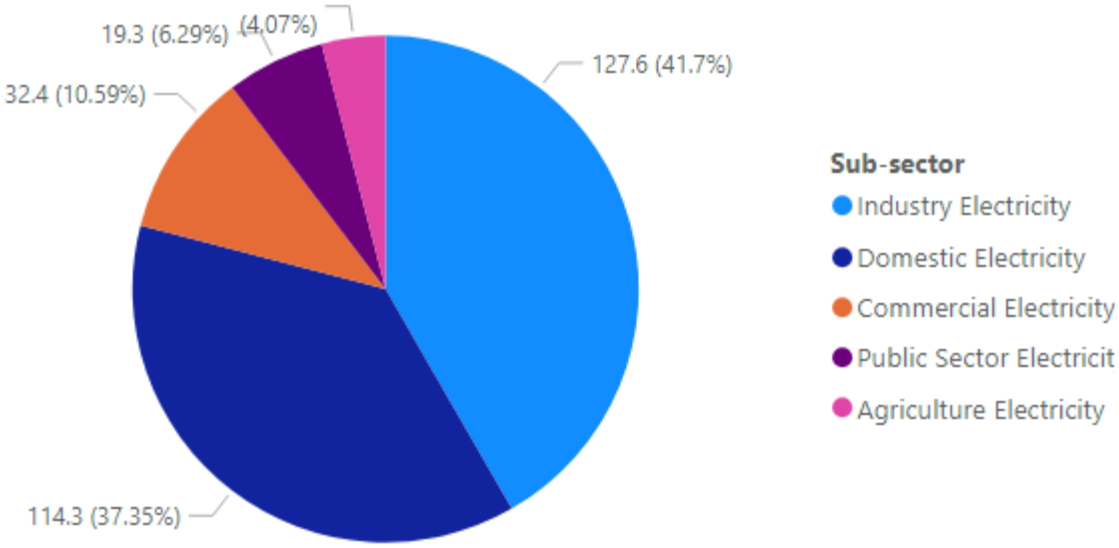

Figure 24 - Building emissions from electricity only 2021 by building use (Kt CO_2e)

3.4.2. Heating and Powering Domestic Buildings – background and data

In the UK Energy Performance Certificates (EPC) are used as a measurement of how energy efficient a domestic property is. Properties are assessed and given a ranking from A (the most efficient) to G (inefficient). An EPC can then be used as an indicator of how expensive it will be to heat and power a property, and how much carbon dioxide it will emit[161]. The rankings A-G are determined when an assessor

[161] https://energysavingtrust.org.uk/advice/guide-to-energy-performance-certificates-epcs/

uses the Standard Assessment Procedure (SAP) when assessing a property. The SAP score goes from 1-100, as shown in Figure 25.

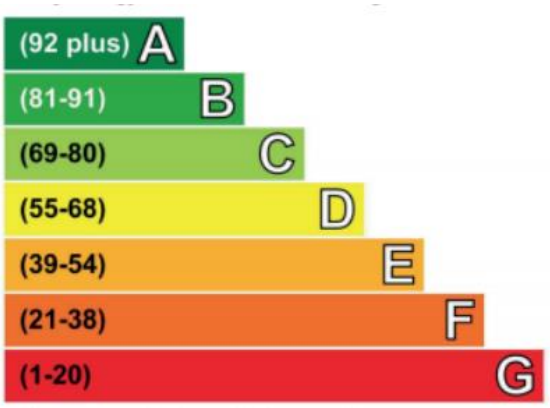

Figure 25 - EPC energy ratings with SAP score.

In the UK the average energy efficiency rating is a D (with SAP score between 65-67). The 'type' of property, and the tenure of a property both influence the average EPC ratings, as shown in Figure 26[162]. Private rented and owner-occupied properties have lower average EPC ratings than Social rented homes, and flats and maisonettes have higher EPC ratings on average.

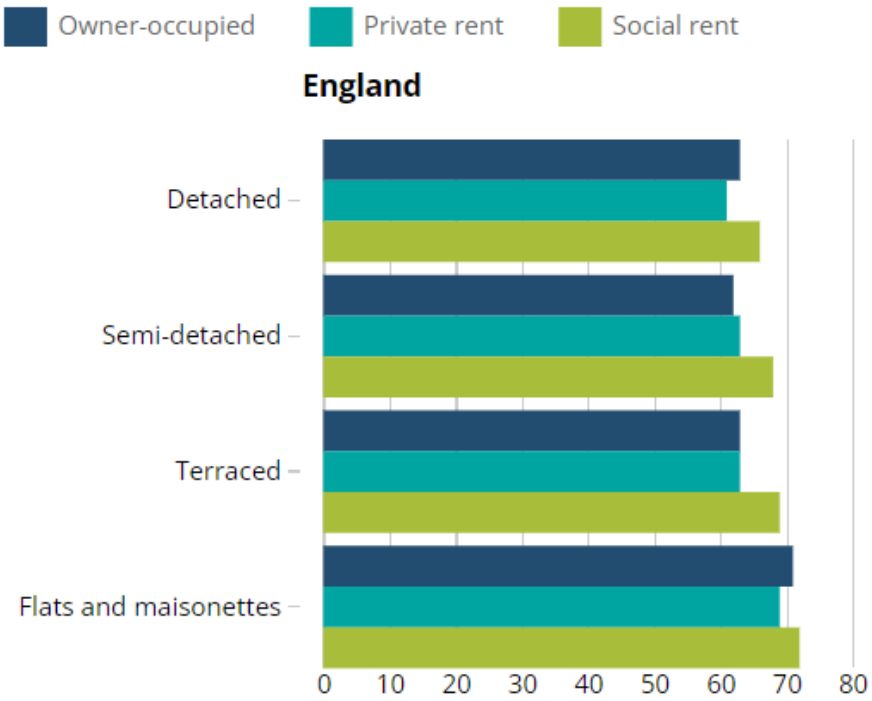

Figure 26 - median energy efficiency score by tenure and property type, England 2022

162 https://www.ons.gov.uk/peoplepopulationandcommunity/housing/articles/energyefficiencyofhousinginenglandandwales/2022

There are approximately 161,600 homes in Northumberland. 126,000 of these homes are on mains gas (78.3%), and 35,600 are off mains gas (21.7%).

In Northumberland, the current estimates of domestic property energy efficiency ratings can be seen in Figure 27, which uses data from the Energy Saving Trust.

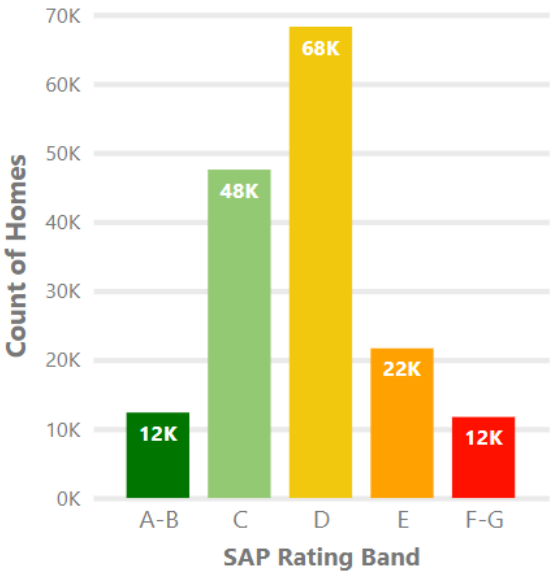

Figure 27 - EPC rating for homes in Northumberland.

Data from the Energy Saving Trust estimates that:

- 36.4% of homes in Northumberland are on-gas and have an EPC rating of D
- 8.5% of these on-gas homes have an EPC rating of E, F or G
- 5.9% of homes are off-gas and have an EPC rating of D
- 12.2% of homes are off-gas and have EPC rating of E, F or G

This shows that proportionately, 11% of on-gas properties have EPC ratings of E, F, G, whereas 55% of off-gas properties have an EPC rating of E, F, G.

The tenure of properties can be hard to know, as there is no national, compulsory, register of private landlords or privately let properties (unless a landlord is renting an HMO property, in which case they have to register with their local authority).

The UK Government wants the energy efficiency of buildings in the UK to improve, to reduce heating bills and "*reduce our dependency on foreign gas*[163]." There are multiple funding options available for domestic properties which will be explored in more detail in the next section.

To summarise however, current government funded projects provide support for eligible[164] households as follows. The Home Upgrade Grant (HUG) is available for homes that are off gas grid. The suite of Energy Company Obligation (ECO) funded

[163] https://www.gov.uk/government/news/energy-efficiency-what-you-need-to-know
[164] https://www.gov.uk/apply-great-british-insulation-scheme & https://www.gov.uk/apply-home-upgrade-grant

projects are available for homes on and off mains gas. The other government grant (currently available), the self-service boiler upgrade scheme, is available for on and off gas properties.

Using data from the Energy Saving Trust and NCC it is estimated that 10.5% of homes in Northumberland are eligible for ECO funding and an estimated 1,854 (1.15%) homes may be automatically eligible for HUG support (based on their post codes). NCC currently have funding to support 600 households.

Some social housing providers may also be able to win funding from government (SHDF) to improve the energy efficiency of any properties with an EPC of D or below. There will also be many more homes eligible for HUG funding in Northumberland, however NCC are unable to map this as the 'financial' eligibility of households is unknown.

Government funding is available to help the most vulnerable households to make sure they are able to access energy efficiency measures. However, it is clear from the data set out here and the criteria for funded projects that the majority of households in Northumberland will not be able to access grant funding and will need to self-finance in order to increase their energy efficiency, reduce their running costs and reduce their emissions.

3.4.2.1. Heating and Powering Domestic Buildings - Co-benefits from increased efficiencies and decarbonisation.

The energy efficiency and associated running costs of domestic dwellings is important to many of the County Council's priorities, such as public health and reducing inequalities. As well as climate change and the environment.

For example in the UK cold weather has a direct link with winter mortality and poor health[165], including mental health problems. Poor health and housing conditions are closely linked. The negative effects of cold weather on health begin to occur from temperatures of 5-8 °C and below[166]. Three times more deaths occur in the colder quarter of housing in the UK, than in the warmest quarter[167]. When comparing UK statistics internationally, countries with more energy-efficient housing have lower rates of winter mortality than the UK[168].

Many people in society are vulnerable to the risks associated with a cold home. This includes people over 65 years old and young children. Also, people, who are pregnant, have a disability, have a mental health condition, have a respiratory condition, have cardiovascular conditions, or people on a low income. Someone may find themself living in a cold home due to; fuel costs, income, the temperature they

[165] CWP_Making_the_Case_2014_FINAL.pdf (publishing.service.gov.uk)
[166] Page 13- Cold Weather Plan for England 2013 (publishing.service.gov.uk)
[167] https://www.nice.org.uk/guidance/ng6/chapter/3-Context

[168] https://www.nice.org.uk/guidance/ng6/chapter/3-Context

need to feel warm enough, the efficiency of the heating system, and the energy efficiency of the property[169].

One of the vulnerabilities that can increase the risk of poor health in cold homes is being over 65 years old. The 2018 population projections[170] for England show that in Northumberland 24.3% of the population were aged 65 or over. This figure is projected to rise to 30.5% in 2030, and 33% by 2040. In 16 years' time, (by 2040) the old age dependency ratio for Northumberland will be 546.6 people of state pension age (SPA) per 1000 people of working age. In 6 years' time, at least 30% of Northumberland's population could be at risk of the poor health effects of a cold home.

3.4.2.2. Heating and Powering Domestic Buildings – costs linked to efficiencies and decarbonisation.

Data from the Energy Saving Trust estimates that the total cost of installing energy efficiency measures and decarbonised heating in all of Northumberland's domestic properties would be £6.3 billion pounds. Delivering these measures would provide households in Northumberland with annual bill savings of approximately £111.9 million pounds each year. So, in 56 years this investment would have been re-paid by money saved from bills.

Taking an average across all 161,600 homes in Northumberland, 7.7 measures will be needed costing, on average, £39,200. These would raise the properties energy efficiency from an EPC D to an EPC B and save a household on average almost £700 a year on bills.

A recent report published by the government[171] shows that the sale prices of houses are affected by the energy efficiency (as measured using EPC) rating of the property. The research indicates that the more energy efficient a property, the more money it sells for. This correlation appears to be strongest in the North East region, as shown in Figure 32.

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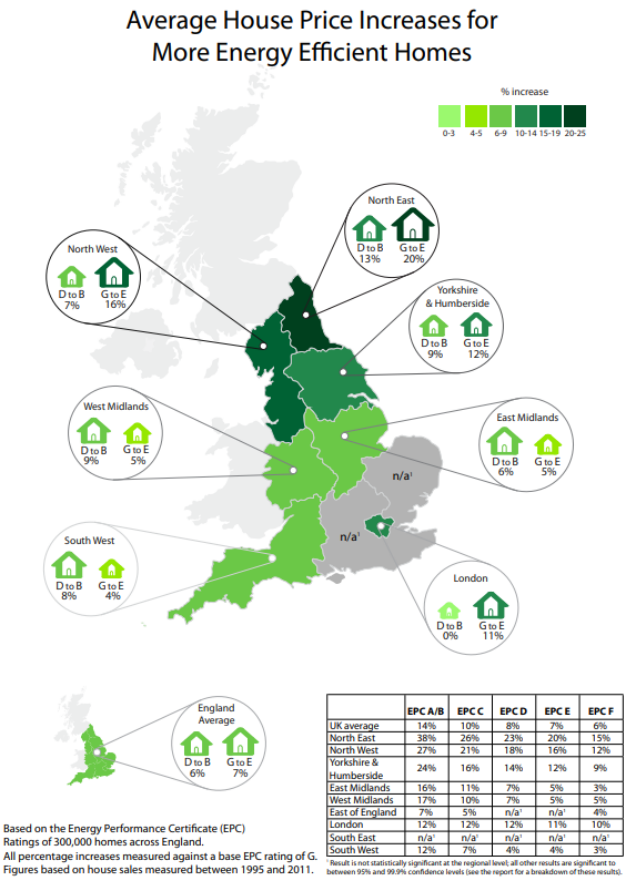
[169] https://www.nice.org.uk/guidance/ng149/resources/visual-summary-pdf-7022755693

[170] https://www.ons.gov.uk/peoplepopulationandcommunity/populationandmigration/populationprojections/bulletins/subnationalpopulationprojectionsforengland/2018based

[171] https://www.gov.uk/government/publications/an-investigation-of-the-effect-of-epc-ratings-on-house-prices



	EPC A/B	EPC C	EPC D	EPC E	EPC F
UK average	14%	10%	8%	7%	6%
North East	38%	26%	23%	20%	15%
North West	27%	21%	18%	16%	12%
Yorkshire & Humberside	24%	16%	14%	12%	9%
East Midlands	16%	11%	7%	5%	3%
West Midlands	17%	10%	7%	5%	5%
East of England	7%	5%	n/a¹	n/a¹	4%
London	12%	12%	12%	11%	10%
South East	n/a¹	n/a¹	n/a¹	n/a¹	n/a¹
South West	12%	7%	4%	4%	3%

¹Result is not statistically significant at the regional level; all other results are significant to between 95% and 99.9% confidence levels (see the report for a breakdown of these results).

Figure 28 - impact of energy efficiency on house prices in England.

3.4.3. Policy and Legislation

There are two main pieces of legislation that are relevant to the energy used to heat and power our buildings. They are:

- The Climate Change Act (2008)[172]
- The Energy Act 2023[173]

Government states that the Energy Act 2023 will *"…transform the UKs energy system by strengthening energy security, supporting the delivery of net zero and ensuring household bills are affordable in the long term[174]."*

The Climate Change Act (2008) states that the "UK Carbon account for the year 2050 is at least 100% lower than the 1990 baseline."[175] This legislation tells the public, and local government, the aims of national government.

In relation to the Climate Change Act there is a suite of policies and strategies that have been provided:

[172] Climate Change Act 2008 (legislation.gov.uk)
[173] https://www.legislation.gov.uk/ukpga/2023/52/contents/enacted
[174] New laws passed to bolster energy security and deliver net zero - GOV.UK (www.gov.uk)
[175] https://www.legislation.gov.uk/ukpga/2008/27/section/1 - accessed December 2023

- 2021 – Government published the Net Zero Strategy (build back better)[176]
- 2022 - high court rules this strategy was inadequate and breached the Climate Change Act
- 2023 - Government published 'Powering up Britain'[177]

Within this portfolio of policy documents the 'Heat and Buildings strategy'[178] was published in 2021. This sets out how the UK will decarbonise buildings as part of the route to net zero by 2050.

The plans as published in 2021 centre around the development of the markets and consumer choices that are required to achieve net zero heating. Firstly, the commitment to develop hydrogen heating (which so far accounts for approximately £326 million worth of funding for industry and energy suppliers). Secondly the commitment to greener buildings, via the Public sector decarbonisation scheme and various 'Help to heat' schemes worth £12 billion, so far funding has been allocated for:

- Boiler upgrade scheme – £450 million (but a share of £6 billion allocated for energy efficiency)
- Home Upgrade Grant Phase 2 – £1.1 billion nationally for off-gas homes
- Social Housing Decarbonisation Schemes – Since 2020 £999 million has been allocated across three 'waves' of funding. Government has allocated a total of £3.8 billion over 10 years.
- Sustainable Warmth Competition - £439 million from April 2022 to March 2023.
- Energy Company Obligation (ECO)

A good example of national legislation leading to tangible change was the 2021 energy information regulation brought in by government [179]. This regulation means that most energy-using products must display their energy rating, at point of sale and on packaging. This will allow people to make informed decisions about what they buy based on how efficient an appliance will be to run. The county council is responsible for enforcing this regulation.

The price of electricity in comparison to gas is a significant barrier to the decarbonisation of heating and the transition to greener homes. A 'rebalancing' of the cost of energy been discussed by government, who in 2022 stated,

> *'rebalancing' the costs placed on energy bills away from electricity to incentivise electrification across the economy and accelerate consumers and industry's shift away from volatile global commodity markets over the decade.*

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[176] https://www.gov.uk/government/publications/net-zero-strategy

[177] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1147457/powering-up-britain-net-zero-growth-plan.pdf

[178] https://www.gov.uk/government/publications/heat-and-buildings-strategy

[179] https://www.gov.uk/guidance/the-energy-labelling-of-products#:~:text=From%201%20March%202021%2C%20certain,the%20whole%20of%20the%20UK%20.

This will also ensure that heat pumps are comparatively cheap to run over time[180]."

This ambition was reiterated in Spring of 2023[181] when the government confirmed that during 2023-2024, they would set out plans to rebalance gas and electricity costs in household bills. The aim being to speed up the electrification process for households and businesses by making electricity cheaper.

3.4.4. Reducing emissions from heating and powering buildings

There are many ways in which NCC can support an improvement in energy efficiency and the decarbonisation of heat in buildings in Northumberland. The energy hierarchy (Figure 33) helps give a simple outline of the steps needed to reduce energy use and decarbonise heat in buildings. This also forms the basis for NCC strategy.

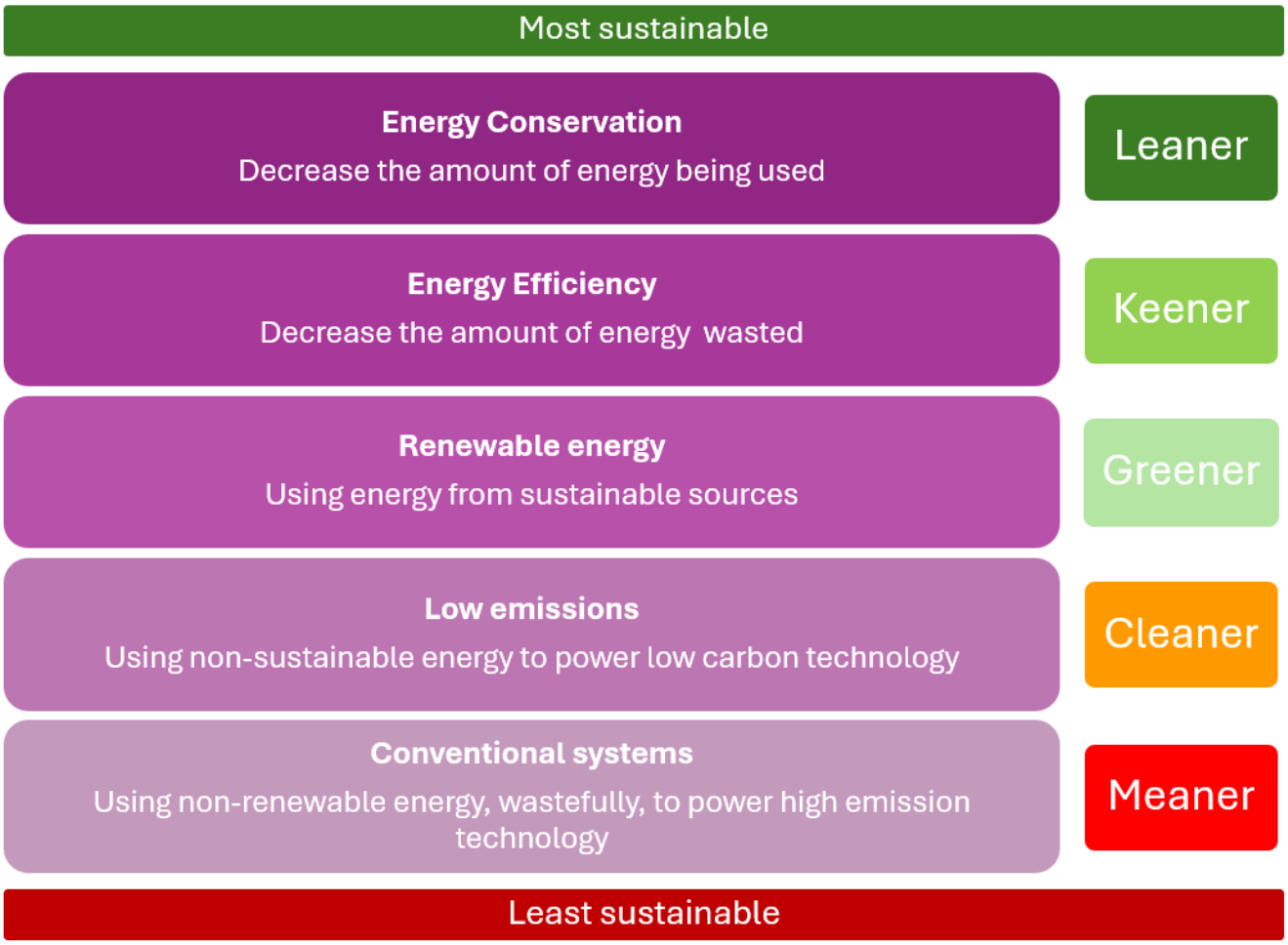

Figure 29 – Adaptation (authors own) of the Energy Hierarchy[182,183]

[180] https://www.gov.uk/government/news/energy-efficiency-what-you-need-to-know
[181] Shapps sets out plans to drive multi billion pound investment in energy revolution - GOV.UK (www.gov.uk)
[182] https://www.london.gov.uk/sites/default/files/gla_energy_assessment_guidance_june_2022_0.pdf
[183] https://www.glasgowsciencecentre.org/our-blog/the-energy-hierarchy

3.4.5. Improving Energy Conservation and Efficiency

3.4.5.1. Retrofitting buildings

'Retrofit' is the term given to the process of taking a building-by-building approach where work is undertaken to the fabric of a building to ensure that it is insulated effectively, so that heat is not wasted.

The complexity, cost, and outcomes from the retrofit of buildings can be variable. This is due to the individuality of building types and styles in the UK, and the standards to which they were originally built. The UK has some of the least energy efficient housing in all of Europe[184], this is partly due to the age of many properties in the UK[185].

In addition to retrofitting the fabric of a building, there are energy efficiency measures that can be made within a property. Using new, more efficient technology (e.g. thermostats, battery storage, LED lightbulbs) or the management and maintenance of existing technology (e.g. bleeding radiators, switching appliances off standby). Not all these energy saving examples link directly to heating. However, it is important to consider all energy uses within buildings, especially in relation to the financial cost of energy.

3.4.6. Decarbonising heating – using energy from sustainable sources

3.4.6.1. Individual buildings

Decarbonising heating in individual buildings happens when fossil fuel heat sources such as gas and oil boilers, are replaced with low-carbon solutions such as heat pumps or electric heating. The energy used for heating a building will then come from electricity, which (in most cases) is supplied by the mains grid. However, this could also be supplemented using solar PV power. As the national electricity grid continues to decarbonise this means that increasing levels of the electricity used in the UK will come from renewable energy sources.

Heat pumps use electricity and can be exceptionally energy efficient, supplying more heat energy than they use in electricity. Other heating technologies like gas and oil boilers, or electric storage heaters, have a maximum efficiency of one unit of heat for one unit of energy. However, most models work well below this maximum efficiency.

There are different types of Heat pump (air source, ground source, air-to-air, water source etc[186]), and heat pumps can be used to heat individual buildings, or groups of buildings. Heat pumps work best however, when the building in question is well insulated and efficient.

3.4.6.2. District Heating

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[184] https://www.instituteforgovernment.org.uk/sites/default/files/publications/tackling-energy-efficiency-problem.pdf

[185] https://www.ons.gov.uk/peoplepopulationandcommunity/housing/articles/energyefficiencyofhousinginenglandandwales/2022

[186] https://energysavingtrust.org.uk/energy-at-home/heating-your-home/heat-pumps/

Heating can also be decarbonised at scale. Using neighbourhood or district low-carbon heat networks. This means generating or accessing enough low carbon heat to supply multiple buildings directly. Removing the requirement for each building to generate its own heat. This is referred to as District Heating.

3.4.6.3. Hydrogen

There is also the possibility that existing infrastructure can be utilised to supply new, low-carbon alternatives to fossil fuels. Hydrogen theoretically has the potential to become a low-carbon heat source, that could utilise the existing gas network. However, in reality, there are significant barriers to achieving this in the near future.

