EDINBURGH NET-ZERO 2030

2030 CLIMATE STRATEGY

Delivering a net zero, climate ready Edinburgh

December 2021

EDINBVRGH
THE CITY OF EDINBURGH COUNCIL

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Foreword

Climate change is the biggest threat facing our planet. That's why the World Health Organisation has placed climate change and air pollution at the very top of its list of threats to public health.

It is also why the City of Edinburgh Council declared a climate emergency, established an independent Climate Commission and set a target for the city to be net zero by 2030.

As noted by the Climate Emergency Response Group, if Scotland is to meet its 2045 target, our cities need to make faster progress and Edinburgh needs to play its part by striving to reach net zero by 2030.[1]

As the capital city of an industrialised country where the industrial revolution was born, we have a responsibility to act now to play our part globally and to protect and improve the city for generations to come. The faster we can reduce greenhouse gas emissions, the more we can reduce the damaging consequences.

2020 saw the world work together to combat the public health crisis created by a global pandemic. That shone a light on what communities and organisations can achieve in the face of an emergency. 2021 has seen world leaders gathering in Scotland for the 26th Conference of Parties (COP26) to agree actions to limit global temperature rise.

We need to act now to ensure that the legacy of COP26 is renewed action on climate change – building on the capacity for collaborative action that communities and organisations demonstrated during the pandemic – and driven at the scale and pace needed to respond to the climate and nature emergency.

This means that as we continue to deal with the lasting effects of the pandemic, we need to ensure the city's recovery is both fair and green, and one which accelerates progress on reducing the city's emissions and adapting the city to be resilient to climate change.

To achieve that goal, we need to improve air quality, protect and enhance our thriving green spaces, support sustainable travel and continue to create energy efficient, good quality places to live and work to make Edinburgh a healthier and happier place to live.

Young people have been at the forefront of demanding faster action on climate change and our residents have told us they want Edinburgh to become a sustainable, fair and thriving city. Around 80% of people responding to consultation on a draft of this strategy support its vision, aims and actions. The question is not whether we act, but how we deliver change individually and as a city.

The challenge we face is clear. We must reduce our transport emissions 12 times faster. Emissions from buildings need to be reduced twice as fast year on year. Our homes need to be retrofitted 50 times faster. The good news is we know from independent research that we can get over 65% of the way there with actions that pay for themselves within their lifespan[2].

We also know that taking climate action will create opportunities for the city that can offer new and exciting skilled jobs and make Edinburgh a leader in green industries and innovations. This strategy sets out how we will enable, support and deliver action to meet our net zero ambition. It is aimed predominantly at partners within the city who have a duty to transition to net zero, have significant city emissions footprints, and the power and budgets to make impactful change.

However, it also speaks to citizens, communities and smaller businesses, highlighting actions they could take to help drive down emissions. Our communities, businesses and residents have a strong record of climate action and I know the city will work together to deliver change at the speed and scale needed.

Together we have enormous power and influence over the emissions in the city and we can create a thriving net zero future for the benefit of everyone.

Cllr Adam McVey Leader of City of Edinburgh Council
Cllr Cammy Day Depute Leader of City of Edinburgh Council

[1] Delivering on Scotland's response to the climate emergency, Climate Emergency Response Group, September 2021

[2] A Net Zero Carbon Roadmap for Edinburgh, PCAN, 2020

Summary of the 2030 Climate Strategy approach and priority action

This strategy sets out the clear and practical steps Edinburgh will take to tackle the challenge of climate change and achieve our aim of becoming a net zero city by 2030.

Figure 1 illustrates our strategic approach and principles, which will drive city-wide action on climate change. These underpin our seven priority actions and the wider actions set out in the thematic chapters which follow.

Throughout this strategy, the Council and key city partners are focused on putting in place actions we can implement now, using approaches that we know work, and drawing from learning and experiences from other cities.[3]

Figure 1: Strategic approach and principles to drive city-wide action on climate change.

[3] Key city partners who have agreed to support the delivery of actions are named against the relevant actions within each chapter. It is envisioned this list will expand following consultation on this strategy.

Principles for a just transition

In developing this strategy, our approach has been guided by seven core principles:

A just transition: We will look to maximise the job creation and other co-benefits of the transition to net zero - focusing on fair work, tackling poverty and inequality and ensuring that everyone can share in the city's success.