It is currently prohibitively expensive to produce zero-carbon ('green') hydrogen meaning that heat generated through hydrogen will be too expensive to facilitate a general uptake. There is also not currently the capacity to do so in the UK. In addition, the energy required to generate green hydrogen is significant, creating a strain on the UK's electricity grid which is an inefficient use of energy.

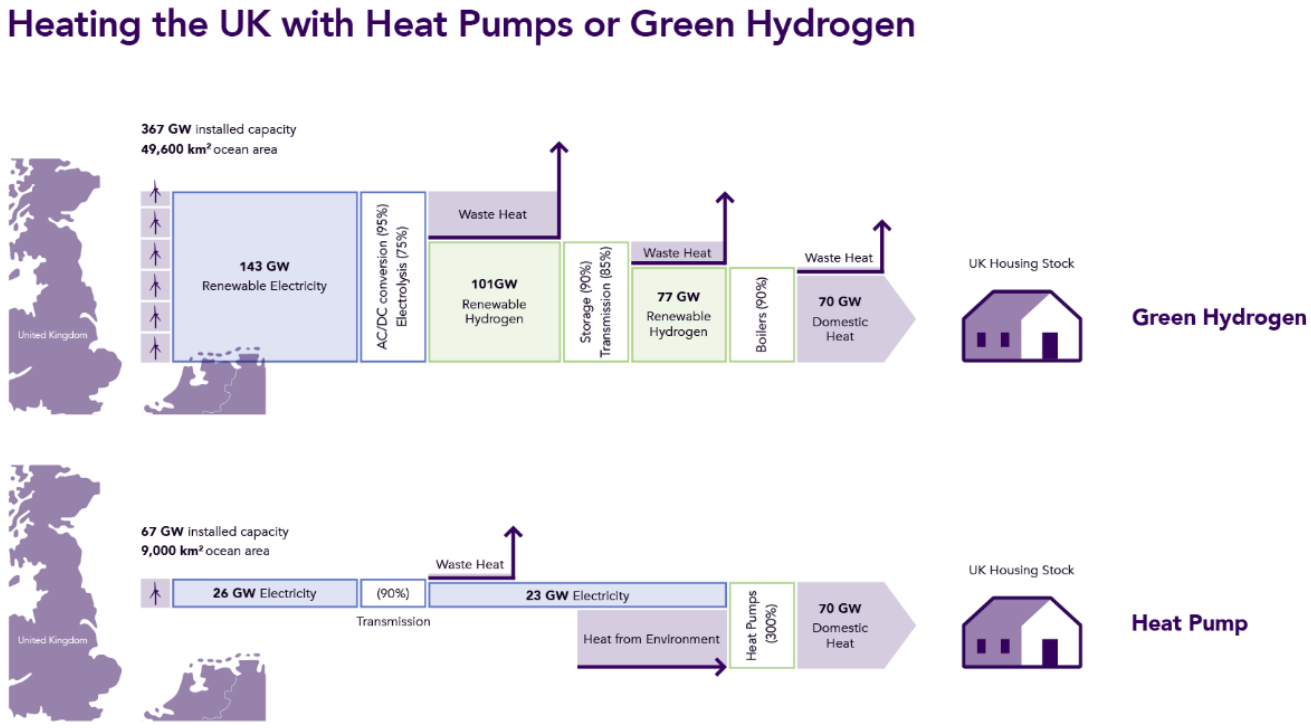

Figure 30 - Comparison of energy required to heat UK buildings using hydrogen vs heat pumps[187]

Figure 34 shows how much more energy is needed to produce the heat required to heat Britain's housing stock each winter using Hydrogen as opposed to heat pumps which harness existing heat from environmental sources.

[187] https://h2sciencecoalition.com/data-resources/

The House of Lords, Environment and Climate Change Committee, recently concluded that hydrogen is "not a serious option for home heating in the short to medium-term and its use is expected to be limited in the long-term"[188].

This means, that given the ambition to reduce Northumberland's emissions to carbon neutral by 2030 and net zero by 2040, Hydrogen is unlikely to be a viable solution within those timeframes.

3.4.7. Reducing Heating Emissions from Buildings – Progress Review

The section above outlines some of the main techniques and technologies available to reduce emissions from heating buildings, all of which were included in NCC's previous *Climate Change Action Plan 2021-23*. Setting aside Hydrogen as a feasible option for NCC at this point in time, this section will focus on the projects undertaken between 2021 and 2023, and those that are also continuing through the period of this action plan to 2026 and beyond.

3.4.7.1. Domestic Retrofit Schemes

When the previous climate change action plan was written, government funding was available for domestic retrofit through the Green Homes Grant and ECO schemes. Significant additional government funding has since been allocated to local authorities, to retrofit low-income homes with poor energy efficiency. This has come through funding streams with various names including, Green Homes Grant Local Authority Delivery (LAD), Sustainable Warmth, Home Upgrade Grant (HUG), and the Social Housing Decarbonisation Fund (SHDF).

From 2021 to 2023 the climate change team at NCC was successful in securing funding for the following projects:

- Local Authority Delivery 1b – April 2021 to March 2022
- Local Authority Delivery 2 – April 2021 to Sept 2022
- Social Housing Decarbonisation Fund (wave 1) – April 2022 to January 2024
- Local Authority Delivery 3 – April 2022 to December 2023
- Home Upgrade Grant 1 – April 2022 to March 2023
- Home Upgrade Grant 2 – April 2023 to March 2025

Northumberland County Council used these funding streams to deliver retrofit measures to homes across the County. From 2021 to the end of 2023, we installed retrofit measures on 323 homes in Northumberland (and supported the installation of another 86 properties via our SHDF partners).

It is anticipated that these measures have saved approximately 410 tonnes CO_2 annually whilst also saving the homeowners or tenants money on their running costs.

During the delivery of these projects from 2021 to 2023 the climate change team have endeavoured to act on all the lessons learnt, also providing the government with feedback. The climate change team drafted a new set of contracts that could be

[188] https://committees.parliament.uk/committee/515/environment-and-climate-change-committee/news/186300/the-boiler-upgrade-scheme-is-failing-to-deliver-says-lords-committee/

used on all future domestic retrofit projects. To make sure that project outcomes aligned with the new PAS2035 retrofit standards, a dedicated in house retrofit team was hired in the summer of 2022. This meant that PAS2035 guidance on these projects was independent of delivery contractors and therefore of a very high standard. Having in house PAS2035 expertise in turn supported the creation of a suite of specification documents for the procurement of installers. Parallel to this the creation of a North East wide, public sector, procurement framework for building retrofit projects was supported. Finally, with the government giving two years for the delivery of the most recent scheme: Home Upgrade Grant 2 (HUG2), the scale and ambition of this project was able to be increased and funding provided for a whole Warmer Homes delivery team.

3.4.7.2. Energy Company Obligation – ECO4, ECO flex, Great British Insulation Scheme

Energy suppliers have an obligation to support households most vulnerable to high energy costs through the Energy Company Obligation (ECO) schemes[189]. Households which are on certain benefits and have an EPC of D or lower, can receive help with costs for energy efficiency works.

In Northumberland, the County Council supports ECO funding by providing checks and confirmation of household eligibility. The scheme is primarily delivered however by the energy companies themselves in collaboration with their contractors.

In 2023 the NCC Energy Team signed off on ECO4 Flex applications for 51 properties in Northumberland. In September 2023 NCC signed a joint statement of intent with Newcastle and North Tyneside, enabling NCC to continue accepting eligibility applications for the ECO schemes[190].

Households can contact an energy supplier directly to seek support[191]. Households can also contact installers directly, by visiting Trustmark and inputting their postcode. This will provide a list of accredited installers available in their area. The websites of these companies should also make it clear if they offer ECO installations. Agents and installers may also contact households directly with offers of support – households can check with the energy supplier they are representing or their local council if they are unsure if the offer is legitimate.

3.4.7.3. Public Sector Decarbonisation

The Public Sector Decarbonisation Scheme[192] (PSDS) provides grants for public sector bodies to fund heat decarbonisation and energy efficiency measures in public sector buildings. The government aims to reduce emissions from public sector buildings by 75% by 2037[193]. The climate change team successfully bid for phase 1

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[189] https://www.gov.uk/energy-company-obligation

[190] https://www.newcastle.gov.uk/sites/default/files/energy%20services/NTCA%20-%20GBIS%20%26%20ECO4%20-%20LA%20Flex%20SoI%20-%20published%2001092023.pdf

[191] https://www.ofgem.gov.uk/environmental-and-social-schemes/energy-company-obligation-eco/contacts-guidance-and-resources/eco-supplier-contact-details

[192] https://www.gov.uk/government/collections/public-sector-decarbonisation-scheme

[193] https://www.gov.uk/government/publications/net-zero-strategy & https://www.gov.uk/government/publications/heat-and-buildings-strategy

PSDS funding to install ground source heat pumps in six public buildings in Northumberland:

- Willowburn Leisure Centre
- Belford Fire Station
- Swarland Primary School
- Stannington First School
- Stamfordham First School
- Alnwick Lindisfarne Middle School

During the 2021-2023 period, all six heat pumps were installed, and one site is now undergoing electrical upgrades to put the heat pump into operation. Once operational, all the sites (where the heat pumps are operating) will be monitored for a year to assess the emissions savings realised. It is anticipated that the delivery of these measures will result in carbon savings of 358 tonnes CO_2e per annum.

3.4.7.4. District Heating

As set out above, District Heat Networks are a way of distributing low-carbon heat to buildings in urban areas using a dedicated network, generating heat at centralised energy centres rather than in individual buildings.

In NCC's Climate Change Action Plan 2021-23, the following ambition was set out:

> *'Northumberland is proposing, with the support of central government and the Heat Network Delivery Unit (HNDU) to assess the 7 largest towns in Northumberland for their ability to host district heat networks, these towns are; Alnwick, Ashington, Berwick, Blyth, Cramlington, Hexham and Morpeth. Funding is being sought from HNDU for this work.'*

Northumberland County Council was successful in winning funding from HNDU to undertake the work set out above and added Prudhoe to the list of towns being considered.

The results of these assessments show that all 8 towns could support economically viable low carbon heat networks using existing sources of heat.

A summary of the potential heat network, the financial viability, and the carbon benefits is set out in Table 11.

Town	Preferred Heat Source	Total Heat Demand (GWh/yr.)	Total no. of buildings connected	Total CAPEX required (£)	CO_2e emissions saving (t/yr.)
Alnwick (South)	River source	11.48	358	£14,735,248	2,121
Ashington	Industrial waste heat	82.67	3,638	£86,160,000	15,378
Berwick (Tweedmouth South)	River source	13.98	581	£31,741,000	2,410
Blyth	Mine water	19.1	823	£26,900,000	3,781.9
Cramlington	Industrial waste heat	24.7	1389	£29,000,000	4,111.8
Hexham	Industrial waste heat	15.21	393	£17,131,000	2,505
Morpeth (Central)	River source	5.27	317	£5,720,000	714
Prudhoe	River source/industrial waste heat	25.30	953	£33,450,000	4,608
Total		**197.71**	**8452**	**£244,837,248**	**35,629.7**

Table 11 - Summary of potential heat networks, cost and potential carbon savings

3.4.8. Reducing Emissions from Buildings – Future Focus

3.4.8.1. Domestic Retrofit Schemes

The climate change team at NCC was awarded £12.4m funding for phase two of the Home Upgrade Grant scheme (HUG2). This funding is targeted at properties off the gas grid. Funding has been awarded for up to 600 homes to receive retrofit measures by the end of March 2025.

In December 2023, the UK Government announced additional funding for domestic heat decarbonisation including £500m towards a new local authority delivered retrofit scheme for private homeowners and £1.25bn towards a continuation of the Social Housing Decarbonisation Fund. This gives a high level of confidence that Northumberland County Council can continue to access funding for and deliver these types of measures for low-income households in Northumberland.

3.4.8.2. Scaling up domestic retrofit – self-service for residents

Despite the progress made by the County Council in delivering measures directly to homeowners, NCC can only directly support a very small proportion of all Northumberland's homes. It is therefore essential if the county targets for carbon neutrality and net zero are to be met, that landlords and homeowners are supported to undertake retrofit measures themselves.

During 2023 officers from the climate change team (CCT) collaborated with the North of Tyne combined authority, and representatives from other regional local authorities, to bid for two new regional domestic energy projects. Following the success of these bids, the CCT supported project development and procurement; and remain on the steering boards for both regional projects.

Utilising almost £2 million of grant funding, both projects will provide support for Northumberland residents seeking advice and support to improve the energy efficiency of their homes. Helping residents to make energy improvements to their homes that will reduce carbon emissions and lower their energy use.

The first project offers a comprehensive energy advice service via a 'one-stop-shop' website and is delivered by the Energy Saving Trust. The website will feature energy saving advice, options to create tailored domestic energy efficiency improvement reports, and links to local installers who can do the work. In addition, expert advisors from Energy Saving Trust will offer over-the-phone advice to support residents every step of the way. This project is funded by the UK shared prosperity fund, and available to residents in Northumberland, North Tyneside, and Newcastle. This project is branded 'Home Energy Advice North East' and the website and telephone advice line will be launched in April 2024.

Aligning with this project is the 'North of Tyne Local Energy Advice Demonstrator' (LEAD). LEAD is being delivered by Energy Saving Trust and their partners, Groundwork North East and Cumbria, and Community Action Northumberland. This project will provide extra in-person support for more vulnerable households, or

homes that are more complex to decarbonise[194]. Households within this criterion may then benefit from support from a qualified retrofit coordinator, home assessments, and where eligible, referral to grant funded energy efficiency schemes. The LEAD project will also provide retrofit awareness training to local community leaders, charities, service providers to support engagement across communities. Project funding comes from DESNZ[195] via the North East and Yorkshire Net Zero Hub[196] and is available to residents across all seven north east local authorities[197].

To further facilitate domestic energy improvements and retrofit the government has introduced the following schemes.

- **Great British Insulation Scheme[198]**
  Households may be able to access free or cheaper insulation via the great British insulation scheme. Homes in council tax bands A-D and with an energy performance certificate of D or below, may be eligible. However, to find out if you are eligible, you must use the government eligibility checker. As mentioned in the ECO section, some applications may then be passed onto NCC for eligibility confirmation. Before using this a household needs to know, the total household income, the types of benefits received by anyone living in the property. If eligible for support the household will be contacted by their energy supplier, they will arrange an assessment of the property. After the assessment the household will find out if they will need to pay anything towards the works, and then decide if they would like to go ahead.
- **Boiler Upgrade Scheme**
  The UK Government has in December 2023, allocated an additional £1.5bn to the Boiler Upgrade Scheme which provides £7,500 per household in grant funding towards the cost of a low-carbon heat pump when replacing a fossil-fuel boiler.
  Statistical releases from government[199] show that between May 2022 and November 2023, 193 BUS grants were paid out in Northumberland. Monthly statistics[200] show that applications to the BUS have risen since the grant amount was raised to £7,500 but this information is not available at Local Authority Level. Northumberland County Council can play a role in increasing applications and claims for the BUS by showcasing the advantages and successes of domestic retrofit measures and promoting the grant scheme to residents.

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[194] https://www.gov.uk/government/publications/defining-and-identifying-complex-to-decarbonise-homes
[195] https://www.gov.uk/government/publications/local-energy-advice-demonstrator-competition-successful-projects/local-energy-advice-demonstrator-projects-details-of-organisations-awarded-funding
[196] https://www.neynetzerohub.com/projects-and-events/delivering-programmes/local-energy-advice-demonstrators/
[197] Northumberland, Newcastle, North Tyneside, South Tyneside, Gateshead, Sunderland and Durham
[198] https://www.gov.uk/apply-great-british-insulation-scheme
[199] https://www.gov.uk/government/publications/ad-hoc-request-on-boiler-upgrade-scheme-grants-paid-by-local-authority
[200] https://www.gov.uk/government/collections/boiler-upgrade-scheme-statistics

Northumberland County Council will demonstrate, through the delivery of successful retrofit schemes, how energy efficient and decarbonised technology works and how savings can be made on household energy usage. NCC teams will continue to promote low-carbon heating measures to residents and support access to the Boiler Upgrade Scheme. Where government funding allows, NCC will continue to hire and develop staff in the new and emerging PAS 2035 retrofit requirements. Allowing NCC to remain leaders in best practice for PAS2035 compliant retrofit.

3.4.9. Reducing emissions from public buildings

3.4.9.1. Public Sector Decarbonisation Scheme

The climate change team secured £71,000 of funding in 2023 via the Public Sector Low Carbon Skills Fund[201]. This funding provides public sector bodies with grants so they can access skills and expertise to unlock heat decarbonisation. This funding will allow NCC to procure experts, who will create detailed heat decarbonisation plans for 15 selected NCC buildings that have been identified as suitable for future PSDS funding bids. The 15 buildings are listed below.

Beaufront First School
Belford Primary
Bellingham First School
Bellingham Middle School
Burnside Primary
Choppington Primary School
Cleaswell Hill Special School
Eastlea Primary
Hipsburn First School
New Delaval Primary School
Newbiggin Sports Centre
Otterburn First School
Pegswood Fire Station
The Sele First School
West Hartford Fire Station

[201] https://www.gov.uk/government/publications/public-sector-low-carbon-skills-fund

These assessments will be used to create project proposals for the decarbonisation of each building. These project proposals can then be used to bid for future funding from the PSDF in 2024.

3.4.10. District Heating

A cabinet paper was approved in July 2023[202] setting out Northumberland County Council's approach to realising the potential of district heat networks in the 8 towns assessed (see section 3.4.7.4.).

In accordance with the approach set out in this paper, the County Council is in the process of procuring legal and commercial support to bring onboard a heat delivery partner to build and operate low carbon district heat networks.

If fully realised to the potential ascertained in the feasibility studies undertaken and summarised above, low carbon heat networks could reduce CO_2 emissions from heating by around 35,630 tonnes annually.

The assessment carried out focuses on using district heat networks primarily to heat large public sector buildings such as schools, leisure centres and hospitals. Providing the district heat network infrastructure, however, creates the opportunity for many more customers to access this low carbon heat including both commercial and domestic properties. It can therefore be assumed with some certainty that the actual potential for reducing emissions through the provision of district heat networks in our towns, is significantly higher than that calculated above.

District heat networks are one of the main levers available to the council and the county to decarbonise heat across all building types. Progressing to delivery of these networks will also bring inward investment and job creation, supporting NCC's ambition of driving economic growth in Northumberland through sustainable development.

Northumberland County Council is committed to realising the potential of heat networks in our towns in partnership with a selected heat delivery partner.

3.4.11. Conclusion

Heating and powering buildings is an extremely complex and challenging issue in terms of decarbonisation. However, the technology exists to achieve significant carbon reductions in this sector and with these reductions, major co-benefits can be realised which align with NCC's key priorities, in particular reducing inequalities and driving economic growth. As set out above, Northumberland County Council can both directly and indirectly continue to drive this area of work with the support of national government through legislation, policy and funding as well as individual residents, businesses and community groups who play a key role to achieving the necessary scale to see the county on the way to net zero emissions.

3.5. Transport

202 https://northumberland.moderngov.co.uk/documents/s15349/03%20District%20Heating%20Update%20and%20Partnership%20Procurement.pdf

Transport is a key contributor of greenhouse gas emissions across the UK and in Northumberland. As a largely rural county, it is very hard for residents and visitors to travel around large parts of the county by any other means than car. Likewise, it is hard to transport freight by any other means than HGV. There is therefore a need to consider how car and HGV road transport can be decarbonised if the county is to reach net zero. Alongside this, it is important to consider how reliance on greenhouse gas producing modes of transport can be reduced, for instance through better provision of public transport or walking and cycling infrastructure.

This section will analyse the data on transport usage and emissions, consider the progress made during the previous climate change action plan and look forward to projects taking place over the next three years and beyond.

3.5.1. Data

The 2021 emissions data from DESNZ shows that transport accounted for 623.88 $KtCO_2$ of Northumberland's total emissions (22.9%)[203]. In the 2021 to 2023 action plan transport was ranked as the largest emitter in the region. With the addition of Methane (CH4) and Nitrous Oxide (N2O) in the most recent DESNZ data set, transport is now the second largest source of emissions, after heating (31.66%), and only slightly larger than Agriculture soils and livestock.

Road transport is responsible for 96.64% of the emissions from transport and therefore 22.2% of emissions in Northumberland, as shown in Figure 35.

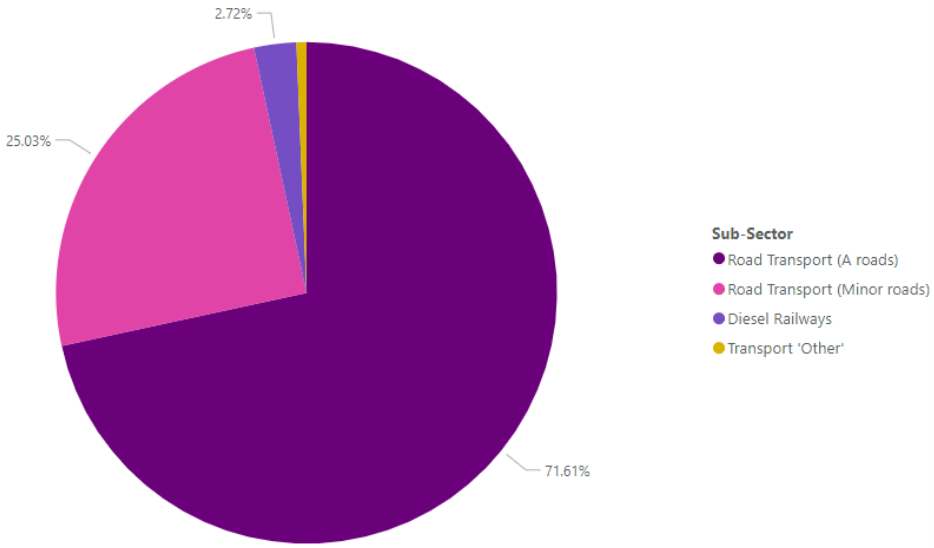

Figure 31 - Emissions from transport in Northumberland 2021 by sub-category.

The data on transport emissions requires some caution. As transport was one of the sectors most effected by the Covid-19 pandemic restrictions in the UK between 2020

[203] https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

and 2021[204]. Traffic levels fell dramatically during the pandemic[205], as shown in Figure 32, the data on annual traffic supplied by the Department for Transport. The number of vehicle miles travelled decreased drastically in 2020 and has been rising back towards pre-pandemic levels since.

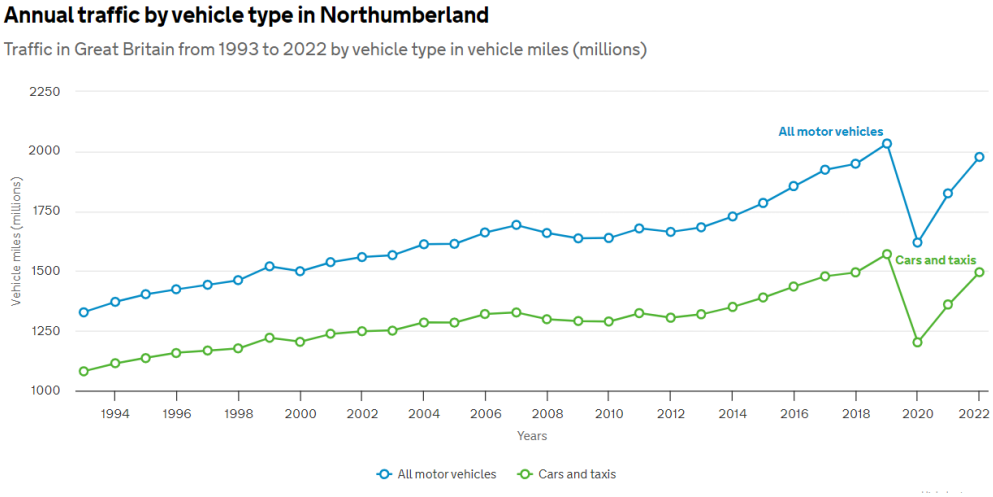

Figure 32 - Annual traffic by vehicle type in Northumberland by year.

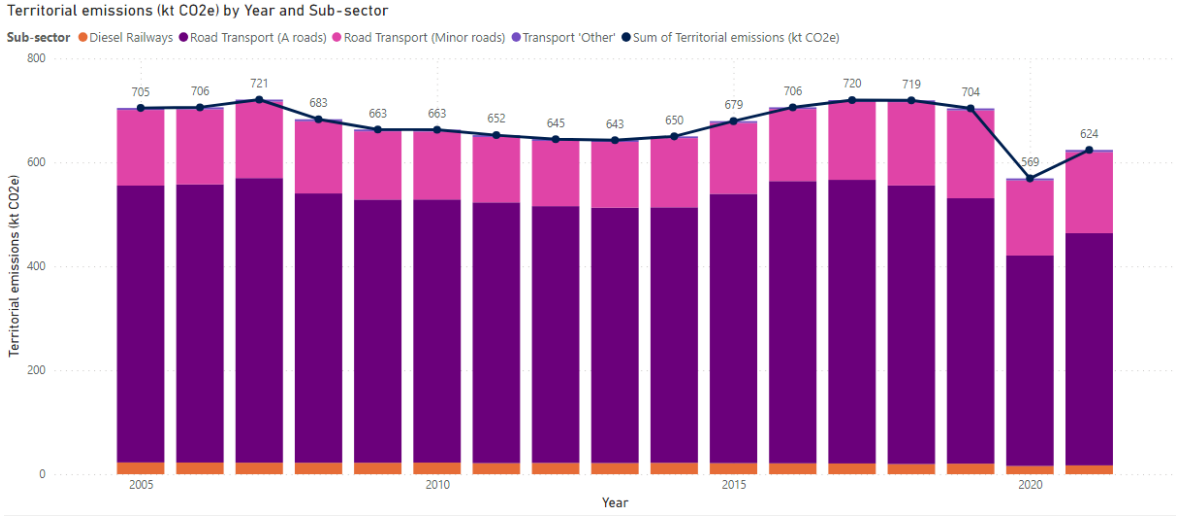

Figure 33 - emissions from transport in Northumberland by year and sub-sector.

The data on traffic directly corresponds to the trends in emissions from transport seen over time with the impact of the Covid lockdowns clearly visible in the data. The decrease in emissions from transport (Figure 37) seen over the period of the last climate change action plan should therefore be seen in this context.

[204] https://www.gov.uk/government/publications/covid-19-and-occupational-impacts/covid-19-and-occupational-impacts#:~:text=National%20lockdowns%20(late%20March%202020,encouraged%20working%20from%20home%20(Brown%20%26

[205] https://roadtraffic.dft.gov.uk/local-authorities/102

3.5.2. Transport legislation and policy

The following section summarises the hierarchy of transport policy affecting Northumberland County Council (as shown in Figure 38).

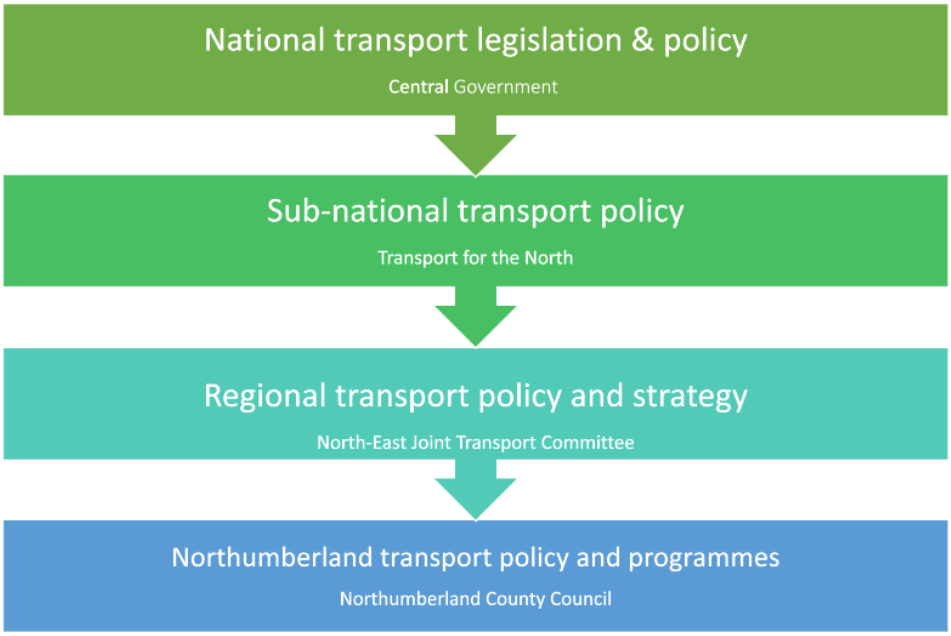

Figure 34 - Hierarchy of transport policy affecting Northumberland (authors own)

3.5.2.1. National legislation and policy

There are many aspects of national legislation and policy which impact on transport in Northumberland and therefore either directly or indirectly on the emissions from transport.

In 2021, the Department for Transport published *Decarbonising Transport: A Better, Greener Britain*[206] which set out a path to net zero transport at a national level. This policy includes:

- increasing cycling and walking
- zero emission buses and coaches
- decarbonising our railways
- a zero-emission fleet of cars, vans, motorcycles and scooters
- accelerating maritime decarbonisation
- accelerating aviation decarbonisation

Elements of this policy have been updated since 2021 and made into law such as the *zero-emission vehicle mandate*, published on 3rd January 2024, which mandates that 80% of new cars and 70% of new vans sold in Great Britain will be zero emission by 2030, increasing to 100% by 2035.

3.5.2.2. Sub-national policy and partnerships

[206] https://assets.publishing.service.gov.uk/media/610d63ffe90e0706d92fa282/decarbonising-transport-a-better-greener-britain.pdf

Northumberland falls within the area of a statutory sub-national transport (S-NT) body 'Transport for the North'[207]. Transport for the North is made up of the 20 Local Transport Authorities (LTAs) and 11 Local Enterprise Partnerships (LEPs) in the North of England, and it aims to allow the region *"...to speak with One Voice on the transport infrastructure investment needed to drive transformational growth and rebalance the UK economy[208]."*

In December 2021, Transport for the North published a regional Transport Decarbonisation Strategy[209] which develops many of the themes set out above in the national policy at a regional level. Through the Transport Decarbonisation Strategy, Transport for the North commits to a regional near-zero carbon surface transport network by 2045.

3.5.2.3. Regional policies and partnerships – North East Transport

Transport is about connecting people and places, as such it is essential to think about transport networks and people's requirements beyond local authority boundaries. Many people live, work or socialise across the North East region. To reflect this, Northumberland County Council, along with the other 6 councils in the North East, are part of the North East Joint Transport Committee. Known as Transport North East, this is the transport authority for Northumberland.

The committee worked together to publish the North East Transport Plan (NETP) In 2021[210]. This region wide plan sets out the transport ambitions for the North East from 2021 to 2035. The main objectives and aims of the plan are summarised in Figure 35.These will be achieved (in part) from at least £6.8bn of investment across approximately 243 schemes.

As a member of the North East Joint Transport Committee, Northumberland County Council are fully aligned with this policy and are committed to delivering the objectives of the North East Transport Plan in Northumberland. Creating a carbon neutral North East is one of the key objectives of the NETP,

"*We will initiate actions to make travel in the North East net carbon zero, helping to tackle the climate emergency declared by our two combined and seven Local Authorities, addressing our air quality challenges, and helping to achieve the UK's net zero by 2050 commitment[211].*"

This dovetails with the additional objectives; to create more appealing sustainable transport choices, and facilitate a healthier North East. Both objectives seek to

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[207] https://transportforthenorth.com/

[208] About us | Transport for the North | foundation of the Northern Powerhouse - Transport for the North

[209] https://transportforthenorth.com/reports/tfn-transport-decarbonisation-strategy-dec-2021/

[210] https://www.transportnortheast.gov.uk//wp-content/uploads/2021/10/AST004-Transport-Plan-A4-North-East-Transport-Plan.pdf

[211] https://www.google.com/url?sa=t&rct=j&q=&esrc=s&source=web&cd=&ved=2ahUKEwisib6mh6GGAxW1X0EAHRW9DbAQFnoECBwQAQ&url=https%3A%2F%2Fwww.northeast-ca.gov.uk%2Fdownloads%2F2594%2Ftransport-plan-a4-north-east-transport-plan.pdf&usg=AOvVaw1m_xIU9B1gcgKvWO0gxdEh&opi=89978449

create an area where people are more able to choose active travel, as it is made easier and more attractive, and our region's air quality is improved.

From this plan the following strategies have been published:

- Zero Emission Vehicle (ZEV) Policy – 2022[212]
- North East Rail and Metro Strategy[213]
- North East Bus Service Improvement Plan 2021-2022[214]
- North East Active Travel Strategy 2023[215]

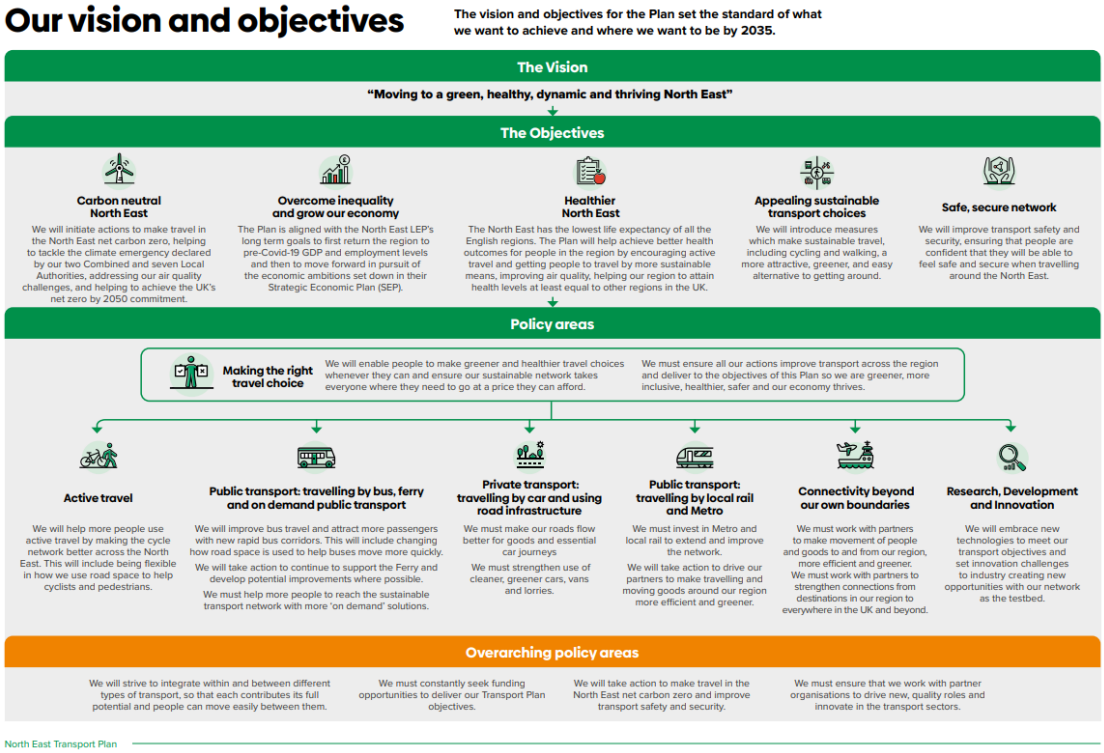

Figure 35 - Page 7 of the North East Transport Plan 2021-2035[216]

3.5.2.4. The North East Devolution Deal

The soon to be realised North East devolution deal will transfer powers and a £1.4 billion investment fund (over a 30-year period) from central government to the seven north east local Authorities.

By bringing together Northumberland, Durham and the Tyne and Wear regions the North East will be able to shape its long-term future with certainty and local vision.

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[212] TNE-ZEV-Policy.pdf (transportnortheast.gov.uk)

[213] North-East-Rail-and-Metro-Strategy.pdf (transportnortheast.gov.uk)

[214] TNE-BSIP-Nov-25-2.pdf (transportnortheast.gov.uk)

[215] Active-Travel-Strategy-June-23-1.pdf (transportnortheast.gov.uk)

[216] https://www.transportnortheast.gov.uk//wp-content/uploads/2021/10/AST004-Transport-Plan-A4-North-East-Transport-Plan.pdf

Additional budget controls will also be devolved to the region, key to this section is the new 'City Region Sustainable Transport Settlement', giving the North East over half a billion pounds to upgrade public transport.[217]

Details on the development of strategies associated with the devolution of transport to the North East Combined Authority will be released over the period of this action plan.

3.5.2.5. Northumberland County Council Policy

Parallel with NCCs alignment with the North East Joint Transport Committee and the North East Transport Plan, NCC create their own, county specific, transport programmes. The local transport programme for Northumberland is published each year, with the most recent plan for the financial year 2023-2024 being recently published[218].

This programme outlines how NCC will spend the money allocated by the Department for Transport (part of this funding will go to the North East Joint Transport Committee to cover central transport costs). The key areas of work are, sustainable transport, safety, roads and bridges, structures and landslips. The work being undertaken under the sustainable transport area, and much of the work within safety, aims to improve and maintain highway environments to encourage more walking and cycling.

3.5.2.6. Policy application to emissions in Northumberland

As demonstrated in the paragraphs above, there is a great deal of strategy, policy, legislation and planning going into the decarbonisation of transport at National, sub-national and regional levels. In terms of reducing emissions from transport in Northumberland, it is important to consider where Northumberland County Council can directly and indirectly make an impact, and where it is more effective to allow the policies set out above to take the lead. The following sections will therefore focus on the most impactful projects identified by NCC to make transport in Northumberland more sustainable. NCC will continue to collaborate with and participate in the development of relevant policy through the groups described above.

3.5.3. The sustainable travel hierarchy

Encouraging and prioritising an increase in active travel, and journeys using public transport, is the means to decarbonising transport which offers the most co-benefits in terms of public health, accessibility, and equality.

This is a key area where NCC and partners have the potential to facilitate reductions in transport emissions. By providing the structures needed for change, such as active travel friendly infrastructure, and improvements in public transport provision.

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[217] https://www.gov.uk/government/publications/north-east-devolution-deal--2

[218] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Roads-streets-and-transport/transport%20policy/Local%20Transport%20Plan/LTP-Programme-2023-24.pdf

NCC have no control over private vehicle use, but again the Council can structurally support positive change, for example through the installation of EV charging infrastructure.

In terms of setting out the most efficient and sustainable means of transport, i.e. the means by which the most people can be moved around with the least energy, infrastructure and space required, the sustainable travel hierarchy is a useful reference tool (Figure 40).

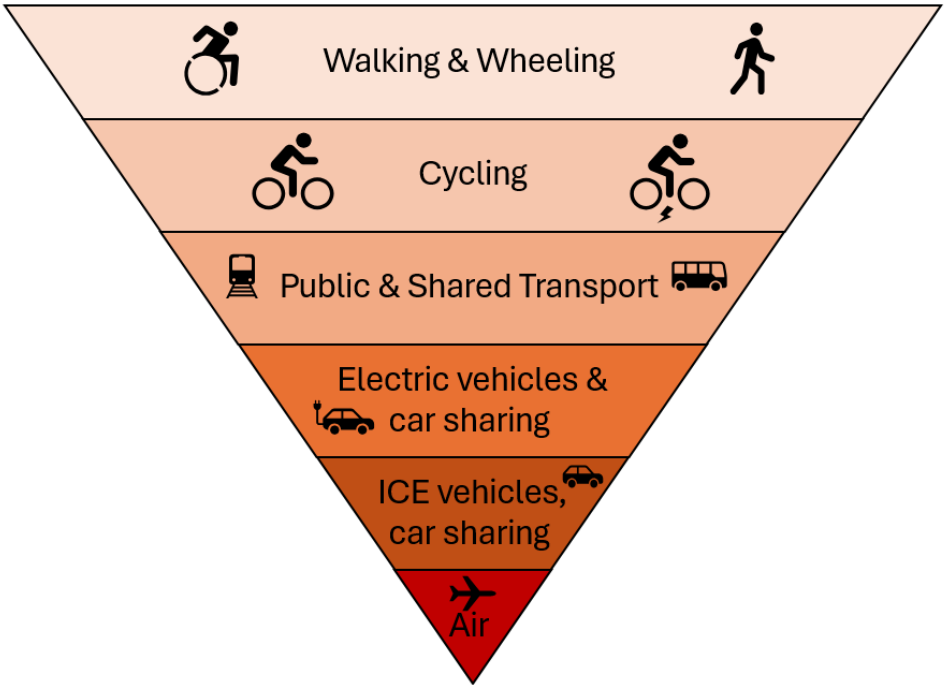

Figure 36 - the sustainable travel hierarchy[219]

The following section will be structured following this hierarchy, reflecting progress made against the previous *Climate Change Action Plan 2021-23*.

3.5.4. Active Travel – walking, wheeling and cycling

Active travel is an essential tool to improve the health of people and the environment. The value of active travel to our society and planet is such that The Department for Transport refers to active travel as "…One of the best return on investment decisions governments can make[220]". This is reflected across transport policies and strategies at national, regional and local levels.

"Active travel is good for the environment, our economy and public health. It's emission free, which reduces toxins in our air and makes our towns and cities nicer places to live. It eases congestion, which is a drag on our economy. And it makes us healthier, helping to keep us fit and preventing thousands of premature deaths from

[219] https://energysavingtrust.org.uk/an-introduction-to-the-sustainable-travel-hierarchy/
[220] The second cycling and walking investment strategy (CWIS2) - GOV.UK (www.gov.uk)

physical inactivity and poor air quality while saving our NHS billions of pounds each year.[221]"

More information about the objectives and investment planned to support cycling and walking in England, can be found in recent documents published by Department for Transport:

- Cycling and walking investment strategy – 2017[222]
- Gear Change: a bold vision for cycling and walking - 2020[223]
- The Second cycling and walking investment strategy – 2023[224]

3.5.4.1. Active Travel England

Active travel England are the government executive agency responsible for making active travel the preferred mode of travel for everyone in England. They work alongside local authorities and offer guidance, funding and strategies to help create infrastructure and societal change. Northumberland's approach to active travel fits in with that stipulated by Active Travel England as the key funding body on behalf of the Department for Transport.

3.5.4.2. The Big Northumberland Gear Change

The Big Northumberland Gear Change is a campaign specific to Northumberland that encourages residents and visitors to adopt more sustainable ways of moving around Northumberland, using active travel or public transport more often.

Funding is provided through the Department for Transport's Capability Fund, allocated through Transport North East.

As highlighted on the Big Northumberland Gear Change website a third of all journeys made in Northumberland are less than 5km, however only 13% of all journeys in Northumberland are made by walking, wheeling or cycling[225]. This shows that there is significant potential for positive change.

3.5.4.3. Local Cycle and Walking Infrastructure Plans (LCWIPs)

As outlined in the previous *Climate Change Action Plan 2021-23* central government published a Cycling and Walking Investment Strategy in 2017. This strategy introduced local cycling and walking investment plans (LCWIPs) as a strategic tool for identifying local improvement needs for active travel.

NCC staff, supported by Department of Transport, created draft LCWIPs for the 12 main towns in Northumberland (Alnwick, Amble, Ashington, Bedlington, Berwick, Blyth, Cramlington, Haltwhistle, Hexham, Morpeth, Ponteland and Prudhoe). The draft LCWIPs identified 65 priority cycling and walking (active travel) corridors with

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[221] The second cycling and walking investment strategy (CWIS2) - GOV.UK (www.gov.uk)
[222] https://assets.publishing.service.gov.uk/media/5f622fade90e072bb68d5c74/cycling-walking-investment-strategy.pdf
[223] https://assets.publishing.service.gov.uk/media/5f1f59458fa8f53d39c0def9/gear-change-a-bold-vision-for-cycling-and-walking.pdf
[224] The second cycling and walking investment strategy (CWIS2) - GOV.UK (www.gov.uk)
[225] https://www.northumberlandgearchange.co.uk/

an estimated creation cost of £80 million. This preparation work means that NCC is well positioned to bid for capital funding to realise these projects. Between 2021 and 2023 NCC has been able to bid for funding to take the following projects forward.

NCC was successfully awarded Levelling Up Funding for two active travel corridors (ATCs). One between Hexham and Corbridge[226], and one between Bedlington East and Bedlington West[227]. Both finished public consultation in spring 2023 and are now moving to detailed design stage.

NCC also received funding from the Transporting Cities Fund (investment provided by the Department for Transport) to create a transforming cities corridor between Ponteland and Callerton[228]. Phase one has been completed, and phase 2 is now underway.

Ashington Active Travel Corridor[229], which will connect Ashington town centre, the new railway station and North Seaton with each other, and existing infrastructure and cycle routes, underwent consultation in summer 2023 and is now moving to a detailed design stage.

Cycling and walking corridors in Blyth have been identified and consulted upon as part of the wider Energising Blyth regeneration programme. Bebside to Blyth Town Centre[230] corridor will create a corridor connecting Blyth town centre with the new railway station at Bebside, facilitating active travel to the new public transport link provided by the Northumberland Line.

The Blyth Town Centre to South Beach corridor involves improvements to a north-south corridor linking a proposed town centre 'gateway' at Waterloo Road/ Renwick Road roundabout, to make a comprehensive, direct and high-quality route across Blyth to South Beach with funding from Active Travel Fund Tranche 3.

As future funding becomes available, Northumberland County Council will continue to use the evidence created during the LCWIP process to bid for funding to deliver additional active travel infrastructure in our towns.

3.5.4.4. Capability Fund

Northumberland County Council successfully bid for active travel capability funding through 2021 and 2022. Using this funding to deliver:

- balance bikes for schools to use from the Bedlington cycle library
- balance bikes for schools and communities to use from the Newbiggin cycle library

[226] Hexham to Corbridge Active Travel Corridor - LUF Public Consultation - Have Your Say Northumberland - Citizen Space
[227] https://haveyoursay.northumberland.gov.uk/transport/bed-luf-public-consultation/
[228] Northumberland County Council - Final phase of new cycling and walking route getting underway
[229] Ashington Active Travel Corridor (northumberlandline.uk)
[230] A1 SHEET (northumberland.gov.uk)

- education and employment opportunities for the Kitty Brewster, Blyth cycle library

NCC were successful in their bid for further funding in 2022-2023, using these funds to develop or deliver the following:

- four adult cycle libraries for Northumberland (venues still to be confirmed)
- berwick community cargo cycle project
- funding for 100 cycle training places
- pipeline design and development of LCWIPs
- funding for communications and marketing for the Big Northumberland Gear Change

3.5.4.5. Active travel for schools

The Go Smarter Northumberland team at NCC work with schools across the county to encourage more children to travel to school in an environmentally friendly manner and reduce car use for school journeys. Active travel to and from schools provides multiple benefits; reducing congestion and improving road safety around schools, improving air quality around schools, reducing emissions, reducing family fuel costs, and pupils are more alert, relaxed and ready to learn after active journeys.

Go Smarter can help schools to develop travel plans via Modeshift STARS. Providing support with planning, training, and signposting funding. Modeshift STARS is a national sustainable travel scheme funded by the Department for Trasport. Go Smarter Northumberland also run environmental initiatives throughout the year for schools and pupils to take part in, for example the annual clean air day in June[231].

3.5.4.6. Active travel future focus

NCC will continue to bid for available funding to facilitate the creation of the 65-priority cycling and walking corridors identified in the LCWIPs. Endeavouring to bring as much of the estimated £80 million required to deliver our active travel aims across the county. NCC will also continue to deliver training and support for groups and individuals looking to access active travel opportunities across the county.

3.5.5. Public Transport

Provision of affordable and accessible public transport is a key means of reducing reliance on private vehicles and therefore the emissions associated with them. In a large, rural county it can be challenging to provide access to public transport for all communities. However, given that 50% of Northumberland's population live in 3% of its geographical area (the South East) and the vast majority of the rest live in the towns and villages along the A1 and A69 corridors, public transport options are accessible to most residents, if not all geographic locations.

Through the period covered by the previous *Climate Change Action Plan 2021-23*, public transport, particularly buses, have been hit with a reduction in use caused

[231] https://www.actionforcleanair.org.uk/campaigns/clean-air-day

primarily by the Covid-19 pandemic. This has made it challenging to analyse data and understand longer term trends.

3.5.5.1. The Northumberland Line

The Northumberland Line, between Ashington and Newcastle, will bring passenger trains back to the southeast of the County on what was previously a freight only rail route. The Northumberland Line aims to support and stimulate community growth, regeneration and employment in southeast Northumberland by providing new and improved transport links for local people and businesses. The development of the line is being supported by a number of key partners, North of Tyne Combined Authority, NEXUS, Network Rail, Northern Rail and the Department for Transport.

The Northumberland Line will provide new rail links for two of the three largest towns in Northumberland, Ashington and Blyth (Cramlington is already served by the East Coast Main Line). New stations are being built at; Ashington, Blyth Bebside, Bedlington, Newsham, Seaton Delaval and Northumberland Park (linking to the Tyne & Wear Metro). A connection will be provided to Manors Station (for Northumbria University) and Newcastle Central (for city centre destinations and onward connections on the national rail network).

Approximately 50% of Northumberland's population live in the South-East of Northumberland and will be able to benefit from the new rail line. By offering an alternative mode of transport, road congestion from car and bus traffic will decrease. Improving air quality and decreasing greenhouse gas emissions.

Work on the Northumberland Line project has been ongoing during previous *Climate Change Action Plan 2021-23,* and it was anticipated that the line would open to passengers in winter 2023. The opening of the Northumberland line will be phased with the first trains running from Ashington, Newsham and Seaton Delaval in Summer 2024. This means that the expected emissions savings from the Northumberland Line should come into effect during the period covered by this action plan.

The previous *Climate Change Action Plan 2021-23* set out savings of around 80.7 KtCO_2e of greenhouse gas emissions over 60 years which would equate to 1.35Kt CO_2e per year. These savings were based on the outline business case[232] which has now been superseded by more recent developments. There is a longer-term aspiration to run electric trains on the line, using a hybrid battery and overhead line system. This would lead to more significant CO_2 savings. In order to begin operating the service at the earliest opportunity however, the decision has been taken to begin operation using diesel trains. Whilst the initial CO_2 savings will not be as high, the infrastructure will still be in place to allow more sustainable trains to operate on the line in the near future, subject to the operator decarbonising their fleet.

Diesel trains will still provide an opportunity to reduce CO_2 emissions in comparison to the equivalent car use on the same journey.

[232] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/planning%20policy/Studies%20and%20Evidence%20Reports/Infrastructure%20Studies/Northumberland-Line-Strategic-Outline-Business-Case-March-2019.pdf

Northumberland County Council will undertake an audit of carbon emissions from the first year of operation in order to assess the impact made.

3.5.5.2. Buses

Northumberland has a diverse geography, including a mix of urban and large rural areas with complex travel demands that make public transport vitally important in terms of providing access to employment, education, healthcare services and tourist destinations. Historically, most bus routes in Northumberland have operated commercially without any financial support from NCC. These represent around 80% of all services. The remaining 20% of services (approximately 48 routes) are either fully or partially subsidised by NCC, and these would not operate without the ongoing support of the council. The support the county council gives helps boost the local economy and safeguard the environment by ensuring that people get to where they need to be without needing a car.