Progressive policy: We will work with the Scottish Government to develop regulatory frameworks that are progressive, promote innovation and create incentives for citizens and businesses to make practical changes in the way they live and work.

Adapting to unavoidable climate change and preventing future emissions: We will take actions and make changes to ensure the city is resilient to future climate change and prevent future emissions, as well as reducing those we currently produce.

Reducing our global footprint: We will create a more circular economy, supporting action to reduce emissions that occur in other parts of the world as a result of purchasing and other activity within the city.

Fabric first: We will improve the energy efficiency of the city's buildings, adopting fabric first approaches to reduce energy demand and emissions.

Electrification first: We will ensure the network's capacity can respond to the substantive increases in the city's electricity demand while keeping an open mind to innovation in other energy sources, such as green hydrogen.

Creating 20-minute neighbourhoods: We will make it easier for citizens to access the services and amenities they need locally.

The Council will play a leadership role

The City of Edinburgh Council has a key role to play in providing city leadership on climate change.
It will use the levers that are within the control or influence of the Council to enable net zero action in the city.

These levers include the ability to:

- Build strategic relationships and collaborations for change.
- Deliver high-quality low carbon infrastructure and services.
  make strategic investments to drive change.
- Lobby for change as the capital of Scotland and a major UK city.

Priorities for climate action

This strategy recognises that no one action will deliver a net zero city. We need to tackle climate change on all fronts as part of a whole-system approach. But we also need to be clear on our key strategic priorities for urgent action.

The seven priority actions below respond to the top sources of emissions within the city and the key enabling activities needed to support action to address them.

They are part of a comprehensive programme of action set out in the full 2030 Climate Strategy and supporting implementation plan.

Priority 1
We will accelerate energy efficiency in homes and buildings

Energy to heat and power the city's homes and other buildings accounts for 68 % of the city's emissions. Many of the city's buildings will require energy efficiency upgrades (or 'retrofitting') if we're to reach net zero. Strategic actions to support this include:

- Developing a new mechanism and business plan to support Edinburgh's citizens to affordably retrofit their homes.
- Outlining a collective programme of investment in retrofitting the city's public buildings.

Priority 2
We will enable the development of a citywide programme of heat and energy generation and distribution
Demand for energy is set to increase as the city's population grows. There is a need to ensure the city's energy networks can meet this demand and provide clean, affordable energy for our citizens and businesses. Strategic actions to support this include:

- Developing a citywide heat and energy masterplan, supported by a pipeline of infrastructure proposals, with the BioQuarter and South East Edinburgh developments acting as exemplars.
- Working with Energy for Edinburgh to develop proposals for community energy generation schemes that deliver clean energy and help build community wealth.

Priority 3
We will accelerate the decarbonisation of public transport
The way we move people, good and services around the city accounts for 31 % of the city's total emissions. To achieve net zero, we need to develop the city's public transport network to deliver affordable, integrated, net zero solutions for all trip types.

Strategic actions to support this include:

- Implementing the City Mobility Plan, prioritising investment in expanding the active travel network, connecting communities to services and amenities in their neighbourhoods.
- In partnership with Lothian Buses, deliver two pilots for large vehicles on EV and hydrogen, using the learning to develop a costed plan for decarbonising the bus fleet.
- Developing a plan to maximise opportunities for shared public service charging hubs at strategic city locations.

Priority 4
We will renew the focus on climate resilience and accelerate adaptation of the city
Climate change will bring increased flooding, coastal erosion and more frequent severe weather – causing damage to the economy and disruption for citizens. We need to adapt our communities, economy, natural and built environments to be resilient to unavoidable climate change. Strategic actions to support this include:

- Setting new planning policy and guidance within the City Plan 2030, to support sustainable net zero development and growth of the city.
- Developing a costed climate change risk assessment for the city and a new city adaptation plan, recognising the full value of the city's natural assets.
- Developing a pipeline of adaptation investment proposals, collaborating with City Regional Deal partners on regional approaches to adaptation and opportunities to enhance the natural environment.