The first national COVID-19 lockdown in March 2020 led to a significant reduction in public transport provision across Northumberland, in most cases at very short notice. Funding for the public transport industry in the form of Covid Bus Services Support Grant (CBSSG), and its successor Bus Recovery Grant (BRG) effectively allowed operators to claim lost revenue on services at pre-pandemic levels, even though demand had dropped to as low as 10% of what was previously recorded. This enabled bus operators in Northumberland to largely maintain normal service levels. By March 2023, patronage had recovered to around 85% of pre-pandemic levels, which compares favourably with other areas.

Northumberland County Council has been successful in securing further grant funding (initial tranche £8.2m) through the Bus Service Improvement Plan (BSIP)[233] which aims at improving bus services across the county by making buses easier to access through an increase in the frequency of services and plugging gaps in the existing network.

Further support was then made available by the Department for Transport (DfT) in January 2023 to cap adult single fares at £2, aimed at encouraging bus use. Most operators in Northumberland joined the scheme that has since been extended to December 2024. Together with the Transport North East £1 fares for people under 22 years, these lower fares have generated growth in passenger numbers, although there has been a material decline in revenue in many places, especially on long distance routes. As a result, these schemes are dependent on continued financial support.

The Council has embarked on a project to accurately measure the carbon emissions that arise from all the passenger transport services that it commissions, this includes all forms of education transport, social care transport and local bus and community transport services. Calculating the carbon emissions at regular intervals enables trends to be ascertained.

An action plan can then be devised with the objective of reducing carbon emissions.

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[233] https://www.gov.uk/government/publications/bus-service-improvement-plan

One approach already well established that helps achieve our environmental goals is the programme of “clean sheet” area review and re-tendering activity which effectively creates a new and leaner school transport network resulting in less mileage being incurred by taxi, minibus and coach operators transporting children between home and school.

Currently, the Council has specified that all vehicles deployed on its contracts must be compliant with a minimum engine emission standard of Euro V though it should be noted that where this involves a cross boundary local bus service into Newcastle then the Euro VI engine emission standard is required to meet the requirements of the Clean Air Zone. In time NCC may consider the adoption of Euro VI engine emission standard as the norm across all contracts, but this needs to be carefully considered given the considerable costs of investment required by our suppliers and the subsequent impact that would have on contract prices paid by the Council.

Another approach used to support sustainable modes of travel is to make as much use as possible of local bus and train services to transport students and young people to educational settings. In 2023, nearly 10% of students who qualified for school transport assistance used the public bus and rail networks. This has the dual benefit of reducing the cost of providing home to school transport while helping to support the long-term viability of the public transport network (especially in rural areas).

3.5.6. Private Transport

To reduce emissions from transport, the number of private cars and the journeys made in them, must decrease. As shown in the hierarchy of travel diagram (Figure 36), encouraging and prioritising an increase in active travel, and journeys using public transport, is the first step to lowering transport emissions in Northumberland. Where private transport is necessary, it can be made more efficient through car sharing and car clubs. Emissions can also be reduced in Northumberland by replacing vehicles that use internal combustion engines with electric vehicles which have zero tailpipe emissions.

3.5.6.1. Car sharing

In the previous *Climate Change Action Plan 2021-23,* two possible actions around car sharing and car clubs were proposed:

- ‘NCC will publish an online tool that will allow residents to register their interest in joining a car club’
- ‘NCC will seek to introduce its own car sharing incentive for staff travel’

In 2023 NCC acted as an advisor on the ‘Car Club in a box’ research and development project. This was a project funded by the 2022 Transport Research and Innovation Grant. The principal objective was to package learning from existing rural car club(s) to create new and improved processes for other communities, using knowledge from Derwent Valley Car Club combined with human-centred design expertise from Edge Innovation. The ‘car club in a box’ tool aims to be flexible and adaptable for each communities' specific needs.

It has been consistently challenging to develop any kind of viable business case for a Council led rural car club. Discussions have been had with community stakeholders, but it is difficult to bring to fruition. Through the provision of EV charging infrastructure as set out below. NCC hopes that it can at least provide the necessary infrastructure to develop low-emissions car sharing clubs in the future. NCC will also continue to explore opportunities to support communities with car clubs and share learning from other localities.

3.5.6.2. Electric Vehicle Charging Infrastructure

Electric vehicles emit no greenhouse gas emissions from the tailpipe although a small amount is still emitted from brakes and tyres. Their carbon footprint is associated primarily with their production and with the generation of the electricity used to charge them. As electric vehicles are not produced in Northumberland, mitigation of their embodied emissions is out of scope for this climate change action plan. Electricity generation is primarily associated with the national electricity grid and is therefore also difficult to directly address. The decarbonisation of the electricity grid is covered in section 3.3.2. In short, the faster the electricity grid decarbonises and the more renewable generation available, both locally and nationally, the more sustainable electric vehicles become.

The *Climate Change Action Plan 2021-23* highlighted that a large expansion in both public and private sector charging infrastructure would be needed before 2030 to accommodate the expected increases in EV ownership. Increasing this infrastructure will also ensure that households without private off-street parking, and visitors to Northumberland, will have sufficient charging options.

Although in 2023 central government pushed back their pledge to ban the sale of new internal combustion vehicles from 2030 – 2035. This does not change the need to increase charging infrastructure. Indeed, EV ownership has been increasing at a faster rate than predicted and legislation now stipulates that 80% of new cars sold by 2030 must be zero-emissions vehicles (ZEVs).

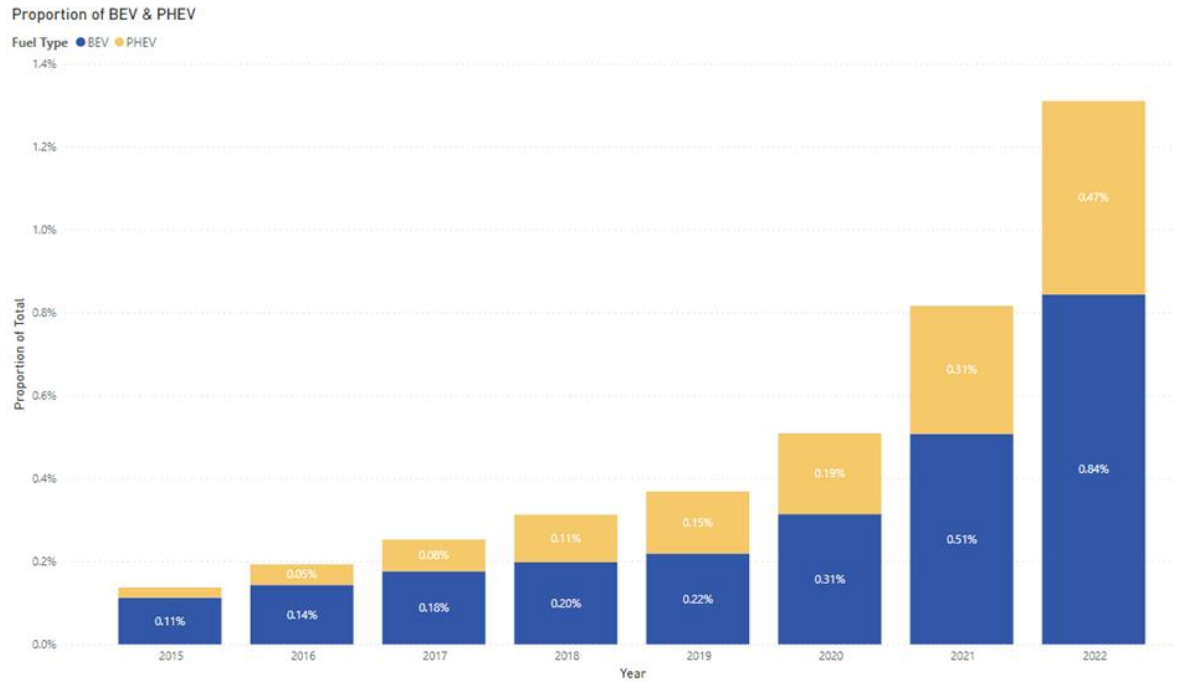

Figure 37 - Battery Electric Vehicle (BEV) and Plug in Hybrid Electric Vehicle (PHEV) ownership as proportion of all vehicles owned in Northumberland over time.[234]

Ownership of battery electric vehicles (BEVs) and plug-in hybrid electric vehicles (PHEVs) has increased exponentially as a proportion of vehicles owned in Northumberland since 2015 (Figure 41). That said, BEVs still only make up 0.84% of all vehicles owned in the County. It would be reasonable to expect the trend in ownership levels to continue upwards; due to government legislation and to the maturing of the second-hand BEV market, making them more affordable to greater numbers of people.

Since the publication of the previous *Climate Change Action Plan 2021-23*, NCC has delivered a series of projects to install additional EV charge points across the County. Prior to 2021 NCC had installed 38 double-headed chargers. Between 2021-2023 NCC has installed 155 double-headed chargers (28 Rapid, 127 fast) across Northumberland.

The installation of this infrastructure would not have been possible without the support of Parish Councils and Councillors within communities across Northumberland who have helped identify suitable locations. Past, ongoing and future funding streams for EV charging installation are set out below.

- **On Street Residential Chargepoint Scheme (ORCS) Pilot**
  In 2020-21, NCC received £96,620 from the Office for Zero Emissions Vehicles (OZEV), matched with £32,205 of internal capital in order to undertake a pilot in collaboration with a contractor called Connected Kerb. This saw 15 double headed EV chargepoints (30 sockets) installed at 7 locations either on or near to streets where residents do not have driveways and therefore park on-street.

[234] https://www.gov.uk/government/statistical-data-sets/vehicle-licensing-statistics-data-tables#ultra-low-emission-vehicles

- **On Street Residential Chargepoint Scheme (ORCS)**
  Following the delivery of the pilot scheme above, it was agreed that NCC would bid for funding for a larger scheme and deliver it internally, without a third-party contractor. In September 2022, NCC was awarded £222,510 from OZEV, which was matched with £148,340 of internal capital. This project has seen 43 additional double headed chargers (86 sockets) installed at locations across the county in the financial year 2022/23.
- **Local Electric Vehicle Infrastructure Fund (LEVI) Stage 1**
  In early 2023, the Department for Transport launched the Local Electric Vehicle Infrastructure Fund (LEVI) which aims to 'deliver a step-change in the deployment of local, primarily low power on-street charging infrastructure across England'. Through Transport North East, Northumberland County Council is bidding for funding to install 80 additional double headed chargers (160) sockets in the financial year 2024/25. This will be delivered through a third-party contract in line with the terms of the funding.
- **LEVI Stage 2**
  Stage 2 of the LEVI fund has also been announced although details are not yet finalised. It can be stated with high confidence however, that NCC will be able to continue accessing funding to scale-up electric vehicle charging infrastructure in strategic locations across the County for the foreseeable future.

In June 2022, cabinet approved the *Electric Vehicle Charging Strategy*[235] which sets out the key priorities and targets for NCC to deliver a sustainable EV charging network in Northumberland alongside the private sector.

This paper committed the Council to prioritising residents who park on-street as the primary target market for NCC EV charge points. These residents make up approximately 22.5% of households in Northumberland. The strategy also set out the intention to fund rapid charging stations (for which external funding is very limited) where a viable business case can be made.

Northumberland County Council will continue to install electric vehicle infrastructure, accessing available funding streams to provide the best value for money. The Council will select locations in collaboration with local communities, which remove barriers to EV ownership and make zero emissions vehicles an easy and accessible choice for private car transport.

3.5.7. Conclusion

As demonstrated in this chapter, transport is an area where Northumberland County Council can make very little direct intervention to reduce emissions. However, significant indirect steps can be taken to create the infrastructure and networks for residents, visitors and businesses to transition to more sustainable forms of

235 https://northumberland.moderngov.co.uk/documents/s11009/05%20Electric%20Vehicle%20Charging%20Strategy%202022-25.pdf

transport. This is where the Council will continue to focus its efforts across the period of this action plan and beyond.

3.6. Northumberland County Council Emissions

Northumberland County Council contributes to the emissions produced in Northumberland through its operations, particularly through heating its buildings and through its fleet of vehicles which operate across the County.

These emissions have fallen consistently since 2005 when they began being measured (Figure 42).

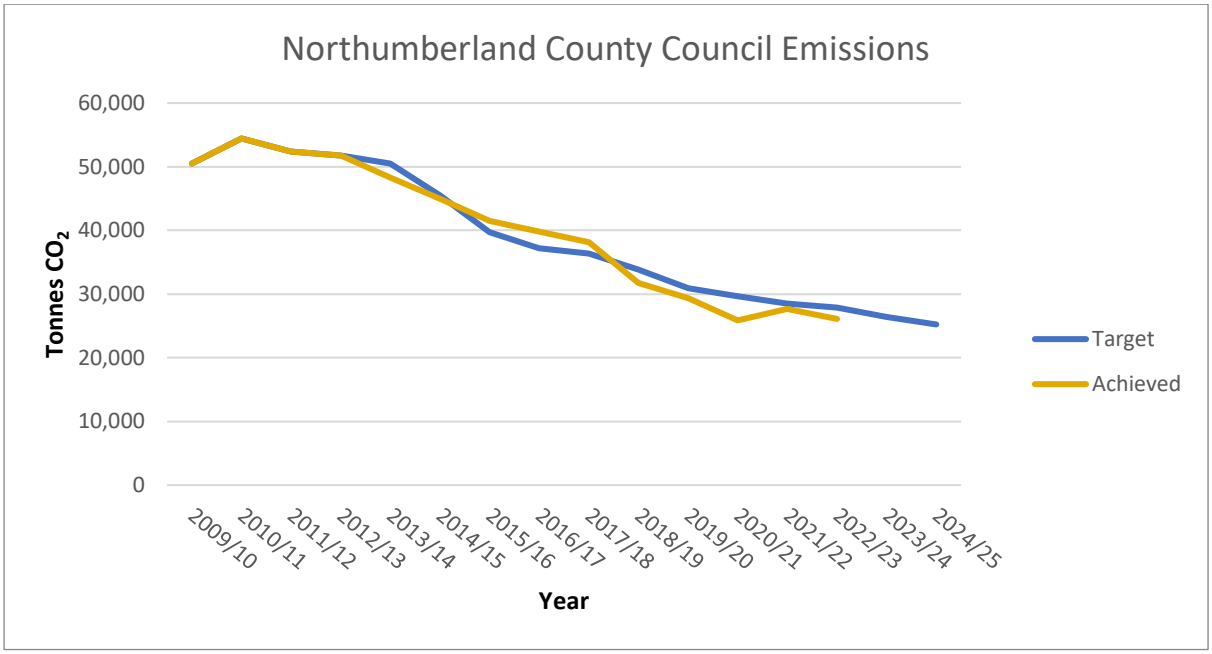

Figure 38 - Emissions produced by Northumberland County Council since 2009/10 baseline.

This fall is in part due to direct action taken by NCC to reduce its emissions. This includes installation of low carbon heating in buildings and investment in electric vehicles to replace diesel in its fleet. It has also been caused by the decarbonisation of the national electricity grid which means that electricity consumed each year emits less carbon than the year before.

In the 2022/23 financial year, Northumberland County Council emitted 26.51 kilotonnes of CO_2. Whilst this is a significant amount, it makes up only 1% of the whole county's positive greenhouse gas emissions. Given this proportion, there is a balance to be found between investing to decarbonise the Council's own operations and investing in the wider county where in some cases, greater benefit can be found.

To demonstrate leadership and commitment to reducing our direct contribution to climate change, the County Council recently announced a target of becoming a net zero organisation by 2030. To create a strategy to achieve this, it is necessary to break down in more detail, the main sources of emissions across the County Council's operations as well as the balance provided by the natural resources the County Council manages.

3.6.1. Sources of NCC Emissions

The two main sources of carbon dioxide emissions produced by the County Council are from heat and transport. These are classed as ‘Scope 1’ emissions meaning the council directly produces them through its own operations. These direct emissions totalled 19.71 $KtCO_2$ in 2022/23. Heat can be further broken down into oil and gas (liquid fuels and gaseous fuels) – 0.58 and 12.63 $KtCO_2$ respectively.

Additionally, the council is responsible for emissions associated with its electricity consumption. These are classed as ‘Scope 2’ emissions, meaning the Council is responsible for them but does not directly produce them. Emissions from electricity in 2022/23 were 5.98 $KtCO_2$.

Finally, the council accounts for some scope 3 emissions – indirect emissions for which the Council takes responsibility but does not directly produce such as through business travel undertaken on Council business and claimed for by employees. In 2022/23 business travel contributed 0.82 $KtCO_2$. It should be noted that not all possible scope 3 emissions are currently measured. These would include emissions from the production and shipping of goods procured by the Council for instance. It is currently not possible to measure these additional scope 3 emissions, but it is something being investigated and could be added to reports if data can be found. Figure 43 shows the total emissions produced by NCC by scope.

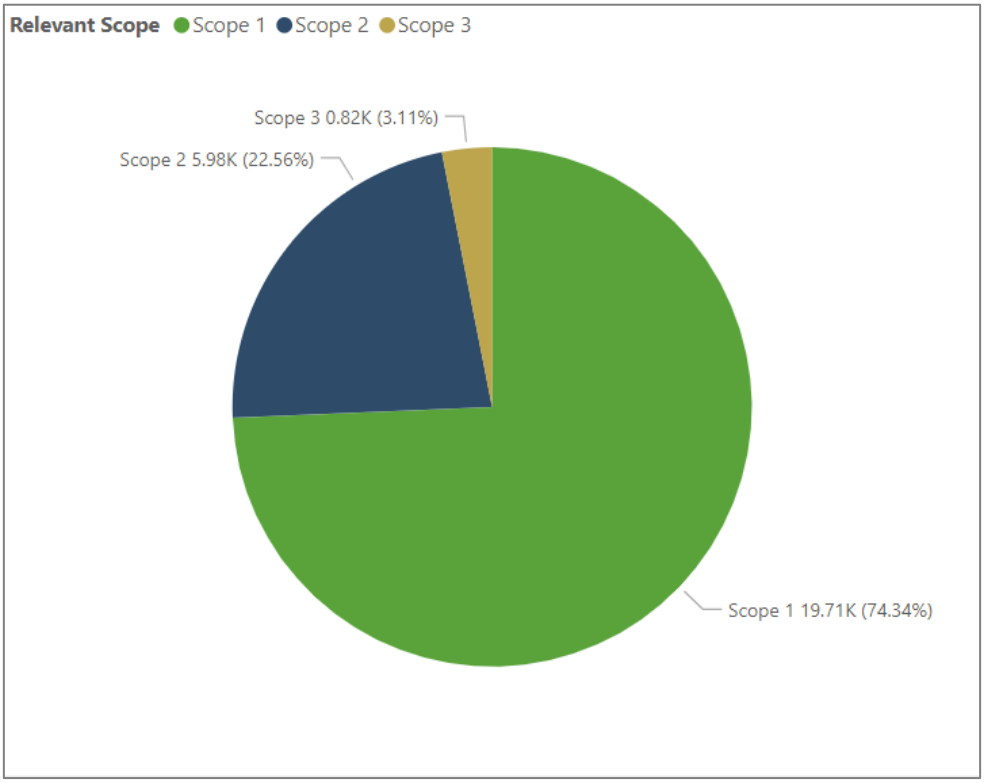

Figure 39 - total emissions produce by Northumberland County Council by scope.

3.6.2. NCC Negative Emissions

Northumberland County Council owns and manages 1193 hectares of woodland ranging from former colliery sites planted in the 1970s, to ancient woodland dating back to 1600 AD. The climate change team at NCC has carried out analysis on this

woodland to calculate the amount of CO_2 which it is absorbing from the atmosphere each year.

To calculate this value, the Woodland Carbon Code[236] (WCC) was used. This is a quality assurance standard for woodland creation projects in the UK, backed by the Government, the forest industry and carbon market experts. Records of council owned woodland were consolidated and analysed to understand species mix, age, yield class and spacing. Using the WCC methodology NCC were then able to calculate that each year, NCC woodland sequesters 13.5 $KtCO_2$.

To reach net zero as an organisation, NCC will have to factor in these negative emissions to balance out positive emissions that cannot be eliminated.

It is also important that NCC works to protect and enhance these natural resources for which it is responsible. Currently, woodland owned by NCC is reactively managed, meaning if there is an issue, particularly in relation to safety around a public right of way, NCC will intervene and remedy. However, there is the potential to put some of NCC's woodland into more active management schemes which would see them thinned to promote biodiversity within the woodlands and increase carbon sequestration as new growth emerges.

Following a report commissioned in 2023, which assessed the condition of NCC woodlands and the potential for management plans, a strategy is being developed to progress the adoption of this new approach, secure the necessary funding for the implementation of woodland management plans and to quantify the impacts. This will be published in 2024.

3.6.3. Reducing Emissions

Once the negative emissions from NCC woodland (-13.5 $KtCO_2$) are subtracted from the Council's positive emissions (26.51 $KtCO_2$), it leaves a net total of 13.01 $KtCO_2$. This is the amount by which the Council must reduce its emissions in order to reach net zero (Figure 44).

[236] https://woodlandcarboncode.org.uk/

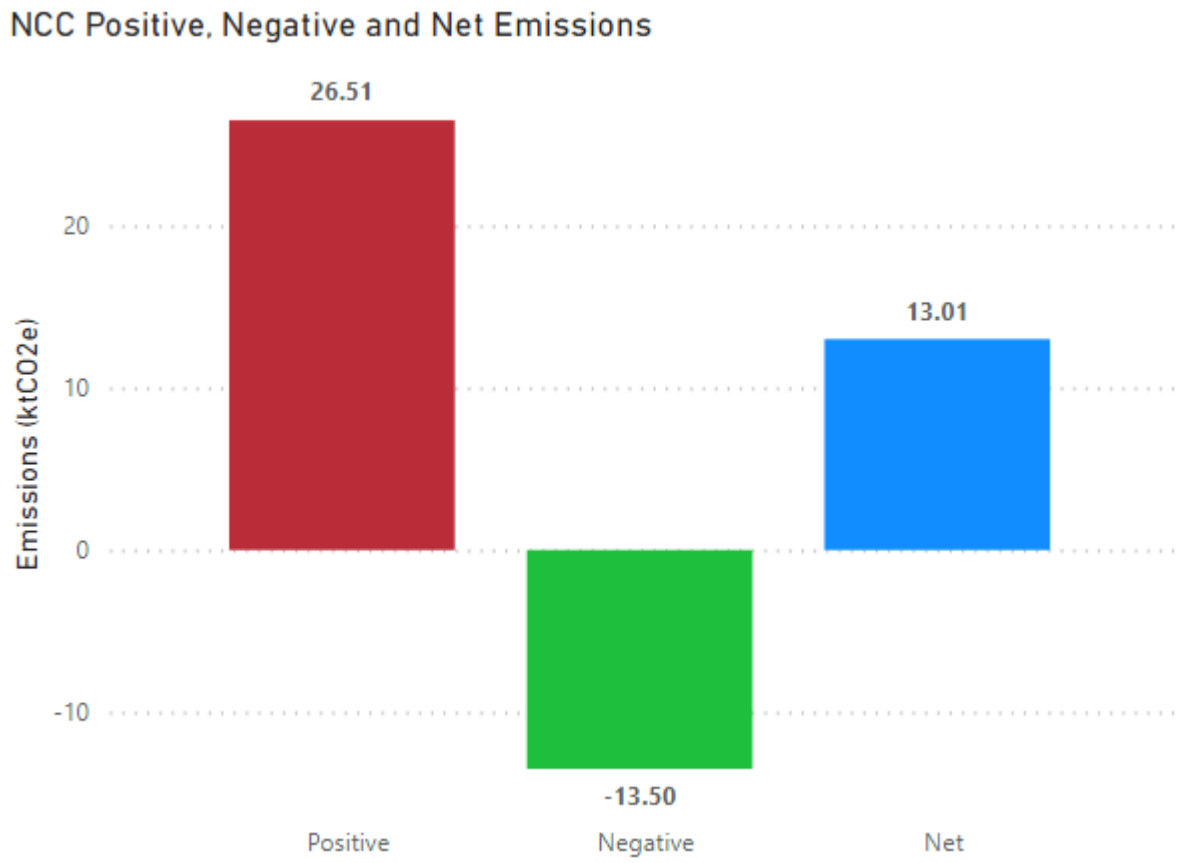

Figure 40 - Northumberland County Council positive, negative and net emissions 2023.

As identified, the main sources of emissions are from fleet and from heating buildings. It is therefore appropriate to focus on these areas to identify opportunities to reduce emissions.

3.6.3.1. Fleet Decarbonisation Programme

Throughout the period of the previous *Climate Change Action Plan 2021-23*, a programme of fleet decarbonisation has been underway. This has focused primarily on the replacement of small diesel vans at end-of-life with electric alternatives. At the time of writing, the Council now operates 42 electric vans, 3 electric cars and has an additional 12 vans on order.

Based on mileage covered by these vans in 2022/23, this has resulted in a saving of 78.12 tonnes CO_2 compared to the equivalent diesel consumption. The transition to electric vans has required the installation of charging infrastructure at NCC depots. There are now 66 chargers in operation at NCC depots, allowing for a continued increase in the transition to EVs.

Work is now underway to begin an EV replacement programme for bigger vans and other larger vehicles. This will require more charging infrastructure including higher power chargers. By 2028, it is intended that NCC will replace 73 ICE panel vans (medium size) with EV alternatives. Work to explore more sustainable alternatives to diesel HGVs is also on-going. This has included trialling the use of hydrotreated vegetable oil (HVO) as a low carbon alternative fuel which, whilst successful, was

not considered to be economically viable or value for money due to the significant revenue cost differential between HVO and diesel of ~£1m per annum.

A strategy for development of the fleet decarbonisation programme will come forward in 2024 and will set out the detail for increased electrification of NCC's vehicles.

3.6.3.2. Buildings

The same principles of fabric-first retrofit as described in the wider Heating section of this plan (Section 3.4.), apply to Council buildings. To reduce emissions from heating NCC's estate, it will be necessary to undertake a programme of building improvements including installing more insulation and replacing fossil fuel boilers with low-carbon heat sources. In order to ensure value for money, building decarbonisation should also offer the Council opportunities to save on revenue costs through reduced energy bills. This means that where low-carbon heat sources which use electricity are installed, it will also often be necessary to generate low-cost electricity at source through solar PV or other means to keep running costs low. Capital costs should also maximise the opportunity for grant funding to offer the best value to residents.

3.6.3.3. Heat Networks (District Heating)

The work undertaken and set out in the chapter on District Heating (section 3.4.7.4), will be hugely beneficial to the decarbonisation of NCC's built estate as it comes to fruition over the period to 2030 and beyond. Low carbon heat networks in Alnwick, Ashington, Berwick upon Tweed, Blyth, Cramlington, Hexham, Morpeth and Prudhoe will allow key NCC buildings in each of those towns to access low carbon heat.

Delivery of low carbon heat networks in the towns listed above, would in due course create the potential for 97 NCC owned buildings to connect to low carbon heat. These include leisure centres, schools, libraries and offices. This would substantially reduce the carbon emissions currently associated with heating these buildings and as such, is a crucial part of the Council's transition to net zero.

The most significant challenge to this programme of work is the timescales required. It is not likely that heat networks will be built and running in all these locations by 2030. The strategy for procuring a delivery partner to build and operate low carbon heat networks is set out in section 3.4.7.4. As this strategy is implemented and progresses, relevant reductions in heat related emissions from NCC buildings in the first locations and phases of delivery will become clearer and can be added to the strategy for the County Council to reach net zero by 2030.

3.6.3.4. Individual Retrofit

NCC owns and operates a significant number of buildings which will not be connected to low carbon heat networks in the foreseeable future. These particularly include buildings in rural locations, which are often primary schools or depots. In many cases, these buildings are heated by oil rather than gas, which as a more polluting fossil fuel, makes them an even greater priority for decarbonisation. Transitioning from oil to low-carbon heating also presents a more favourable invest to save business case as oil is a more expensive fuel than gas and therefore offers more revenue saving potential. During the period covered by the previous *Climate*

Change Action Plan 2021-23, the County Council was successful in being awarded £3,012,580 of grant funding through the Public Sector Decarbonisation Scheme, for the installation of low carbon heating systems in the following buildings:

- Willowburn Leisure Centre
- Belford Fire Station
- Swarland Primary School
- Stannington First School
- Stamfordham First School
- Alnwick Lindisfarne Middle School

Successful installation and operation of the low carbon heating technologies in the buildings above is calculated to result in an emissions reduction of approximately 385 tonnes CO_2 per year.

3.6.3.5. Heat Decarbonisation Plans

The Public Sector Low Carbon Skills Fund provides grants for public sector bodies to access skills and expertise to unlock heat decarbonisation on their estate. NCC has been successful in 2023 in winning Low Carbon Skills funding for 14 heat decarbonisation plans. These will assess and propose measures for the following buildings:

Building name	**Building Type**	**Postcode**
Beaufront First School	Primary School	NE46 4LY
Belford Primary	Primary School	NE70 7QF
Bellingham Middle School	Secondary School	NE48 2EN
Burnside Primary	Primary School	NE23 1XZ
Choppington Primary School	Primary School	NE62 5RR
Cleasewell Hill Special School	Special School	NE62 5DJ
Eastlea Primary	Primary School	NE23 3ST
Hipsburn First School	Primary School	NE66 3PX
New Delaval Primary School	Primary School	NE24 4DA
Newbiggin Sports Centre	Leisure Centre	NE64 6HG
Otterburn First School	Primary School	NE19 1JF
Pegswood Fire Station	Emergency Services	NE61 6SH
The Sele First School	Primary School	NE46 3QZ
West Hartford Fire Station	Emergency Services	NE23 3JP

This work will be complete by April 2024 and will provide a blueprint for capital works to these buildings, all of which have existing fossil-fuel heating systems that will reach their end-of-life in the next three years.

The heat decarbonisation plans also create a foundation for accessing Public Sector Decarbonisation Scheme capital funding which will support the replacement of fossil-fuel heating systems. Once the heat decarbonisation plans are complete, a pipeline of works will be developed, and appropriate funding will be sought. Capital funding has been allocated in the NCC Medium Term Financial Plan to match potential PSDS grant funding for these works.

Carbon emissions from these buildings in the financial year 2022/23 amounted to 0.91 $KtCO_2$. This means, if all heating systems were upgraded to a low-carbon alternative by 2030, NCC would stand to reduce emissions by this amount.

3.6.3.6. Energy Generation

As set out in the paragraph below, the UK electricity grid is projected to decarbonise substantially and be operating at net zero emissions by 2035[237]. This means that investing in generating renewable energy through means such as solar PV across the NCC estate has limited potential for direct carbon savings as the equivalent electricity purchased from the grid, will be low or zero carbon in the medium term anyway.

There is, however, value in assessing the opportunities for energy generation not just for direct carbon savings but because this is often a means of facilitating greater decarbonisation opportunities by making the electrification of heat and transport more financially viable.

NCC has invested substantially in solar PV generation across its estate and in the year 22/23, generated 622,543 kwh. NCC's solar PV has the capacity to generate 1,142,857 kw. NCC solar generation is primarily roof-mounted but in 2023, the County Hall solar car-port was launched. This is an 800KW solar array accompanied by a 400KW battery which provides renewable energy to County Hall and to 120 EV chargers in the County Hall car park.

This solar car-port provides a model for other, similar infrastructure in other car parks across the County, operated by NCC. This can offer potential when coupled with EV charging and/or battery storage. NCC will undertake an options appraisal in 2024 to assess the viability of future solar-car ports on selected NCC operated car parks.

3.6.3.7. Grid Decarbonisation

As stated above, the UK electricity grid is projected to decarbonise substantially and be operating at net zero emissions by 2035. This means, that a reduction in scope 2 emissions (emissions from electricity used by NCC but generated elsewhere) can be assumed. Using the grid electricity carbon intensity factors, projected by DESNZ up

[237] https://www.gov.uk/government/news/plans-unveiled-to-decarbonise-uk-power-system-by-2035

to 2030[238], it can be estimated that NCC emissions from electricity will be 4.6Kt lower in 2030/31 than in 22/23.

These reductions are not directly within NCC's control but will, out of necessity, form part of the route to net zero emissions as a Council.

3.6.3.8. Business Mileage and Corporate Travel

Another area of emissions from NCC operations comes through business mileage and corporate travel. This is generated by vehicles used in NCC business but either belonging to individual staff members or procured externally.

In the financial year 22/23 emissions from business mileage and corporate travel totalled 823.23 tonnes CO_2e. 98% of these emissions came from business mileage rather than corporate travel.

Business mileage emissions have reduced by 22% since 2019 (Figure 45). Much of this is down to the impacts of the COVID-19 pandemic and the associated reduction in work-related travel.

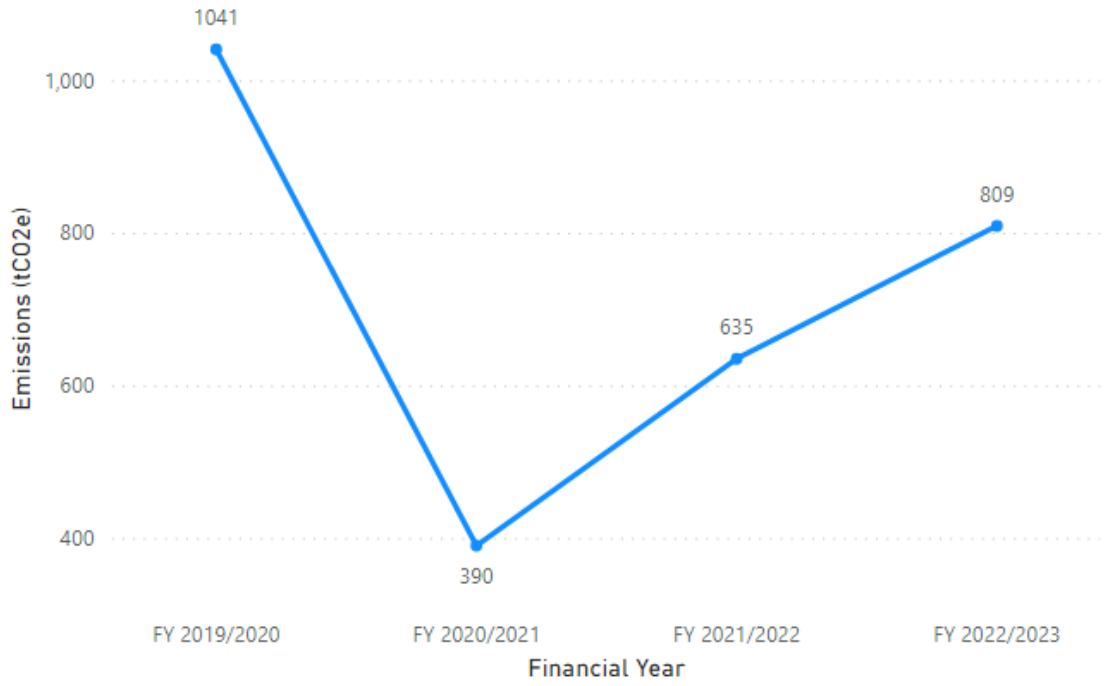

Figure 41 - Northumberland County Council business mileage emissions by financial year.

There are a number of ways of reducing business mileage emissions which include:

- encouraging virtual meetings
- facilitating EV ownership and use amongst staff members
- encouraging car sharing
- encouraging walking or cycling for short business journeys
- encouraging the use of public transport for longer journeys where possible

[238] https://www.gov.uk/government/publications/energy-and-emissions-projections-2021-to-2040

- providing a pool of EV cars for staff use

Thanks to an attractive salary sacrifice scheme, EV usage amongst NCC staff has risen substantially over the last three years meaning that business mileage claims for EVs have increased to 105,087 miles and now make up 1.43% of all claims (as shown in Figure 46).

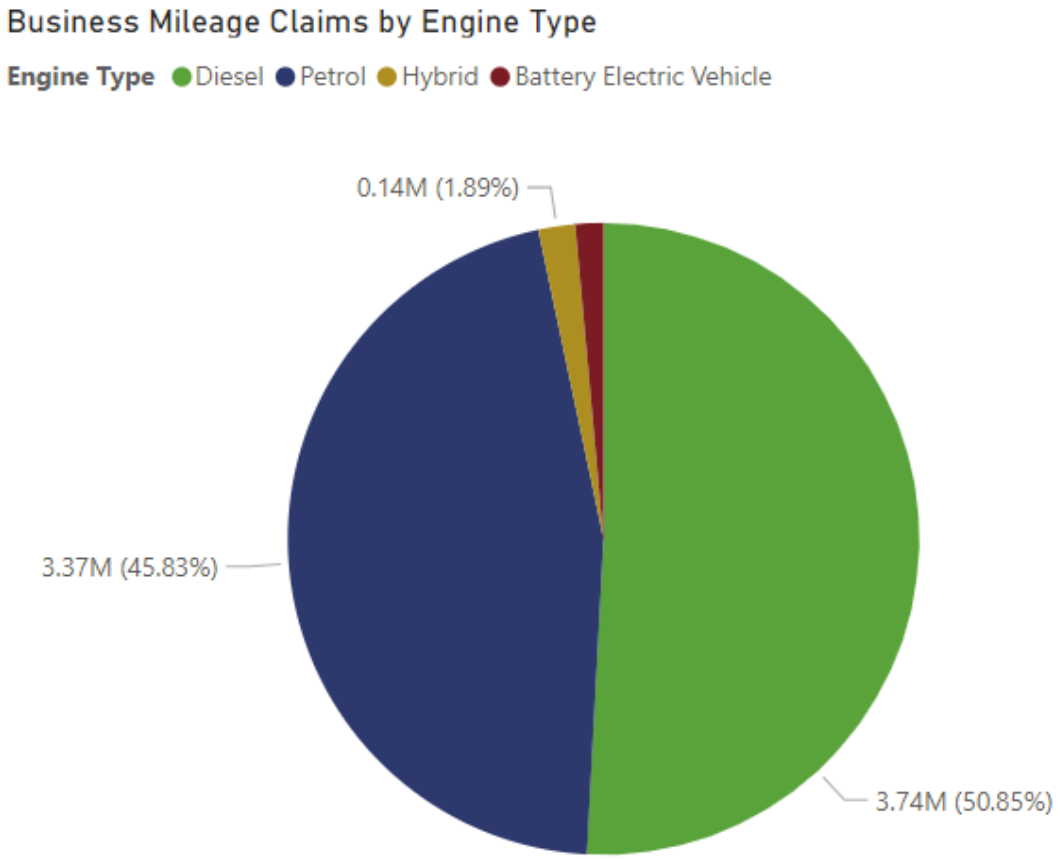

Figure 42 - Northumberland County Council business mileage claims by engine type 2023.

NCC will continue to offer and promote the NHS Fleet Solutions salary sacrifice scheme to enable staff to move to zero emissions vehicles.

To encourage and facilitate more short journeys by bike for business purposes, a number of bikes and e-bikes have been purchased by NCC and are available to use either by specific or general staff.

NCC will continue to monitor business mileage claims and encourage directorates to reduce these wherever possible.

3.6.3.9. Energy Reduction Projects

Ongoing work to reduce energy consumption in buildings across the Council estate was accelerated following the 2022 energy crisis. The Council took steps to reduce heating temperatures where possible in buildings and swimming pools. This is necessarily balanced by the need to offer warm spaces for vulnerable residents.

Whilst carbon savings from these measures are relatively low, adopting energy saving as best practice across the organisation will support the transition to net zero.

3.6.4. Conclusion - The Council's route to Net Zero

As set out above, there are many projects either currently being delivered, or in the pipeline for future delivery, which will contribute to the continued reduction in carbon emissions being produced directly by Northumberland County Council. When considering the current net emissions produced by NCC and then factoring in the projected decarbonisation of the electricity grid by 2030, the Council will be left with an estimated 8.41 $KtCO_2e$ by which emissions must be reduced in order to reach net zero. It is estimated that this can be achieved through delivery of the projects above. It should be noted however that achieving these reductions is dependent on delivery and connection to one or more low carbon heat networks for key NCC buildings. The detail on the delivery of these projects is not yet known and therefore concrete assurance cannot yet be given on the pathway to net zero for the County Council. An updated strategy will be published following the procurement and onboarding of a heat delivery partner.

4. Environment

4.1. Introduction

In our first climate action plan (2021-2023) *'Action area 6 – Natural resource-based carbon sequestration'* outlined the data available at the time and the resulting actions proposed. As a mostly rural county with a wealth of green space, data showed that Northumberland had negative carbon emissions of –1,114 $KtCO_2$ (from the Carbon Emissions Data published in 2021 for the year 2018). These negative emissions compensated for 61% of Northumberland's carbon emissions.

As such the plans laid out in this section were based around actions that would protect and enhance Northumberland's natural assets, specifically:

- The Great Northumberland Forest
- Local Nature Recovery Strategy pilot for Northumberland
- Borderlands Inclusive Growth Deal
- peat restoration

Over the last three years the awareness, scope and focus of how NCC can protect and enhance Northumberland's environment has evolved. This is in part influenced by new legislation and policy from Central Government. By constantly improving data, and by the work that has been done by NCC teams since the publication of the first Action Plan.

Therefore, what was previously referred to as *'Action Area 6'* will now be covered within *'Environment'*. The Environment section will be broken down into, six subsections. This better reflects the classification systems used for national and international emissions data. As the words 'Nature' and 'Environment' can have

different meanings to different people[239]. The next section will refer to specific and clearly defined aspects of the environment:

- ecosystems and biodiversity
- agriculture
- trees and woodlands
- peatlands
- waste
- pollution control

More details and examples of work that NCC does for conservation and enhancement of the environment can be found in the Environmental Policy Statement, as discussed at the beginning of this section.

It should be noted that there are important environmental matters where the council has no power, control, or legislative duties. As such these will not be included in the following section. This report focuses on matters where NCC has either; a legislated responsibility, assets, capacity, or funding to enable action to be taken.

The information within this action plan, and the Environmental Policy Statement provide an overview of the role NCC has in protecting and enhancing the environment of Northumberland.

4.2. Environment data

As the geographically largest local authority area in the North East and second largest in England, the way that land and natural resources are used in Northumberland can have a significant impact on both the county and the region's drive towards net zero. When the previous action plan was written, it was understood that Northumberland was the biggest carbon sink in England due in large part to its forestry, absorbing -1,114.3 $ktCO_2$ in 2018[240].

In 2022 and 2023 the data on local authority level emissions, provided annually by the Department for Energy Security and Net Zero, underwent significant revisions in its inclusions and methodology. For the first time, methane and nitrous oxide emissions were included, alongside carbon dioxide at a county level. Methane and nitrous oxide are both powerful greenhouse gases which contribute to climate change in the same way as carbon dioxide by holding heat in the earth's atmosphere. For simplicity, they are calculated as equivalent to carbon dioxide so they can be compared directly.

The inclusion of these greenhouse gases has increased the carbon dioxide equivalent emissions from Northumberland by 44% compared with the carbon dioxide only emissions data NCC was previously working with (Figure 47).

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[239] They are often used to represent the world around us, 'the countryside' or green and blue spaces. They are also used to represent people's thoughts or actions about the world around us (e.g. an environmentalist) and how to care and protect; the land, wildlife, air, water, and each other.

[240] https://www.gov.uk/government/statistics/uk-local-authority-and-regional-carbon-dioxide-emissions-national-statistics-2005-to-2018

The main source of these methane and nitrous oxide emissions is the agricultural sector, therefore it is important to give this sector greater consideration in this action plan.

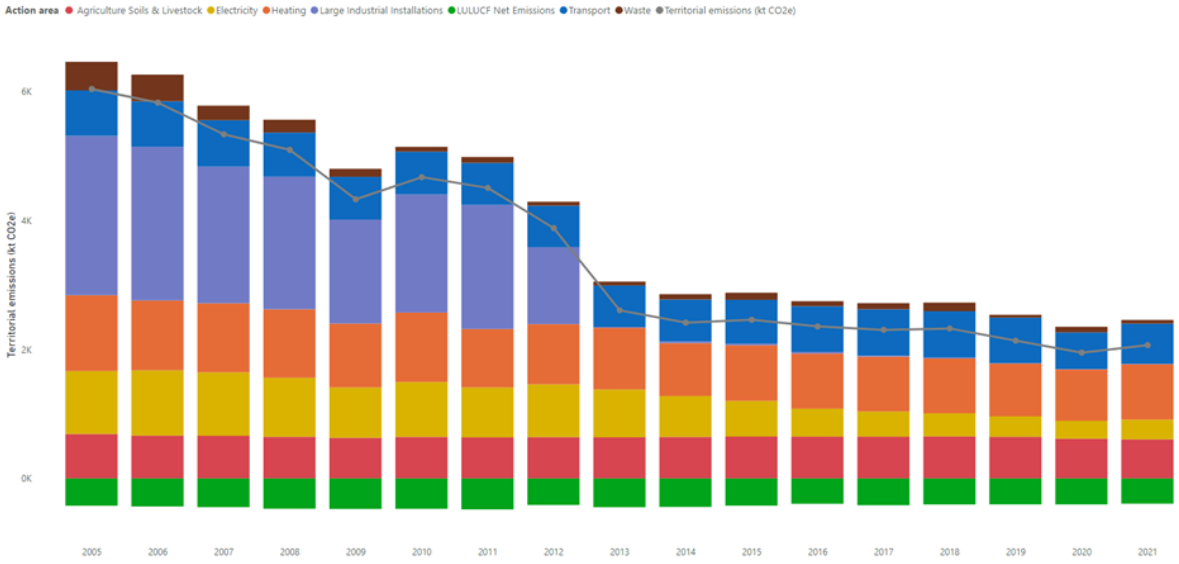

Figure 43 - Territorial emissions from Northumberland since 2005 by action area

In light of the significant change to the County's greenhouse gas emissions with the inclusion of methane and nitrous oxide, the Council has made the decision to announce a new target of achieving net zero emissions (i.e. carbon dioxide, methane and nitrous oxide) for the County of Northumberland by 2040.

More detail on emissions data will be supplied within the following sections on Agriculture and Forestry and other land use.

When considering the Environment, it is important also to consider how land is used in Northumberland.

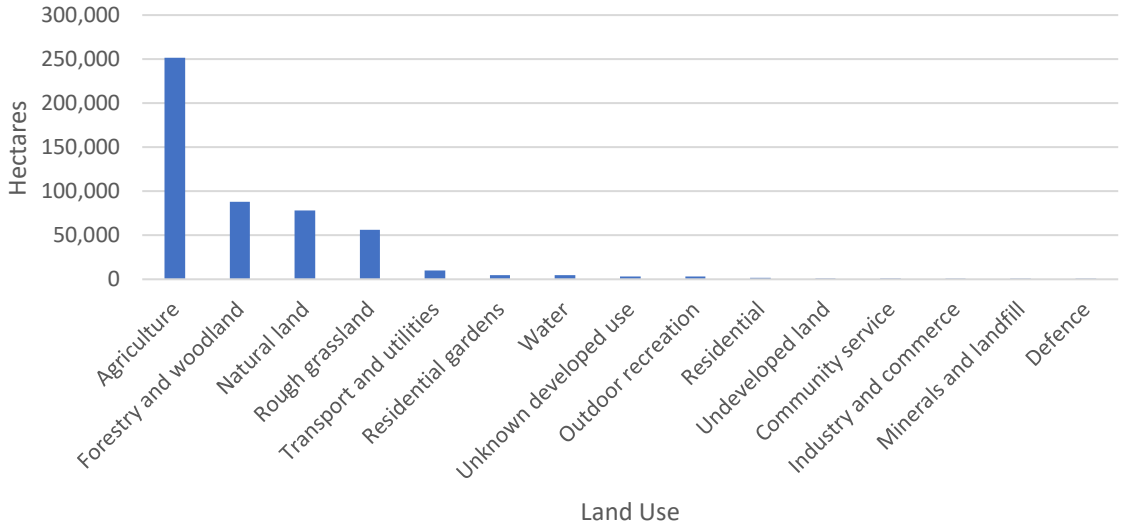

Figure 44 - Land Use in Northumberland - Official Statistics 27 October 2022[241]

50% of land in Northumberland is used for agriculture, meaning that sector accounts for by far the highest proportion of land use (Figure 48). The next highest uses are forestry, natural land (land not being cultivated or grazed) and rough grassland (Areas of rough grassland and bracken shown by annotation or symbol on the OS map).[242]

This demonstrates that, not only in terms of emissions but also in terms of the protection and enhancement of the county's environment more generally, it is essential to consider agriculture and forestry.

4.3. Central Government Policy

Since the first climate action plan was published two new relevant acts of parliament have been published, the Environment Act 2021[243] and the Levelling-up and Regeneration Act 2023.[244]

There have also been relevant changes to existing legislation:

- Natural Environment and Rural Communities Act 2006 (Part 3 - Biodiversity - Section 40 - this Act has been amended by the 'Environment Act 2021' to bolster the obligations on LAs around biodiversity.)[245]
- Town and Country Planning Act 1990 – Section 90 amended and Schedule 7A inserted to mandate biodiversity net gain as a condition of planning permission[246]

4.4. NCC and the Ecological and Climate Emergencies

The importance of wider environmental and ecological concerns amongst Northumberland's residents and visitors has been made clear to NCC throughout our engagement with these groups.

In July 2023 Northumberland County Council officially recognised the ongoing ecosystem and biodiversity crisis facing the county by declaring an Ecological emergency.

The climate emergency, declared by NCC in 2019, and the ecological emergency are deeply intertwined. The Climate Change Action Plan 2024-2026 will sit alongside wider environmental strategies and form a key part of the Council's holistic approach to preserving and enhancing the environment.

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[241] https://www.gov.uk/government/statistics/land-use-in-england-2022/land-use-statistics-england-2022

[242] https://assets.publishing.service.gov.uk/media/63595b6ed3bf7f0bd5cea49d/Land_Use_and_Land_Use_Change_-_Technical_Notes.pdf

[243] https://www.legislation.gov.uk/ukpga/2021/30/contents/enacted

[244] https://www.legislation.gov.uk/ukpga/2023/55/enacted

[245] https://www.legislation.gov.uk/ukpga/2006/16/section/40/2023-01-01?timeline=true

[246] https://bills.parliament.uk/publications/41967/documents/433

Following the declaration of an ecological emergency, NCC adopted an Environmental Policy Statement[247] in October 2023 which recognises the interwoven issues and need to take a holistic view across both the natural environment and the climate change targets.

This statement outlines the work that NCC does, and will continue to do, across the following areas:

- climate change
- nature recovery and biodiversity
- heat and renewable energy
- sustainable waste management
- travel and transport
- water quality
- parks and green spaces
- safeguarding public health

The approval of this policy statement demonstrates the Council's commitment to preserving and enhancing our natural environment and it is supported by this climate change action plan.

4.5. Ecosystems and Biodiversity

This section will cover various projects and strategies being undertaken by NCC with their partners and other stakeholders, to restore, protect and preserve biodiversity, habitats, and ultimately, ecosystems across the county of Northumberland.

The term biodiversity means the variety of life, how many different plants, animals and microorganisms are there within a habitat (a place). Ecosystem is the term used to describe an interdependent community of animals, plants, and microorganisms, and their physical environment (habitat). All living things rely on other living things, and their habitat, for survival.

When working to restore or preserve the natural environment, habitats and biodiversity must be considered equally to make sure that ecosystems are functional and healthy. The main categories of ecosystems are, terrestrial, freshwater, coastal and open ocean. All four categories influence each other. Everyone in Northumberland has the power to effect change in all four categories.