Priority 5
We will support citizen empowerment, behaviour change and community activism
Action by Edinburgh's citizens is an essential and necessary part of reducing the city's emissions and securing a sustainable city for future generations. We need to support citizens to be informed and engaged and create spaces where we can design solutions together. Strategic actions to support this include:

- Sponsoring an independent Edinburgh Community Climate Forum, to be co-created by EVOC, Our Future Edinburgh and Edinburgh citizens.
- Delivering a series of public awareness raising campaigns, supported by climate action toolkits for citizens and community groups.

Priority 6
We will support business transition and a green circular economy
The climate emergency is the greatest threat Edinburgh's economy has faced since the pandemic. Planning for a green recovery from Covid-19 offers an opportunity for the city to rebuild sustainably, increasing Edinburgh's resilience to future economic shocks. Strategic actions to support this include:

- Supporting and encourage city businesses to sign up to the Edinburgh Climate Compact and commit to reduce their emissions.
- Establishing a business-led Just Economic Transition Forum to convene the city business community and provide leadership on the sector's transition to net zero.

- Supporting the launch of a new Business for Good programme through Edinburgh CAN B to provide practical support for city businesses to transition to net zero.

Priority 7
We will collaborate to develop a citywide programme of green investment proposals

Research tells us that we can get 65% of the way to net zero through interventions that pay for themselves over time.[4] Yet the city faces challenges in developing projects at the scale required to attract investment. We need to align public sector budgets and connect investors to a portfolio of city green investment opportunities.

Strategic actions to support this include:

- Establishing a new Climate Strategy Investment Programme Board to consider, align and agree investment proposals.
- Developing a Green Investment Plan to support the city's transition to net zero.

Wider delivery actions are described within each of the thematic chapters within the remainder of this strategy. This strategy is also supported by an implementation plan which sets out the following for each of the strategy's actions:

- Key deliverables
- Milestones and timescales for delivery
- Lead delivery partner(s); wider delivery partners; Council contact
- Resources.

The implementation plan also includes outcome indicators which will be used to monitor progress, alongside annual reporting of the city's emissions.

[4] A Net Zero Carbon Roadmap for Edinburgh, PCAN, 2020

Our planet, our future

The climate and nature crisis is the single biggest threat facing humanity.

In 2018, the Intergovernmental Panel on Climate Change (IPCC) called for worldwide action to prevent global warming above 1.5°C[5].

In 2020, the World Economic Forum Global Risks Report[6] put climate action failure, extreme weather and biodiversity loss as the top three highest risks for the world in terms of likelihood and impact. 2021 saw records broken for extreme heat, floods, droughts, wildfires and hurricanes, and the World Health Organisation has classified climate change as the single biggest health threat facing humanity.[7] Figure 2 outlines some of the impacts on health that climate change will cause.

Nature is declining globally. In 2020 the World Wildlife Fund reported a 68% average drop in global wildlife population sizes since 1970, noting that Covid-19 has highlighted how unprecedented biodiversity loss threatens the health of both people and the planet.[8]