Ecosystems are threatened by human actions, and the effects of climate change.

Healthy ecosystems can help reduce the impacts of climate change as well as reducing emissions which cause climate change. They are therefore essential in overcoming and adapting to the challenges posed by a changing climate.

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247 https://northumberland.moderngov.co.uk/documents/s16884/03%20Environment%20Policy%20Statement.pdf

More information and details will be published by the NCC Ecology team over the timeframe of this action plan. Links to additional information will be provided throughout.

4.5.1. Current biodiversity condition

The term biodiversity (a contraction of biological diversity) simply means the variety of life – both in terms of the range of species of plants, animals, fungi and microbes and the genetic variation within them. NCCs ecology experts provide an extensive background to the issues facing the UK in relation to Biodiversity in the July 2023 cabinet paper *Northumberland Stewardship and Rural Growth Investment Programme – Nature Recovery Response*[248].

The Biodiversity Intactness Index (BII) is a measure of the change in ecological communities in response to human pressures. The BII is an estimated percentage of the original number of species that remain and their abundance in any given area, despite human impacts. The BII is averaged across areas (countries, regions or global) to give an estimate of the remaining biodiversity across that area, and it has been adopted as an indicator in the Post-2020 Global Biodiversity Framework within the UN Convention on Biological Diversity. Globally, the index stands at 75%, however the UK has a biodiversity intactness index of only 50%. This is the lowest out of all the G7 countries.

Given its relatively low population density and the proportion of the county comprising uplands unsuited to intensive agriculture, Northumberland is relatively rich in wildlife in a national context. However, data concerning the extent and condition of important habitats and populations of important species in the county is incomplete, and improving our understanding of these trends continues to be a challenge.

4.5.2. Ecosystems, Biodiversity and Northumberland County Council

National Government has committed to leave the environment in a better state for future generations. To help towards these aims new legislation, The Environment Act 2021[249] has introduced new obligations for public bodies to take action to conserve and enhance biodiversity through a range of mechanisms. The obligations imposed on Northumberland County Council (and all local authorities) are:

- the development of Local Nature Recovery Strategies
- new mandatory system of 10% Biodiversity Net Gain for planning submissions
- strengthened obligations to conserve and enhance biodiversity. This includes new planning, implementation and reporting duties

248 https://northumberland.moderngov.co.uk/documents/s15350/04%20Northumberland%20Stewardship%20and%20Rural%20Growth%20Investment%20Programme.pdf

249 Environment Act 2021 (legislation.gov.uk)

More detail on how this applies in Northumberland has been set out in the July 2023 cabinet paper *Northumberland Stewardship and Rural Growth Investment Programme – Nature Recovery Response*[250].

4.5.3. Pilot Local Nature Recovery Strategy

During 2021 Northumberland took part in a pilot Local Nature Recovery Strategy (LNRS). The purpose of the pilot LNRS was to test the draft LNRS guidance and regulations created by the department of environment food and rural affairs (DEFRA).

This provided an opportunity for the Ecology team at NCC to learn about the LNRS process, what works well, and what doesn't work well. NCC now has the foundational materials and experience to support the development of a full LNRS as set out below.

The Pilot LNRS was supported by a steering committee that included Northumberland, Newcastle and North Tyneside Local authorities, the Northumberland National Park authority, Natural England, Forestry Commission, the Environment Agency, the Environmental Records and Information Centre, and Northumberland Wildlife Trust.

NCC has also begun and continues to undertake the following key relevant projects to support and enhance biodiversity and ecosystems:

- Continued management of designated sites in Northumberland that are in the Council's ownership including SSSIs, European sites, Local Wildlife Sites, Country Parks and Local Nature Reserves. North Pennines AONB. Northumberland Coast AONB.
- Operation of the Space for Shorebirds strategic mitigation scheme – a developer-funded scheme to address recreational damage and disturbance within designated sites on the coast.
- Involvement in preparation and implementation of management plans for the North Pennines and Northumberland Coast National Landscapes (formerly AONBs) and support for the National Landscape staff units and partnerships.
- Continued partnership working with; Berwickshire and Northumberland Marine Nature Partnership, Northumberland Peatland Partnership, Great Northumberland Forest and other land-owners and managers as appropriate.

4.5.4. Local Nature Recovery Strategy

In summer 2023, the regulations and statutory guidance for Local Nature Recovery Strategies were published by DEFRA (building upon the lessons learnt across the UK during the pilot LNRS projects).

NCC is leading the development of the statutory North of Tyne LNRS, on behalf of the North of Tyne Combined Authority, working with Newcastle upon Tyne and North

250 https://northumberland.moderngov.co.uk/documents/s15350/04%20Northumberland%20Stewardship%20and%20Rural%20Growth%20Investment%20Programme.pdf

Tyneside Councils and the Northumberland National Park Authority and a steering group that includes the DEFRA bodies, National Landscapes, Environmental Records and Information Centre and Northumberland Wildlife Trust. DEFRA have provided grant funding to cover the cost of this work, and the Strategy will be published in late 2025.

The aims of a LNRS are to create a local habitat map, and to identify:

- priorities for nature recovery
- measures that could help this recovery
- additional environmental benefits that come with, or alongside, recovery measures

There will be opportunities for organisations, communities, farmers, landowners and the public to be involved in the LNRS process during 2024.

Information on the development of the LNRS will continue to be published on the relevant County Council webpages[251].

4.5.5. Strengthened obligations to conserve and enhance biodiversity

For some years all public bodies have had a duty to have regard to the purpose of conserving biodiversity. This has recently been strengthened considerably, and all public bodies now have a duty to take action to conserve and enhance biodiversity, and as part of that process to make plans setting out what they will do to fulfil this duty and publish reports setting out what they have achieved, over a five-year planning and reporting cycle. Northumberland County Council will make its first biodiversity plan during the first half of 2024. This will be a Council-wide plan and so will include work on biodiversity net gain and the Local Nature Recovery Strategy but will also include a review of wider activity such as grounds maintenance and land management, flood management and coastal change management.

More details about the new biodiversity reporting requirements for Northumberland County Council can be found in the cabinet paper *Strengthened Biodiversity Duty and Reporting Obligations*[252] November 7th, 2023.

4.5.6. Biodiversity Net Gain

A new strategy called Biodiversity Net Gain (BNG) has been introduced by central government as an approach to development, and land management. The overarching aim is that development should leave the environment in a measurably better state than before the development took place. This will be enacted through the Council's planning process and will be mandatory for all planning applications (other than specifically exempted classes of development).

Developments must achieve a net gain of 10% biodiversity through the creation of new habitats on development sites or on other land. BNG uses a standardised metric to assign a notional biodiversity value to a development site based on a series of

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[251] https://www.northumberland.gov.uk/Economy-Regeneration/Programmes/Rural-Growth-and-Innovation/Local-Nature-Recovery-Strategy.aspx.

[252]

characteristics including the nature and extent of the habitats present on the site, and their condition. This can be used to compare the biodiversity value of the site before and after development. Developers must deliver a 'biodiversity value' that is 10% higher than the land in its un-developed state – sometimes this will not be possible on the site being developed, so the developer will have to create a habitat elsewhere (which must be retained, managed and monitored for a minimum of 30 years). As well as leading the development and management of new habitat, this system will dis-incentivise the development of sites of higher ecological value by making them much more expensive to develop than sites of lower ecological value.

Draft regulations and guidance have been published[253], with Statutory Instruments being laid in Parliament for approval. Implementation dates will be confirmed after approval, but it is anticipated that biodiversity net gain will become mandatory for major developments from late January 2024 and for minor developments in April 2024.

4.5.7. Pilot Investment in Natural Capital

Northumberland County Council began work on a pilot local investment in natural capital (LINC) project in 2023. NCC were invited by DEFRA to participate in this pilot project, because Northumberland are the only local authority represented in both, the North East devolution discussions, and the Borderlands Inclusive Growth Partnership.

For the Pilot LINC, NCC are representing all the English Local Authorities in the Borderlands Inclusive Growth Deal Area: Northumberland, Cumberland, Westmorland and Furness.

The Pilot LINC projects are a part of national government programme of funding, allocated to four local authorities, who are expected to,

"...build their capacity to attract private investment at scale, direct it towards their local environmental priorities (including those identified and mapped through Local Nature Recovery Strategies), as part of their plans for economic growth, and share learning with other local authorities." *254*

Further detail is set out in the July 2023 cabinet paper Northumberland Stewardship and Rural Growth Investment Programme – Nature Recovery Response*255*.

4.6. Agriculture

In terms of land use, agriculture is the most significant sector in the county, accounting for 50% of Northumberland's land use[256]. It has shaped how the county looks and is a focus of rural communities and economies across our region. Since

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[253] https://www.gov.uk/government/collections/biodiversity-net-gain

[254] https://assets.publishing.service.gov.uk/media/643583fb877741001368d815/mobilising-green-investment-2023-green-finance-strategy.pdf pg. 95

[255] https://northumberland.moderngov.co.uk/documents/s15350/04%20Northumberland%20Stewardship%20and%20Rural%20Growth%20Investment%20Programme.pdf

[256] https://www.gov.uk/government/statistics/land-use-in-england-2022/land-use-statistics-england-2022

the publication of our last climate change action plan (2021-23), a great deal has been learned about the agricultural sector's contribution to climate change through its emissions, as well as the potential impacts of a changing climate on the continued productivity of the sector and the unique position it offers to provide a solution through new farming methods and land management techniques.

As land managers, farmers are under pressure to adapt the way they use their land with the competing demands of ensuring food security for the wider country whilst also shifting to more nature and climate friendly ways of farming, often creating conflicting priorities for farmers who are fundamentally focussed on remaining viable businesses.

In 2022, Northumberland County Council undertook an inquiry titled *the Future of Farming*[257], chaired by Professor Sally Shortall at Newcastle University. Its purpose was to better understand the challenges and opportunities faced by the range of farmers and landowners in Northumberland in moving from the current regime of subsidy funding to the new benefits system for environmental land management (ELMs). Themes included *Navigating the changing policy landscape, supporting farmers through the agricultural transition* and *balancing the respective interests of landowners and tenants*. Whilst climate change was not the focus of the inquiry, these themes considered its impacts and the pressure and opportunities faced by both landowners and tenant farmers in responding to it.

4.6.1. Agriculture Emissions

As covered in the introduction to the Environment section, DESNZ emissions data now includes methane and nitrous oxide emissions alongside carbon dioxide[258]. This means the carbon dioxide equivalent emissions for Northumberland have increased by 44% when compared to the data NCC was previously working with.

Of these additional emissions, 71% come from the agriculture sector, namely livestock and agricultural soils. This means that as a proportion of Northumberland's total positive greenhouse gas emissions, agriculture makes up 22.39%, making it level with transport as the second largest contributor of emissions after heating (Figure 49).

[257] https://www.northumberland.gov.uk/Economy-Regeneration/Programmes/Rural-Growth-and-Innovation/Future-of-Farming.aspx
[258] https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

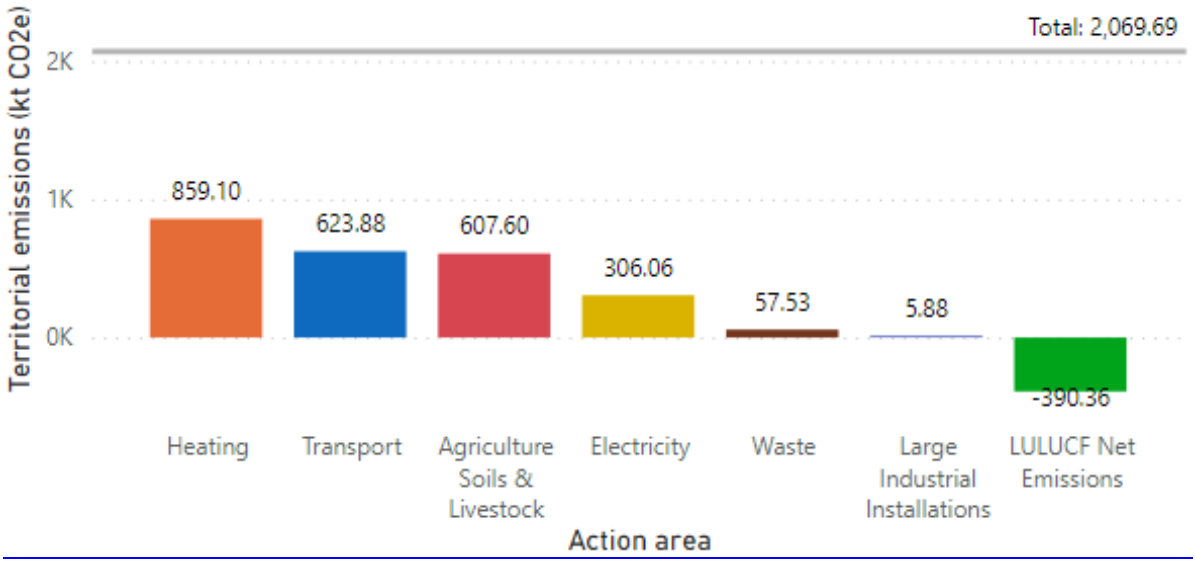

Figure 45 - Territorial emissions from Northumberland in 2021 by action area

Within the agricultural sector, emissions come from two categories, agricultural soils and livestock (Figure 50).

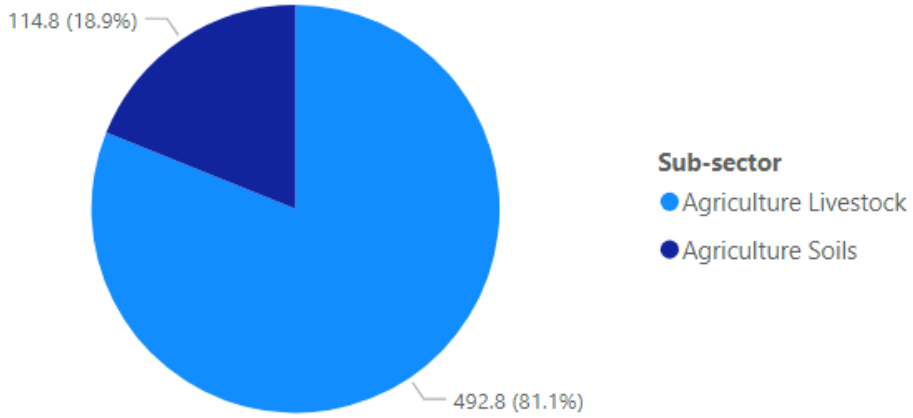

Figure 46 - Emissions from agriculture action area in Northumberland 2021 by subcategory

Livestock emissions are primarily methane (CH_4) and emissions associated with soils are primarily nitrous oxide (N_2O).

It is right therefore, that agriculture is included as a priority action area in this climate change action plan and that consideration is given to the Council's role in supporting the decarbonisation of agriculture alongside our key partners and other stakeholders.

In light of the significant change to the County's greenhouse gas emissions with the inclusion of methane and nitrous oxide, the Council has made the decision to announce a new target of achieving net zero emissions (i.e. carbon dioxide, methane and nitrous oxide) for the County of Northumberland by 2040. This aligns to the targets for net zero farming set out by the National Farmers Union (NFU).

4.6.2. Agriculture as a solution

Whilst farming contributes a significant amount of Northumberland's emissions, it also offers huge potential to be one of the key solutions for improving biodiversity and reducing emissions. Farmers manage substantial carbon reserves already present in soils and vegetation. There are examples across Northumberland of innovative solutions implemented by farmers to make their farms more sustainable, reduce emissions and increase their yields. Sharing and scaling up these examples is key to ensuring a more sustainable, resilient farming sector in Northumberland which can help the county to net zero whilst also preserving the important role of farmers in our economy and society.

4.6.3. The role of the local authority

As set out by the Climate Change Commission, local delivery is essential when it comes to cutting emissions, across all sectors, including Agriculture[259]. The *Sixth Carbon Budget* sets out key actions for local authorities on land use, land use change, forestry and agriculture which include:

- Provide business support to farmers and landowners to integrate climate change and farming through low-carbon farming methods, woodland cover, tree nurseries, sawmills, and wood processors; support agricultural research and development, promote use of wood in construction, provide advice on the transition to ELMS, actively work with the local National Farmers' Union and Young Farmers to assist skills development.
- Support farm building and infrastructure modernisation and low-carbon refurbishment through planning policy encouraging broadband and on farm mobile infrastructure. Help move farmhouses off oil and LPG. Promote and support on-farm renewable energy generation including anaerobic digestion systems.
- Support peatland restoration and engage with farmers on cover cropping, re-wetting and ELMs.

As an example of the relationship between the Local Authority and the agricultural sector. The NFU created a guide for the local government association called 'Net zero and Agriculture'. In this document the NFU state that *'Local authorities have an essential role in supporting agriculture with strategic policies for clean growth in the rural economy. An agile planning approach linked to funding opportunities will help farmers and growers plan, innovate and deliver a net zero future.'*[260]

Northumberland County Council is committed to working with key partners such as the NFU, Defra[261], the CLA and others to support our farmers and rural communities in the transition to net zero in a just and fair way.

Northumberland County Council has been successful in obtaining funding through the Government's Innovation Funding Service for a project in collaboration with the

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[259] https://www.theccc.org.uk/wp-content/uploads/2020/12/Local-Authorities-and-the-Sixth-Carbon-Budget.pdf

[260] https://www.local.gov.uk/sites/default/files/documents/Net-Zero-and-agriculture-A-guide-for-local-authorities.pdf

[261] https://defrafarming.blog.gov.uk/2023/04/06/the-net-zero-growth-plan-and-our-farming-offer/

Northumberland based Rural Design Centre to better understand the role of the Local Authority in supporting farmers to decarbonise.

The project will consist of a series of workshops with farmers, led by the RDC which will work to co-design an approach or toolkit which can be applied specifically to Northumberland's context and will consider where the Local Authority should (and shouldn't) seek to offer long-term support.

This project will run from December 2023 to the end of April 2024 when it will publish its findings. It will build on the work of the *Future of Farming* inquiry.

Additional funding from the Innovation Funding Service Net Zero Fast Followers programme, also means that NCC will then be able to develop the findings of its workshops into a useful offer for farmers aiming to reduce emissions and enhance biodiversity on their land. This project will run until June 2025.

4.7. Trees, Woodlands and Forests

As set out in the introduction to this section, forestry and woodland is the second biggest land use in Northumberland, accounting for 17.4% of land.

Whilst the majority of this forestry is in commercial management, it is still a significant asset in terms of carbon sequestration. Over recent years, there has also been a shift, even within the commercial forestry sector to ensuring that non-native, fast growing species are balanced with native mixed woodland which also bring significant environmental benefits. The following section will focus primarily on how trees, woodlands and forests can help to reduce emissions and provide resilience to the impacts of climate change. This should be seen however, in the context of this climate change action plan being a part of the County Council's wider approach to the natural environment which considers ecology and biodiversity in more detail.

4.7.1. Land Use, Land Use Change and Forestry (LULUCF) Data

There is now a more accurate understanding of emissions associated with complex and sometimes conflicting land-uses. For example, and significant to Northumberland, trees planted on peat. Much of Kielder Forest is planted on peat and the assumptions around this have significantly reduced Northumberland's negative emissions in the most recent data set[262].

Further to this, the inclusion of additional greenhouse gases; methane and nitrous oxide, which can be emitted from natural sources such as peat and wetlands have further impacted the county-wide picture.

This means that at the most recent publication (for 2021), Land Use, Land Use Change and Forestry (LULUCF) in Northumberland is estimated to sequester only -390.4ktCO_2e, a hugely reduced figure from estimates under the previous methodology (Figure 51).

[262] https://www.gov.uk/government/collections/uk-local-authority-and-regional-greenhouse-gas-emissions-national-statistics

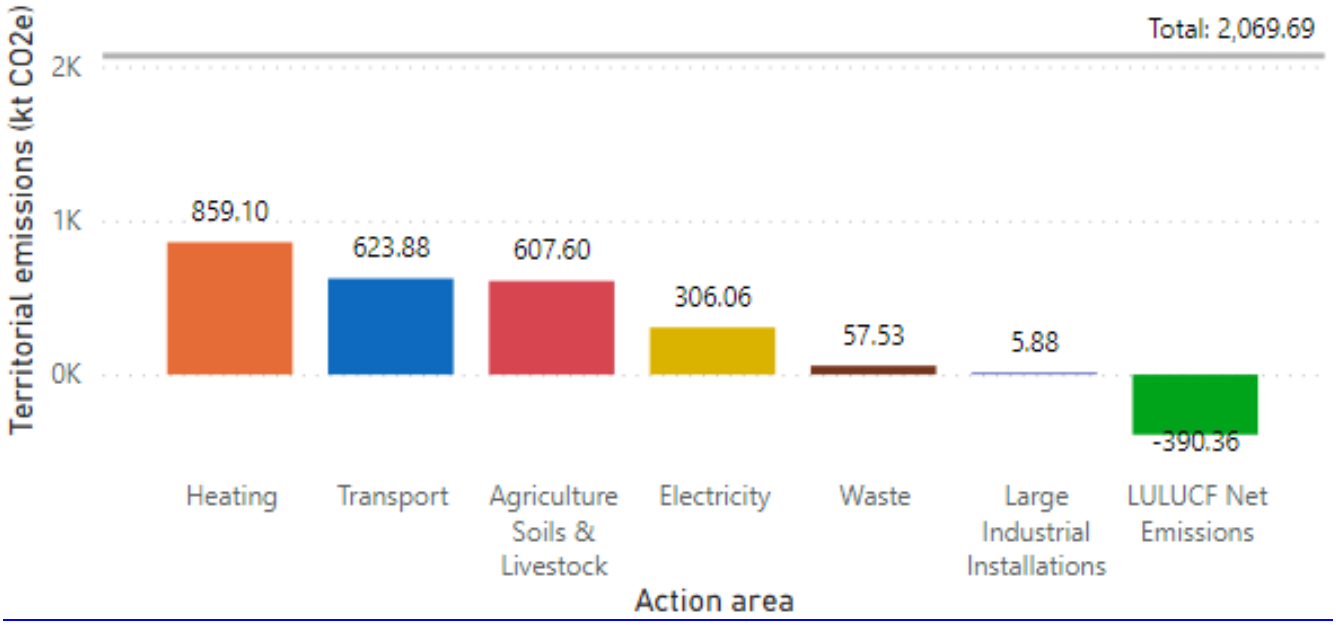

Figure 47 - Territorial emissions from Northumberland in 2021 by action area.

Estimated emissions contained within this sector can be further broken down to provide a more detailed picture (Figure 52).

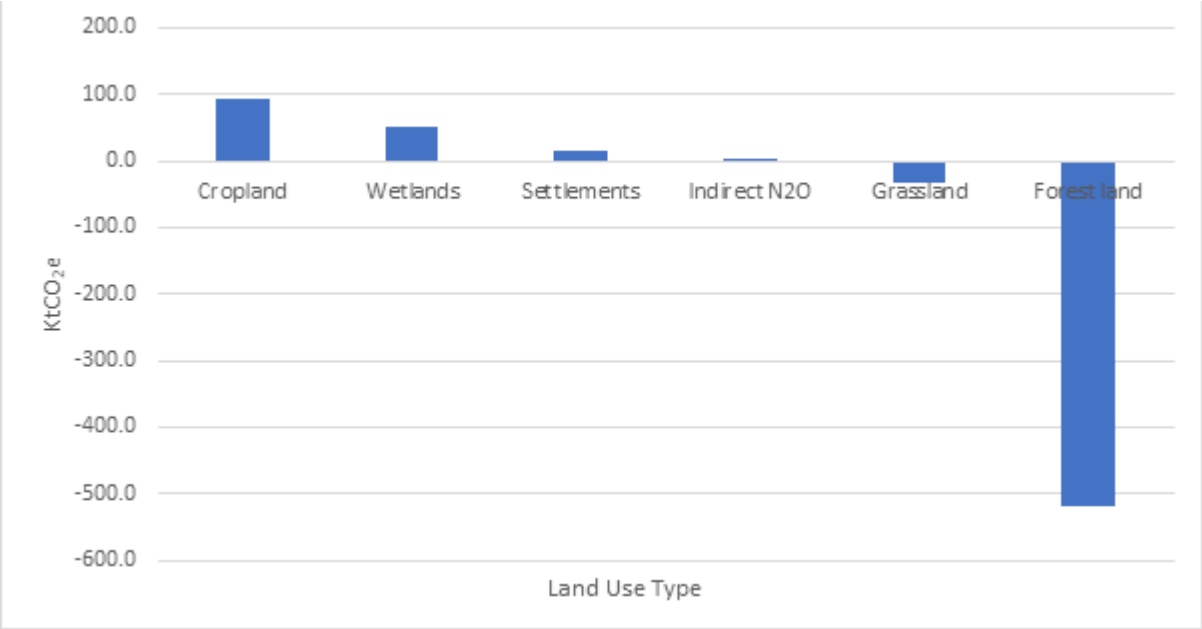

Figure 48 - CO2e emissions from LULUCF in Northumberland 2021 by sub-category.

This data demonstrates the importance of ensuring that any action taken to increase the sequestration potential of a given type of land use (e.g. tree planting) must be carefully considered to ensure that any detrimental effects either directly on emissions or more widely in terms of habitats and biodiversity, are understood and carefully considered.

The action taken in this sector throughout the period of the first climate change action plan, has focussed primarily on tree planting as well as peat restoration at a smaller scale.

Following the revision of emissions data shown above, it is more important than ever to scale-up our efforts in these areas to help NCC meet its net zero ambitions. In addition to the data used to understand emissions at a county level, the council has also gained more data and understanding about the wooded areas in the county that NCC own and manage.

Note on terms - This document will use the following definitions for *woodlands* and *forests*[263]. *Woodlands* are areas with a collection of trees that have, or potentially will have, a tree canopy that covers more than 20% of the ground. *Woodlands* and *forests* can be seen as the same thing, although there is a general understanding that *forests* are 'bigger'.

4.7.2. Northumberland County Council owned trees and woodland

NCC owns pockets of land across the county. Detailed knowledge of what this land contains is constantly evolving. Land is sold, adopted, or acquired every year. Mapping tools have digitalised and become increasingly interconnected, layered and accurate. So, it is easy to see the land under NCC ownership[264], however details about the land, for example vegetation cover and type, can be less clear. NCC trees and woodlands were not included in the last action plan as NCC did not have all the data needed in one, accessible, place in 2021. Over the last action plan this has been rectified and so can now be included.

Northumberland County Council is responsible for all trees on land it owns (or on land it owns as part of an adoption agreement). This includes most roadside grass verges (but not trees in hedgerows), trees in public parks and open spaces maintained by NCC, Country parks, cemeteries maintained by NCC and closed churchyards. The trees range from individual trees, or rows of trees, right up to woodlands (NCC own 1193.30 hectares of woodland).

"Trees are an essential asset and yet can be a highly emotive issue, both in terms of benefits they provide and potential nuisance. NCC is committed to managing its trees to ensure public safety is achieved and ensuring available resources are utilised to deal with tree related issues on a priority basis, whilst considering their importance, value and environmental benefit."[265]

4.7.3. Tree Preservation Orders and trees in conservation areas

In addition to the trees that NCC own, the NCC planning team are also able to designate Tree Preservation Orders (TPOs). Residents can request a TPO, which can be used to protect all types of trees, and any species (apart from bushes, shrubs, or hedges).

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[263] https://www.data.gov.uk/dataset/6e3126bd-fb2c-4cac-b2c4-d521f006b87a/national-forest-inventory-woodland-england-2020 and https://www.woodlandtrust.org.uk/media/51705/state-of-the-uks-woods-and-trees-2021-thewoodlandtrust.pdf

[264] https://northumberland.maps.arcgis.com/apps/webappviewer/index.html?id=629daef36ce746698f955c4f9784805b

[265] https://www.northumberland.gov.uk/Highways/Report-a-tree-issue.aspx#hazards

A TPO can cover a single tree, or all the trees within a defined area or woodland. Damaging, destroying, or carrying out works on a protected tree without consent can result in a £20,000 fine. Trees in conservation areas are also protected in a similar way by legislation. In Northumberland both the County Council and Northumberland National Park Authority are responsible for managing TPOs.

4.7.4. Northumberland County Council Tree and Woodland Strategy

Northumberland County Council has a strategy for the management of trees and woodlands[266] which sets out 'to enhance the protection, quality, quantity and diversity of trees and woodlands within the responsibility of Northumberland County Council, whilst managing and maintaining existing tree stock to a high standard, in line with current best practice, to enhance their contribution to the appearance and character of the county for the benefit and enjoyment of all residents and visitors to Northumberland.'

The tree and woodland strategy referenced above is now being revised and updated with a tree management policy expected in Q3 2024-25. In addition to this, the development of woodland management schemes are being explored for specific parcels of woodland identified by NCC as appropriate for management.

4.7.4.1. NCC owned woodland mapping

In recent years it became clear that more information was needed, about the woodlands that NCC own. Although NCC held lots of useful information, it was in many different formats, and looked after by different/separate teams. It was crucial that this information was collected and made accessible, and functional. This would help NCC to understand how much carbon their owned woodlands currently absorb, and how to (potentially) increase the amount of carbon absorbed.

A project was completed during the last action plan to look at Northumberland County Council's woodlands and work out how much carbon they currently absorb. This began by finding where, and how big, each parcel of NCC woodland is. Then adding in information about, the species, ages, and density of the trees that made up each woodland. NCC could then understand how much carbon each parcel of woodland could absorb each year, and what all the woodlands combined could absorb. This project required multiple data sources like old excel files, maps, and NCC staff expertise and knowledge. Once the data was collected it was then used in the Woodland Carbon Code (WCC) Calculator[267]. Demonstrating that Northumberland County Council's woodlands absorb (approximately) 13,494.7 tonnes of CO_2 every year.

This project provided two outcomes:

- a greater understanding of NCC woodlands
- an accurate estimate of the amount of carbon being absorbed by NCC owned woodlands

[266] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Planning-and-Building/Conservation/Growing-Together-NCC-Tree-and-Woodland-Strategy-2015-20_1.pdf
[267] https://woodlandcarboncode.org.uk/

By collecting and collating this information, NCC has then been able to carry out other projects using this information as a basis for decision making.

4.7.4.2. Woodland Management Scheme feasibility

Northumberland County Council own 1193.30 hectares of woodland (equivalent to 11.9Km2). These woodlands are a valuable resource for Northumberland, one that the council want to help flourish, not just maintain.

NCC are currently working towards the creation of an active woodland management scheme. The reason for this is that active management of woodland can provide many environmental, social and economic benefits, such as:

- improved carbon sequestration
- improved biodiversity and ecosystems
- income generation from timber production, which can be reinvested back into forest management
- enhancing social value through improved access, education and engagement for our residents and visitors

Woodland management schemes would not be applied to ancient woodlands which are extremely valuable ecosystems and culturally significant. From the initial woodland mapping project, it is calculated that 173.87 hectares of NCC woodlands are Ancient.

The first stage of this scheme is to gain a complete overview of the location, health, and type of woodlands that Northumberland County Council own across the county. To understand if there is scope for NCC to create any woodland management schemes. NCC have hired BNP Paribas to create a Woodland Report. They will produce a detailed report on the condition, and location, of all NCC woodlands. This report will then be used to create a plan for NCCs next steps. NCC ultimately hope to be able to create woodland management strategies for our suitable parcels of woodland (if there are any).

Once NCC have reviewed the report, and any options available for managed woodlands. The next steps would be. Applying for grant funding ('Woodland Management Plan', and 'Woodland Management' grant). Creation of a working group (made up of Neighbourhood Services, Great Northumberland Forest, the Climate Change Team, and any other relevant NCC teams) to review the cost-benefits and decide if NCC can bring parcels of their woodland under proactive management.

4.7.5. Trees

To gain a greater understanding of Northumberland's tree cover (not just woodlands) the Trees and Woodlands team have also procured access to 'The National Tree Map'[268]. This will be utilised to help the team to take a 'whole county' view of our tree cover and will help formulate the Tree and Woodland Strategy for the county.

4.7.6. Great Northumberland Forest

[268] https://bluesky-world.com/ntm/

The Great Northumberland Forest scheme was established with the aim to create more wooded landscapes across Northumberland by 2030.

To do this the Great Northumberland Forest team planned to help and facilitate the planting of 1 million trees, across 500 hectares by 2024/2025. By working and engaging across the private, public and voluntary sectors this target has already been exceeded.

By increasing the wooded landscapes across Northumberland, the following strategic objectives will be realised:

- increased absorption of carbon
- increased resilience from the impacts of climate change; flooding, landslides, heat stress, wildfires, droughts, biodiversity decline, and soil loss
- more recreational areas will be created, to improve the health and wellbeing of residents and visitors
- habitats for plants and wildlife will be improved
- clean air and water will be provided by the trees
- beautiful, new, and enhanced landscapes are created
- will help boost jobs and prosperity, via the growth of the agriculture, forestry, and wood processing sector in Northumberland

Since the project launch in autumn 2019, until the end of the last planting season in March 2023, woodlands have been created across 932 hectares. Smaller planting schemes have led to 2.9 million individual trees or hedgerow trees being planted, equivalent to 1139 hectares.

The planting of approximately 3,000 hectares of wooded landscapes is planned across the next two planting seasons (October 2023 – March 2024 and October 2024 – March 2025).

These 3,000 hectares, in addition to those planted since 2019, will mean that almost 0.8% of Northumberland will have gained wooded landscapes, thanks to the Great Northumberland Forest scheme.

The Great Northumberland Forest is supported by the Northumberland Woodland Creation Partnership - NCC, DEFRA, Forestry commission, Forestry England, Northumberland National Park Authority, Ministry of Defence, Environment Agency, Natural England, Confor, Northumberland Wildlife Trust, Community Action Northumberland, Woodland Trust, NFU and CLA.

4.8. Peatland Restoration

Healthy peatlands are essential to Northumberland, they provide:

- habitats for wildlife, and increased biodiversity
- a natural carbon store
- water flow regulation, decreasing flooding by storing water, and providing water during droughts
- water filtration

- absorb airborne pollutants (e.g. sulphur dioxide, heavy metals and nitrogen)[269]

Peatlands take a long time to form, some are over 10,000 years old and over 7 meters deep. Millions of tonnes of carbon are currently stored in peatlands. Damaged peatlands are not just unable to provide the things listed above, they also emit the greenhouse gases they store.

Northumberland has around 142,726 hectares of peat. If all of this were restored to a natural and healthy condition, it has the potential to sequester as much as 340KtCO_2e across a 50-year period.

Healthy peatlands will help Northumberland to mitigate and adapt to climate change. Damaged peatlands will make climate change worse, will reduce biodiversity, and will put the county more at risk from the effects of climate change. Making sure that all the peatlands in Northumberland are healthy is crucial for both tackling climate change and adapting to it.

Northumberland County Council Climate Change and Ecology teams are part of the Northumberland Peat Partnership (NPP)[270]. The NPP works to repair damaged and conserve healthy peatlands. The partnership covers an area extending from North of the A69 to the Scottish Border, which includes 142,726 hectares of peat bog (28% of Northumberland's land mass).

In 2021 the Northumberland Peat Partnership secured £779,000 to survey peatlands in Northumberland. In 2022 this funding was used to carry out detailed field surveys and desk-based mapping for 10 key sites within Northumberland, totalling over 5000 hectares of vulnerable upland peat. When fully restored, this area of peatland has the potential to sequester an additional 238 tonnes of CO_2 each year.

Restoration plans are being developed for all 10 sites. Funding for the restoration of each site will vary, but may include, NCP restoration grant, Peatland Code registration, Countryside Stewardship, or Local Nature Recovery Grants.

The assessment of the health of Northumberland's peat bogs and their restoration will continue to take place for the duration of this action plan, both directly through the Northumberland Peat Partnership and through other bodies such as Forestry England and the North Pennines AONB.

4.9. Waste

In the previous *Climate Change Action Plan 2021-23*, Priority Action Area 7 was 'reducing waste'. In 2021 waste was not included as a direct contributor to CO_2 by National government, however it was included in the *Climate Change Action Plan 2021-23* as waste is an important sector in terms of emissions and wider sustainability. When Local Authority emissions data was published in 2023, methane and nitrous oxide were included, along with carbon dioxide, which has changed our

[269] https://www.forestryengland.uk/blog/protecting-peatlands and https://www.nature.scot/professional-advice/land-and-sea-management/carbon-management/restoring-scotlands-peatland
[270] https://www.nwt.org.uk/what-we-do/projects/northumberland-peat-partnership

understanding of emissions from waste. This will be discussed more in the sections on data, landfill, and baseline carbon emissions.

There were four main actions and priorities outlined in the previous action plan:

- researching the baseline carbon emissions from NCC waste collection services
- kerbside glass collection trial
- additional pilot waste collection schemes
- hirst – large communal bins pilot

These will all be covered in the progress review, along with additional work completed around vape collections.

4.9.1. Waste Data

The emissions data supplied by DESNZ for waste accounts for both landfill emissions and waste management emissions. The sum of territorial emissions from waste in 2021 was 57.53 KtCO²e. Waste accounts for 2.12% of all emissions in Northumberland.

Territorial emissions - kt CO² e			
	Landfill	**Waste management 'other'**	**Total per GHG**
CO²	0	0.48	0.48
N²O	0	5.57	5.57
CH⁴	39.26	12.22	51.48
Total per sub-sector	39.26	18.27	57.53

Table 12 - territorial emissions from waste in Northumberland 2021

Separating out emissions between the two sub sections ‘landfill’ and ‘waste management’, Table 12, shows that 39.26 KtCO²e (68.24%) of emissions from waste come from landfill sources, and this is entirely made up of methane emissions. When looking at Methane emissions for all of Northumberland (624.68 ktCO²e) waste landfill is the third largest emitter, producing 8.24%.

4.9.2. Waste Policy

This Action Plan is being written at a point of change for Local Authorities and the delivery of waste services. Past legislation (The Waste (England and Wales) Regulations 2011[271]) was amended in 2015 to include recycling waste collection of, glass, metal, paper and plastic. However, this was only where ‘necessary...technically, economically and environmentally practicable’ which is referred to as a TEEP assessment. A TEEP assessment of NCC waste collection

[271] https://www.legislation.gov.uk/uksi/2011/988/contents/made

systems (published in 2014[272]) determined it would be economically and environmentally non-viable to deliver kerbside collection of glass every other week across the whole of the county. This has since been revisited due to the proposed changes brought in through the Environment Act 2021, which will provide funding for new burdens on local authorities introducing new collections, making it more economically viable to operate these collections.

Northumberland County council are currently in a 28-year Private Finance Initiative (PFI) contract with SUEZ, beginning in April 2007 and ending in 2034. Under this contract SUEZ are financially incentivised to divert waste from landfill[273].

SUEZ provide:

- 12 Household waste Recovery Centres (HWRCs)
- a 'Material Recycling Facility' (MRF)
- four Waste Transfer Stations (WTSs)
- use of the Energy from Waste (EfW) plant at Haverton Hill on Teesside, which produces 9.6MW of energy annually for the National Grid

Within this contract with SUEZ, NCC are currently recycle the following waste streams as co-mingled (mixed) dry recyclables:

- empty aerosol cans
- clean food and drink cans
- paper
- card
- cardboard
- plastic bottles (any type of plastic as long as it is a bottle)

Garden waste collection can also be arranged (for an additional fee) with the collection service being available to access for 95% of residents[274] (figure from 2014). There are also 'Bring Sites' across the county currently for glass recycling and textiles through a third-party arrangement.

In 2023 the Environment Act 2021[275] received Royal Assent. This legislation was intended to provide consistency in collection across all local authorities in England and will require local authorities to offer kerbside collection of the following materials:

- food waste
- glass
- plastics (bottles/pots/tubs/trays/films)

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[272] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Bins-Recycling-and-Waste/Waste-collection-systems-an-assessment.pdf
[273] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Bins-Recycling-and-Waste/Waste-collection-systems-an-assessment.pdf

https://www.northumberland.gov.uk/Waste/Management.aspx#privatefinanceinitiativepfi
[274] https://www.northumberland.gov.uk/NorthumberlandCountyCouncil/media/Bins-Recycling-and-Waste/Waste-collection-systems-an-assessment.pdf
[275] https://www.legislation.gov.uk/ukpga/2021/30/section/57/enacted

- fibre (paper/card/cardboard)
- cans
- aerosols

NCC currently collect plastic bottles, fibre, cans and aerosols at the kerbside and glass at bring banks, so the major changes for NCC will be:

- glass at kerbside
- food waste
- pots, tubs, trays
- plastic films

4.9.3. Landfill

The Environment Act 2021 has set a target for all Local Authorities to "build on the Resources and Waste Strategy commitments to help achieve a 65% municipal recycling rate and send less than 10% of municipal waste to landfill by 2035[276]."

Northumberland has a recycling rate of around 35%. It is expected that government funding for new recycling streams will greatly improve that figure and allow NCC to achieve the national target of 65% by 2035. With our EfW facility NCC are already on track to keep the amount of waste sent to landfill below 10%, having already achieved a rate of 9.8% in the financial year 2022-2023.

NCC currently have one operating landfill site at Ellington Road near Ashington, where the operator SUEZ will need to have a presence on site for decades managing the environmental control systems. The closed site will be there under management for a long time before anything more can be done with it to bring it back into other uses.

NCC has closed landfill sites which it manages but they are mostly small with no infrastructure and are on a mixture of leased and owned land. Where possible landfill gas is flared off or utilised to generate electricity that is fed back into the national grid, however this is not always possible on small sites.

4.9.3.1. Legacy pollution management

NCC addresses historic pollution issues, which may be legacies of past industrial or illegal activities. One example is the historic pollution at Lynemouth Bay.

Between 1934 and 2005 the beaches at Lynemouth Bay experienced extensive colliery spoil tipping, use as a landfill site as well as illegal waste disposal activity, artificially extending the coastline towards the sea.

It is estimated that over 30m tonnes of colliery waste was tipped at Lynemouth over seven decades. In addition to the general spoil, there are hotspots where there are greater concentrations of other household, commercial and industrial deposited wastes.

[276] https://www.gov.uk/government/news/circular-economy-measures-drive-forward-ambitious-plans-for-waste

The colliery spoil cliffs are now being actively eroded resulting in some of the other waste materials being exposed and washed onto the beach into the marine environment, making the beach very unsightly as well as causing litter and wider ecological concerns. Most of the affected land is owned by NCC, with a small adjoining section of affected land to the south being owned by the Coal Authority.

NCC has allocated £5m in capital funding to tackle the historic legacy of pollution from past industrial uses of the land at Lynemouth Bay. An innovative scheme has been developed to excavate the hotspot areas, then physically treat and separate the colliery spoil from other 'contrary' waste materials. The contraries will be removed to an offsite licensed waste facility, thus preventing further unsightly and ecologically damaging waste materials from being released onto the beach and into the marine environment. The treated colliery spoil will remain on site and be used to back fill excavations and reinstate the land into a new dune landform.

Development of the scheme has involved securing a wide range of consents and approvals from regulatory bodies, including planning and waste permitting consents as well as ecological and environmental survey work and extensive site investigation, sampling and monitoring activity.

The Coal Authority is working with Northumberland County Council to ensure that their land to the north of the River Lyne is incorporated into the scheme and in addition to a financial commitment to cover the cost of the works that will be undertaken on their land, they have also agreed a licence with NCC to enable the site works compounds to be located on their land to the south of the R. Lyne and for all vehicles carrying 'contrary' waste materials to be routed through their site access roads. This means HGV vehicles carrying waste from the site for disposal to licensed waste facilities can be routed directly onto the highway without having to travel through Lynemouth of Cresswell, thus mitigating any transport impacts on the local communities during the scheme.

This programme of works is planned to take place over the spring/summer 2024.

4.9.4. Waste Progress Review

To bring in a food waste collection, a weekly kerbside collection is currently being trialled in four urban areas within distance of NCC's Morpeth Depot. For very rural residents NCC teams are working on a home compost trial that would offer a home solution for both food and garden waste in the areas currently not offering a garden waste collection due to not being Technically, Environmentally, Economically or Practically (TEEP) feasible.

For the glass trial, a monthly kerbside collection is being trialled using a 140L bin across four areas in the county. For plastics, an upgrade to our MRF will be required which currently is not equipped to separate out plastic pots, tubs, trays, and flexible films. NCC are working with Suez to determine the best way to do this, as it will come at a cost to our waste management contract. NCC are also researching on the

best way to collect plastic films as they are a very low value material with high contamination rates and have very few processing facilities to send them to.

For soft plastics currently, in store take-back schemes offer the most environmentally efficient solution to this waste, residents returning the waste to the source of the packaging. NCC have worked with Co-Operative stores to promote their take back scheme, where they use their fleet to take back the soft plastics to the depot after delivering products, which is a very efficient use of transport for what would otherwise be an empty vehicle returning to the depot.

Trials conducted by a neighbouring local authority demonstrate it requires significant operational change to separate out soft plastics from a co-mingled collection, but this offers the most practical method of collecting the material, in a coloured plastic bag that can be easily identified and manually sorted out at the MRF.

4.9.5. Waste Future Focus

The dates for implementation of the new collections are 2026 for glass, plastic pots/tubs/trays, and food waste, and 2027 for plastic films (correct at time of writing).

New legal requirements are also being placed on producers of packaging waste. The Extended Producer Responsibility (EPR) scheme is planned to begin in 2024 and will mean that relevant businesses that supply packaging will be responsible for the costs associated with collecting and disposing this waste[277]. They will pay a EPR fee to Local Authorities based on how much packaging they have produced[278]**.** Relevant businesses have already begun to collate and report on their packaging use[279]. This data will then allow DEFRA and Environment Agency to calculate the fees to charge producers, and so, how much money that Local Authorities will receive in EPR payments.

4.10. Pollution Control

Northumberland County Council has statutory duties to monitor and report on the following potential sources of pollutants:

- industrial pollution[280] – The Pollution Prevention and Control Act 1999
- water bodies that feed private water supplies[281] – The Private Water Supplies (England) Regulations 2016
- contaminated land[282] – The Environment Protection Act 1990

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[277] Reducing packaging, e.g. plastics, is crucial for the environment and climate change. Throughout their lifecycle plastics are responsible for emitting 3.4% of global greenhouse gas emissions (1.8 million tonnes in 2019)- https://www.oecd.org/environment/plastics/increased-plastic-leakage-and-greenhouse-gas-emissions.htm

[278] https://www.gov.uk/guidance/extended-producer-responsibility-for-packaging-who-is-affected-and-what-to-do

[279] https://www.legislation.gov.uk/uksi/2022/1222/regulation/2/made

[280] https://www.legislation.gov.uk/ukpga/1999/24/contents

[281] https://www.legislation.gov.uk/uksi/2016/618/contents

[282] https://www.legislation.gov.uk/ukpga/1990/43/contents

For more information about the work that NCC does around these potential sources of pollution please see - https://www.northumberland.gov.uk/Protection/Pollution/Pollution.aspx

NCC also has statutory duties to monitor and report on potential air pollution. Under the Clean Air Act 1993 local authorities have statutory duties to monitor and control smoke, grit, dust and fume emissions. The 2021 Environment Act amended these duties and produced provisions for Local authorities to be able to financially penalise smoke emissions in smoke control areas[283]. The 2021 Environment Act also amended the 1995 Environment Act. This amendment[284] deals with the requirements of Local Authorities Local air quality management frameworks, and how they track and report air quality in their areas. Further information can be found in the Air Quality Standards Regulations 2010[285].

The NCC Environmental Protection team currently oversee more than 100 sites across the county, keeping track and reporting on potential sources of pollution. The limits for pollutants are set out in national legislation and are based on current scientific advice about safe limits to exposure over a human lifetime.

4.10.1. Air Quality

Air borne pollutants damage the health of people, animals, plants and microorganisms. The Office for Health Improvement and Disparities (part of the Department of Health and Social Care) state that air pollution is the largest environmental risk to public health in the UK. Both long and short-term exposure to air pollution causes and worsens the health of all individuals "...particularly societies most vulnerable populations"[286]

There are human and natural sources of air pollution, and there are indoor and outdoor pollutants. This section will only outline Northumberland County Councils' obligations for controlling outdoor air pollutants.

There are many potential sources of outdoor air pollutants: road traffic, energy production, industry, manufacturing, agriculture and buildings. Air pollutants are often generated when something is burnt releasing gases, particulates and other combustion by-products, e.g. wood in a fire, or petrol in an engine. The main air pollutants that cause harm to humans and are covered by national objectives for air quality are:

- nitrogen dioxide
- particulates – PM10

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[283] Environment Act 2021 (legislation.gov.uk) – schedule 12
[284] Environment Act 2021 (legislation.gov.uk) – schedule 11
[285] https://www.legislation.gov.uk/uksi/2010/1001/contents
[286] https://www.gov.uk/government/publications/air-pollution-applying-all-our-health/air-pollution-applying-all-our-health#:~:text=Air%20pollution%20can%20cause%20and,leading%20to%20reduced%20life%20expectancy.

- fine particulates (PM2.5) - although there are currently no statutory requirements for local authorities to measure or report on PM2.5 in England.

The National objectives for air quality also highlight objectives for the limits and target values required to protect the health of plants and ecosystems. The main air pollutants that cause harm to plants and ecosystems are Nitrogen oxides, Sulphur Dioxide and Ozone.

4.10.2. How is NCC addressing Air Quality

Northumberland County Council have a statutory duty to track and report on the air quality in Northumberland. NCC produces annual air quality reports, which provide residents with information about Northumberland's air quality. These reports are also fed back to National government (DEFRA) to make sure that National air quality objectives are being met in Northumberland. To do this NCC measure air pollution levels and try to forecast how this may change in the next few years.

Northumberland's most recent Air quality Annual Status report (ASR) can be found on the NCC website[287].

The air quality in Northumberland is generally good but it is impacted by some atmospheric pollutants:

- nitrogen dioxide (NO^2) from road traffic
- particulates (PM10 and PM2.5) from road traffic
- naturally occurring ozone near the sea and in the hills of Northumberland.

Road traffic is a diffuse source of pollutants[288], and the more traffic on a road the more pollution there will be. However, pollution is only monitored in areas where there is a lot of traffic[289] and there are homes nearby (known as 'relevant receptors'). There are two sites in Northumberland that require continuous monitoring for road traffic pollution based on overall traffic volumes and proximity of homes:

- Cowpen Road – monitoring particulates and Nitrogen Dioxide
- Blyth Town Centre – monitoring particulates

National air quality targets are consistently met at both locations.

Real time particulate levels can be viewed online[290], at instrument TN03313 in Blyth, and instrument TN03314 in Cowpen. Nitrogen Dioxide is tracked at many locations across the county (using passive diffusion tubes). This acts as an early warning system for NCC. Indicative monthly measurements will alert NCC if an area requires investigation.

Certain industrial sources in Northumberland are also monitored by either Northumberland County Council, or the Environment Agency, under Environmental

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[287] 2023-LAQM-Annual-Status-Report.pdf (northumberland.gov.uk)
[288] https://www.who.int/teams/environment-climate-change-and-health/air-quality-and-health/health-impacts/types-of-pollutants and https://uk-air.defra.gov.uk/pm25targets/overview
[289] Road traffic statistics - Local authority: Northumberland (dft.gov.uk)
[290] AirQWeb - Air Quality Data Monitoring

Permitting legislation[291]. Approval for, and monitoring of, industrial chimneys, and biomass boilers is part of the clean air act and environmental permitting legislation.

Dark smoke is another form of air pollution, essentially the darker the smoke, the more polluting it tends to be[292]. Burning substances that create dark smoke is an offence, and people or businesses that do so can be convicted and fined.

If Local Authorities find areas where air quality standards are not being met, they must declare it as an Air Quality Management Area (AQMA), and then produce a Local Air Quality Action Plan to improve the areas air quality. Northumberland currently has no Air Quality Management Areas or action plans. This is because Northumberland currently comfortably meets the main air pollutant objective levels.

4.10.3. NCC's Future Focus for Air Quality

NCCs Environmental Protection team will continue to monitor and report on potential sources of air pollution across Northumberland.

Recent changes in national policy mean that NCC is now required to develop an Air Quality strategy, that sets out how Northumberland's air quality will continue to be monitored and improved into the future. This strategy will tie together the work being done across the council to keep track and maintain the region's excellent air quality. The intention is for this to be developed through 2024.

Updates and more information will continue to be published on the relevant NCC webpages.[293]

4.11. Environment conclusion

The information within this action plan, and the Environmental Policy Statement together provide an overview of the role NCC has in protecting and enhancing the environment of Northumberland. The enhancement, repair and protection of the environment is critically important, and intertwined with climate change mitigation and adaptation.

The climate change team will continue to work closely with our colleagues across the council, and key external partners, to make sure the NCC approach to environment, climate change and sustainability is aligned.

5. Conclusion

5.1. Route to Net Zero

[291] Businesses that produce emissions must apply for and be granted an environmental permit by either a local authority or the environment agency.
[292] https://www.gov.uk/preventing-air-pollution/dark-smoke
[293] https://www.northumberland.gov.uk/Protection/Pollution

The projects set out in this action plan, ranging from engagement of communities and schools through to the delivery of district heat networks, demonstrate the commitment NCC has to tackling climate change and the breadth of interventions the Council is making.

Through grant funding together with expenditure of Council funds, NCC has spent approximately £30m on projects which directly tackle climate change as well as many tens of millions more on other contributing projects such as the Northumberland Line. Set out in this action plan are projects which will see an additional £300m of spending together with inward investment from the private sector through the Council's procurement of low-carbon infrastructure and services.

Despite this the gap between, where NCC are now, what can be delivered during this action plan, and what needs to be achieved to hit net zero, is significant. If delivered, the projects set out in this action plan will cut annual carbon equivalent emissions by around 120 kilotonnes. It can also be estimated that changes at a national level both in terms of infrastructure and policy, primarily relating to the decarbonisation of the electricity grid, will lead to additional savings of approximately 78 kilotonnes of CO2e by 2030 and 228 kilotonnes by 2040.

This means that at best, the calculable reductions in emissions by 2040 currently stand at 348 $ktCO_2e$. Whilst impressive, this leaves a gap of 1,721.7 $ktCO_2e$ to the net zero target as set out in Figure 49.

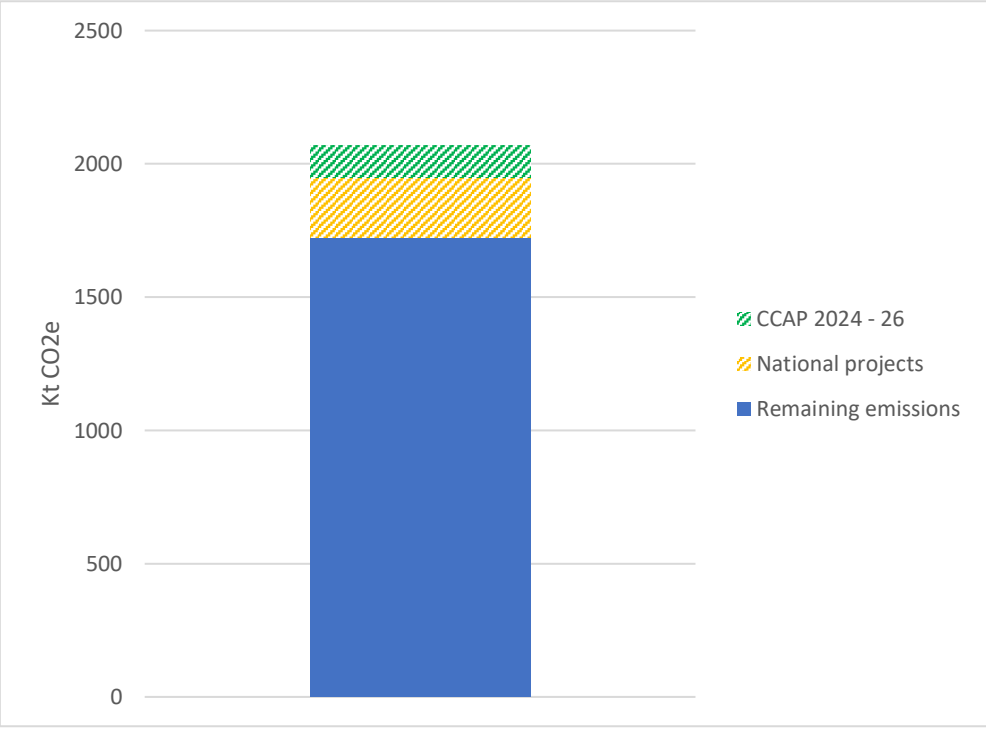

Figure 49 - GHG emissions reductions in Northumberland resulting from projects in this action plan and national projects to 2040.

5.2. Areas of control and influence

As we analyse the potential route to net zero as a County, it is important to bear in mind that the County Council is directly responsible for 1% of the wider county's

emissions. This means that only a tiny proportion of the County's emissions are within the Council's direct control. Outside of this, according to the Local Government Association, the Council is able to exert a strong influence through its policies and partnerships on an additional 30% of emissions[294]. This means that, despite the best efforts of NCC, reaching net zero requires top-down *and* bottom-up changes to how society works and the technology we use.

5.3. Facilitating change through infrastructure

One of the main roles the County Council can play in the drive to net zero, is to invest in and build the infrastructure required for residents, businesses and visitors to move to more sustainable ways of living. As set out in this action plan, this is where efforts will be focused. Delivering the district heat networks, described in section 3.4.10, will provide the initial infrastructure and blueprint for our urban communities to heat their homes and businesses from low-carbon sources. As these networks expand, more and more businesses and residents will be able to choose to take advantage of the options they provide. Similarly, by scaling up the provision of EV charging infrastructure across the county, a transition to electric vehicles will be made more viable for more people.

5.4. Facilitating change through policy and engagement

As set out in the Society section of this action plan, a major part of the County Council's work has been and will continue to be focused on engaging, educating, supporting and enabling a drive towards more sustainable societal norms. The changes made to greenhouse gas emissions through these types of activities are impossible to forecast. For example, there is no measurable link between holding an event for a school group to better understand climate change in Northumberland and pupils from that group changing their habits or those of their parents to directly reduce emissions. However, the evidence set out through this action plan demonstrates that these types of activity are essential to driving more sustainable ways of living and to creating shared ownership of the climate emergency.

5.5. Reporting and Transparency

Despite the scale of the challenge of reaching net zero, a priority for the County Council will be making the relevant data and evidence more readily available so that progress towards the targets set out in this Action Plan can be monitored.

Greenhouse gas emissions for the County of Northumberland are calculated and reported annually by the Department for Energy Security and Net Zero (DESNZ). Northumberland County Council analysis and visualises this data in order to understand the trends and set priorities.

This data visualisation will be made available publicly on our new website so that stakeholders can see more easily the progress the County is making towards net zero emissions.

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[294] https://www.local.gov.uk/publications/councillor-workbook-local-path-net-zero#:~:text=Councils%20only%20have%20direct%20control,and%20the%20delivery%20of%20services.

Progress made by the County Council towards its own internal targets will also be reported annually via the new climate change website.

5.6. Final Thoughts

The challenge faced by Northumberland County Council in realising the targets it has set itself in regard to climate change, should not be underestimated. That said, there remains significant opportunity for the Council and the wider county in the delivery of this action plan. Successful implementation of the key aims set out above, will lead not only to lower harmful greenhouse gas emissions, but also to warmer homes and buildings, reduced energy and transport costs, more accessible transport opportunities, a healthier society and more protected natural environments. The work set out in this action plan should not be judged solely on the overarching targets set out for emissions reduction but also within this context of wider benefit and the County Council's three corporate priorities.

Despite the existential global threat of climate change and Northumberland's relative inconsequence, there is much within this plan to be positive about and to celebrate. The County Council remains committed to realising a greener, healthier, cleaner Northumberland.

5.7. Acknowledgements

<u>Lead Authors</u>

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- Paul Jones

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6. Glossary of terms

Adaptation – (**see also risk and maladaptation**) the action of changing things to make them suitable for a new situation[295]. Adaptation will help both Northumberland's residents and natural systems gain resilience against the negative effects of the climate change and ecosystem crisis. This CCAP outlines the current adaptation work in the region Alongside potential future projects. To successfully adapt to an uncertain future, it is important to understand possible future risks.

Without taking action to adapt to climate change (the changes we are already feeling, as well as future changes) Northumberland, and the UK, faces; health risks, damage to houses and infrastructure, harm to the natural environment and disruption to international supply chains.

An example of adaptation is making sure that new and existing buildings can withstand climate impacts such as extreme heat or flooding. Or planning for more green spaces in built up areas to help keep them cool. Both these examples also have co-benefits for human health and wellbeing.

More Information

- https://unfccc.int/topics/adaptation-and-resilience/the-big-picture/introduction
- https://www.gov.uk/government/publications/third-national-adaptation-programme-nap3/understanding-climate-adaptation-and-the-third-national-adaptation-programme-nap3
- https://www.metoffice.gov.uk/weather/climate-change/climate-change-in-the-uk
- https://www.ukclimaterisk.org/publications/type/briefings/ (this site has climate risk briefings for different sectors e.g. agriculture and food, Business, Transport sector etc)
- https://www.theccc.org.uk/2024/03/13/planning-for-climate-impacts-falls-short-once-again/

Agriculture – The science of practice of farming, including thee rearing of crops and animals.

[295] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_Annex-I.pdf - Page 1
(see also, Adaptation gap, Adaptation limits, and transformational adaptation)

Biodiversity –The variety of plant and animal life in the world or in a particular habitat.

Blue space – Outdoor environments that prominently feature water (e.g., streams, ponds, canals).

Borderlands Partnership - Seeking sustainable and inclusive future for the borderlands area (Scottish Borders, Dumfries and Galloway, Cumberland, Westmorland and Furness, Northumberland).

Building Retrofit – the process of; assessing an existing building, creating a plan, and then installing measures. With the aim to improve its energy efficiency and decarbonise its heating/energy.

Climate Change effects – The effects of climate change are underway now[296]. Sea ice, glaciers and ice sheets are melting, seal levels are rising, and more intense heat is being felt on land and in our oceans[297].

Climate Resilient development (CRD) – the process of applying mitigation and adaptation measures to facilitate sustainable development for everyone[298].

CO_2, and CO_2e - To be able to understand and compare the different greenhouse gases, scientists created the 'carbon dioxide equivalent' measurement. This standardizes the climate effects of the different greenhouse gases by converting them to an equivalent amount of Carbon dioxide (based on their 'global warming potential'). When emission data is written as 'CO_2e' the 'e' represents the 'equivalent'.

Decarbonising heating – reducing the carbon released when heating a property. First by reducing the amount of heat that is lost or wasted. Then by creating heat for the property from a renewable source or from electricity (as the electricity created in the UK will eventually come from 100% renewable energy sources). For more info - https://energyadvicenortheast.co.uk/.

District Heating or Heat Networks – these distribute heat or cooling from a central source of sources and deliver it across a network of different source. Heat sources can come from local sources of low carbon heat.

Ecological – relating to or concerned with the relations of organisms to one another and their surroundings.

Ecology – the branch of biology concerned with the relations of organisms to one another and to their surroundings.

Ecosystem – A interdependent community of animals, plants, and microorganisms and their physical environment (habitat).

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[296] https://science.nasa.gov/climate-change/effects/
[297] https://climate.copernicus.eu/march-2024-10th-consecutive-record-warm-month-globally
[298] https://www.ipcc.ch/report/ar6/wg2/chapter/chapter-18/

Energy efficiency – minimising energy waste, loss, or inefficiencies.

Energy efficiency measures – Insulation (internal and external walls, under floor, lofts etc) thermostats, draft exclusion, LED lightbulbs, double glazing, 'bleeding' radiators etc…

Environment – The natural world ***especially as effected by human activity*** (Oxford English dictionary). The Environment section within the climate change action plan 2024-2026 refers to the following defined aspects:

- Ecosystems and Biodiversity
- Agriculture
- Forestry and other Land use (formerly 'sequestration')
- Pollution and waste management

Forests – A large area covered by trees, sometimes used interchangeably with 'woodland'. Traditionally forests were classified as bigger than a woodland (in the UK) often used to describe current or past 'worked' forests (for hunting game or logging)

Governance - refers to the process, action, or style of governing something. Within organisations or society 'governance' is about how decisions are made, what rules are made, and what is done if these rules are broken.

Governance structures - support the ability of an organisation to function successfully.

Green space – Any area of vegetated land.

Greenhouse gases, GHG – Three of the main greenhouse gasses are, Carbon Dioxide, Methane and Nitrous Oxide. Human activities have increased the emissions of greenhouse gases by 50% since the industrial revolution[299](e.g. by burning fossil fuels). This means that more heat is trapped in the earth's atmosphere, which changes the global climate.

Habitat – The natural home or environment of a plant, animal, or microorganism.

- **Terrestrial –** The earth or dry land
- **Freshwater – lakes**, rivers, ponds, wetlands. Drinking water.
- **Coastal –** Where land, rivers, estuaries meet the ocean.
- **Open ocean –** all the saltwater oceans/seas.

Legislation - describes a law or a set of laws, but it also describes the process of creating a law[300]. In the UK, legislation, Act, and Law, all mean the same thing; basically, a system of rules to follow, which if broken result in penalties.

Legislation and Policy - Acts of parliament arise when a 'Bill' (a proposal for a new law or change of existing law, that is presented to parliament for debate, and potentially amendments[301]) has been approved by the houses of commons and lords

[299] https://science.nasa.gov/climate-change/causes/

[300] https://www.parliament.uk/site-information/glossary/legislation/

[301] https://www.parliament.uk/site-information/glossary/legislation/

and been given Royal Assent. Once approved, this makes the contents of what was a 'Bill' into an 'Act' which is a law (or it changes an existing law)[302].

Local Authority / Local government / Council – all terms represent the body of local government responsible for a range of vital services in a defined area. The local community can vote for representation in their council via a 'local councillor'. All the councillors together make up 'full council' and meet regularly to discuss and agree on decisions. Council officers are responsible for the administrative and practical work of the council and deliver services for local communities.

Maladaptation – (see also adaptation) Actions taken that may increase negative climate change risks, often maladaptation occurs as an unintended or unforeseen consequence. Maladaptation may happen when an action:

- accidentally increases vulnerability to climate change.
- shifts vulnerability somewhere else.
- increases GHG emissions[303].

Measures – things that can be installed, added, or changed in a property.

Microorganisms – microscopic organisms like fungi, bacteria, and viruses.

Mitigation - the action of trying to stop, or reduce the severity, of something happening. Climate change mitigation refers to the reduction of the greenhouse gas emissions that cause climate change.[304] This CCAP sets out a plan to reduce, or mitigate, the territorial emissions of greenhouse gasses in Northumberland. This action will also mitigate against the future severity of climate and ecosystem (and societal) collapse.

Natural Environment - "(a) plants, wild animals and other living organisms, (b) their habitats, (C) land (except buildings or other structures), air and water, and the natural systems, cycles and processes through which they interact.[305]"

Nature - Existing in or obtained from nature; ***not made or caused by humans*** (Oxford English dictionary).

Net zero - This is the point where humanity regains the balance between the amount of greenhouse gases being produced, and the amounts of greenhouse gases being removed from the atmosphere.

- Most **Carbon Dioxide** removal (and storage) occurs during natural processes, like plants photosynthesizing. Reaching net zero for carbon dioxide will only be achieved by reducing the amount of GHG emissions, **and** protecting and enhancing nature, so it can remove and store carbon dioxide.

- **Methane** traps more heat than a molecule of carbon dioxide. However, methane molecules last approximately 12 years in the atmosphere before they naturally break down (compared to hundreds of years for carbon

[302] https://www.parliament.uk/about/how/laws/acts/

[303] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_Annex-I.pdf

[304] https://www.undrr.org/terminology/mitigation

[305] https://www.legislation.gov.uk/ukpga/2021/30/section/44/enacted

dioxide). NASA estimate that 60% of methane emissions are from human activities, and the concentration of methane in our atmosphere has doubled in the last 200 years[306]. Reaching net zero for methane emissions will only happen by reducing the amount of methane produced.

- **Nitrous Oxide** traps considerably more heat than a molecule of carbon dioxide or methane, and it lasts in the atmosphere for a long time (approx. 114 years), before being either absorbed into Earths nitrogen cycle, or destroyed in a chemical reaction[307]. Reducing emissions will be the main way to reach net zero of nitrous oxide, however it is crucial to also protect and enhance nature to support the nitrogen cycle (especially nitrogen 'fixing' bacteria in soils).

Net Zero – as written with capital letters. This is used when referring to net zero as an adjective (e.g. describing a programme, strategy, or policy).

Non-renewable energy - fossil fuels like oil, gas and coal all took millions of years to make, and once used, are gone forever. Burning fossil fuels releases greenhouse gases into the atmosphere, which causes climate change. It also produces pollutants that reduce the air quality, in and around our homes.

North East Devolution Deal – proposed agreement for a devolution deal between national government and the seven local authorities in the North East[308].

Off gas grid – buildings that are unconnected to the mains gas grid.

Off grid – buildings unconnected to the mains electricity grid.
One Health - an integrated, unifying approach that aims to sustainable balance and optimise the health of people, animals, and ecosystems[309]

[306] https://climate.nasa.gov/vital-signs/methane/?intent=121#:~:text=A%20molecule%20of%20methane%20traps,natural%20sources%20and%20human%20activities.
[307] https://www.epa.gov/ghgemissions/overview-greenhouse-gases#:~:text=Nitrous%20Oxide%20Emissions&text=In%202022%2C%20nitrous%20oxide%20(N,2O%20in%20the%20atmosphere. And https://www.ipcc.ch/report/ar5/wg1/
[308] https://www.gov.uk/government/publications/north-east-devolution-deal--2
[309] World Health Organisation, 2021, https://www.who.int/news/item/01-12-2021-tripartite-and-unep-support-ohhlep-s-definition-of-one-health

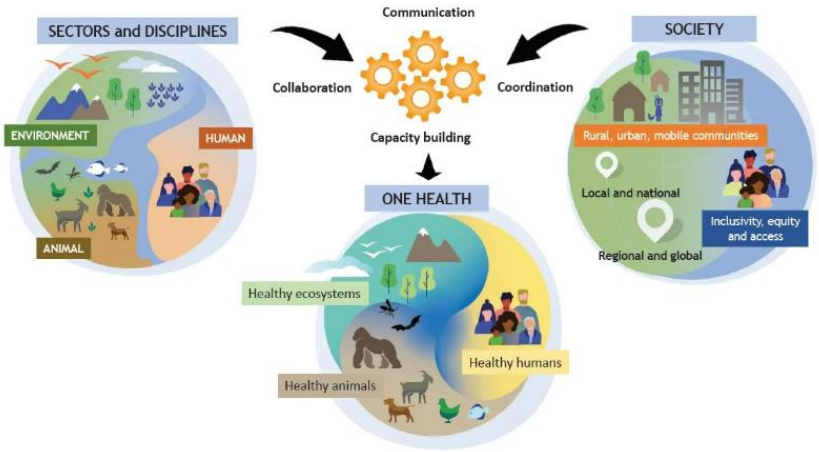

Diagram from World Health Organisation, 2021, https://www.who.int/news/item/01-12-2021-tripartite-and-unep-support-ohhlep-s-definition-of-one-health

PAS2035 – The British standard for retrofitting dwellings (first published in 2019).

Policy - a course of action, principles, or system of guidelines, used to help people reach a desired outcome. When used in government, or governance, a policy is something that is generally adopted by everyone within an organisation ('organisation' could be a company, a school, a nation state etc.) as a set of codes or principles, to be followed, to achieve a set goal. Policies tend to change over time, whereas Laws are fixed and last for a long time.

Renewable energy – energy that comes from a renewable source, of which there is an endless supply, e.g. solar panels or windmills.

Renewable or low carbon energy measures – Solar panels, Air Source Heat Pump, Ground source heat pumps etc.

Resilience - The ability (or capacity) of interconnected systems (social, ecological, economic) to cope with hazardous events[310]. Resilience is shown when a system can adapt to and recover from the effects of a hazard in an efficient and timely manner, while retaining essential functions, structured and identity[311].

Risk – (see also, adaptation) is the possibility of something unwanted happening. Not everyone judges risk in the same way. How risks are perceived (and experienced) can be due to a mix of many things like, economic circumstance, social context, vulnerabilities, and personality.

[310] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_Annex-I.pdf
[311] Resilience | UNDRR

- **Hazard** - is something that may cause loss of life, injury, damage, disruption, or degradation[312]. Hazards can be acute, so are sudden/short term. Hazards can also be chronic[313] and occur or build up over longer timeframes.

- **Exposure** - refers to the protection that is available, or not available, from hazards.

- **Vulnerabilities** - are factors that increase susceptibility to a hazard (physical, social, economic, environmental factors). This includes a lack of capacity for adaptation[314]. Everyone in society is vulnerable in different ways, it is dangerous to assume that everyone has the same capacities and experience. Society is only as resilient as its most vulnerable members.

- **Measuring risk** - Risk specialists carefully judge risks by assessing hazard, exposure, and vulnerability. From this a risk assessment or risk register can be created. As risk perception can differ greatly from person to person, organisations and specialists are relied on to create risk assessments which consider situations from multiple different viewpoints to come out with a balanced approach.

Figure representing climate risk from the interaction of exposure, hazard and vulnerability.

Reproduced from - Viner et al; *Understanding the dynamic nature of risk in climate change assessments – A new starting point for discussion*; Figure 1; 2020, (https://rmets.onlinelibrary.wiley.com/doi/10.1002/asl.958)

Scrutiny body - can be created as part of an Act to monitor how well the Act is been implemented by Government. The authority and independence of a scrutiny body can vary.

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[312] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_Annex-I.pdf

[313] https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/1175834/2023_NATIONAL_RISK_REGISTER_NRR.pdf

[314] https://www.ipcc.ch/report/ar6/syr/downloads/report/IPCC_AR6_SYR_Annex-I.pdf

Sequestration – refers to the capture and storage of carbon. In this document Sequestration is used in reference to biological carbon sequestration, the natural ability of living things, and ecosystems, to store carbon.

Trustmark – Trustmark is a government backed quality guarantee, registered installers who are Trustmark certified must adhere to their customer charter and technical standards.

Vulnerable populations – "being vulnerable is defined as in need of special care, support or protection because of age, disability, risk of abuse or neglect"[315]

Woodland Carbon Code – WCC – this is the quality assurance standard for woodland creation projects in the UK. The WCC generates high integrity, independently verified carbon units. It is backed by the UK's government, forest industry and carbon market experts.

Woodlands – area of land with a collection of trees that have, or potentially will have, a tree canopy that covers more than 20% of the ground[316].

6.1. Abbreviated terms

In this document the following abbreviated terms apply.

AQMA - Air Quality Management Area

ATCs - Active Travel Corridors

BEIS – The Department of Business, Energy and Industrial Strategy, existed from 2016 to 2023 – this department was responsible for publishing Emissions data for the UK.

BEVs - battery electric vehicles

BNG - Biodiversity Net Gain

BRG - Bus Recovery Grant

BSIP - Bus Service Improvement Plan

CAPEX - Capital expenditure, this is money used to buy, maintain, improve, or build fixed assets. E.g. Buildings, equipment, land. Capital expenditure usually creates long term benefits.

CBSSG - Covid Bus Services Support Grant

CCT or NCC CCT – The Northumberland County Council climate change team which includes The Warmer Homes Team

CIA – Climate Impact Assessment

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[315] https://www.gov.uk/government/publications/vulnerabilities-applying-all-our-health/vulnerabilities-applying-all-our-health

[316] https://www.woodlandtrust.org.uk/media/51705/state-of-the-uks-woods-and-trees-2021-thewoodlandtrust.pdf

CLA – Country Land and Business Association

DECC – Department of Energy and Climate Change (DECC), existed before BEIS from 2008 – 2016 (before 2008 Climate change functions fell under DEFRA)

DEFRA - Department of Environment, Food and Rural affairs (National government)

DESNZ - Department of Energy Security and Net Zero (DESNZ), created in 2023 to replace BEIS (National government)

EfW - Energy from Waste

EIA – equality impact assessment

EPC - Energy Performance Certificate

EST - Energy Saving Trust

HUG - Home Upgrade Grant

HWRCs - Household waste Recovery Centres

IIA – Integrated impact assessment

LCWIPs - Local Cycle and Walking Infrastructure Plans

LEAD - Local Energy Advice Demonstrator

LINC - Local Investment in Natural Capital **-** https://www.gov.uk/government/news/green-finance-boost-for-nature-in-uk

LNRS - Local Nature Recovery Strategy

MRF - Material Recycling Facility

NCC - Northumberland County Council, or within this document 'the Council'.

NECA – North East Combined Authority

NFU - National Farmers Union

NoT - North of Tyne

NPP - Northumberland Peat Partnership*

NTCA - North of Tyne combined authority

OEP - Office of Environmental protection

ORCS - On Street Residential Chargepoint Scheme

PHEVs - plug-in hybrid electric vehicles

STEM – Science, Technology, Engineering and Maths

TPOs - Tree Preservation Orders

WTSs - Waste Transfer Station