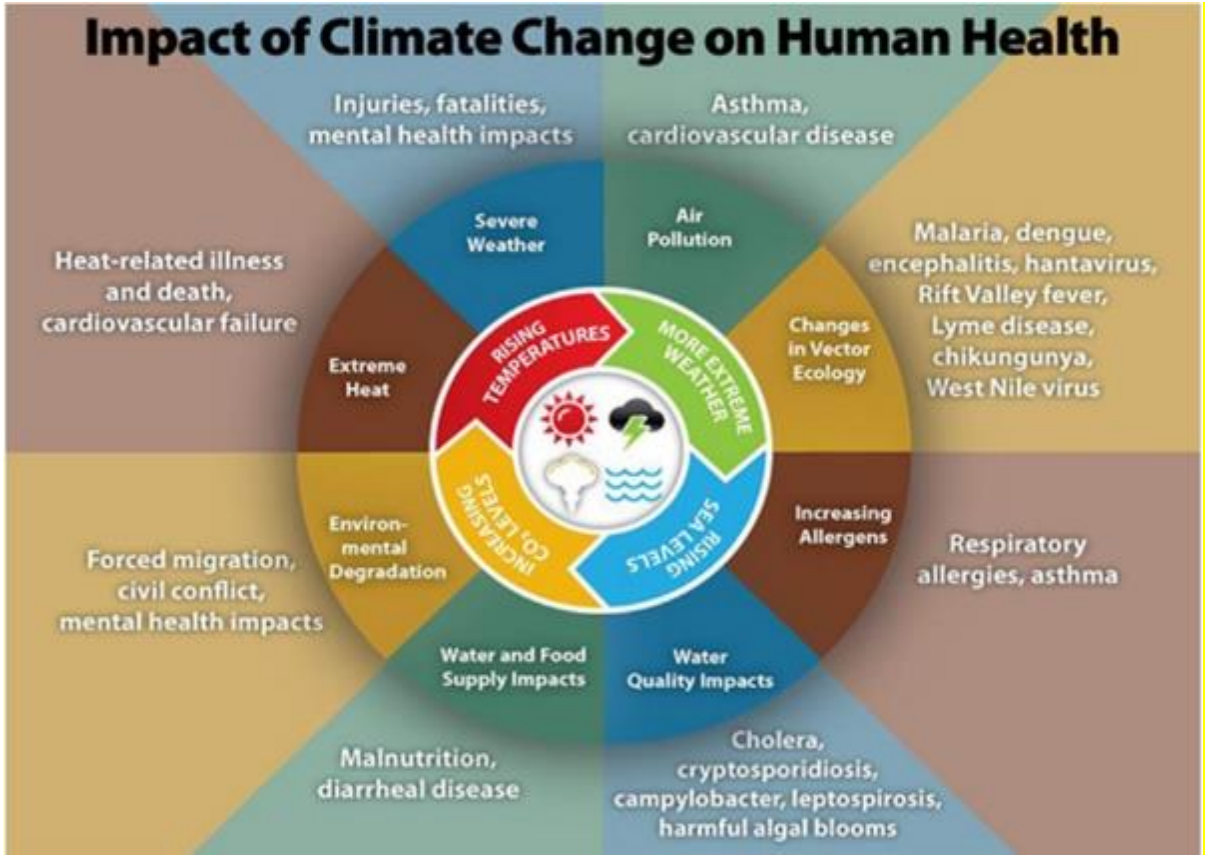


Figure 2: Source: US Centre for Disease Control, Climate and Health Program

[5] Global Warming of 1.5 ºC An IPCC Special Report
[6] The Global Risks Report, World Economic Forum, 2020
[7] The Health Argument for Climate Action, COP26 Special Report on Climate Change and Health, World Health Organisation, 2021
[8] Living Planet Report 2020, World Wildlife Fund

Climate change is impacting our city

These impacts will and are being felt in our city. Edinburgh's climate is set to get warmer and drier in summer and milder and wetter in winter. Sea levels are rising and there is an increased likelihood of severe rainfall events and winter storms occurring more frequently.[9]

A changing climate impacts on human health, the natural environment, the economy, livelihoods, property and infrastructure.

Increased flooding, coastal erosion and more severe weather will disrupt business, including the city's cultural events, and cause damage to homes and the city's public and commercial buildings, including Edinburgh's UNESCO World Heritage Site.

Dealing with these impacts comes at a financial cost to the city, diverting resources which could otherwise be invested in helping the city to thrive.

The UK National Audit Office estimates that for every £1 spent on protecting communities from flooding, around £5 in property damages and wider impacts can be avoided.[10]

Vulnerable groups will feel the impacts of climate change the most

Vulnerable groups contribute least to carbon emissions but are disproportionately affected by the impacts of climate change, Figure 3.

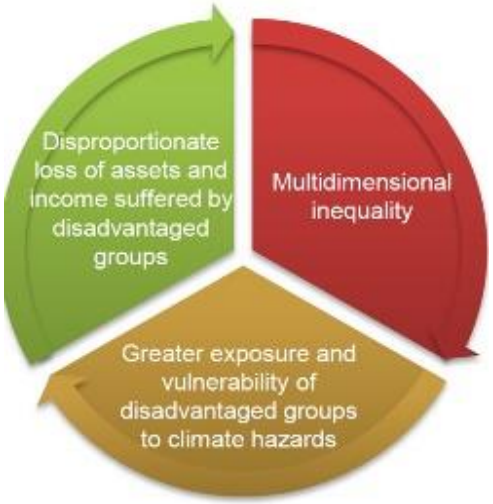


Figure 3: Climate change impact on vulnerable groups. Source: adapted from Dept of Economic and Social Affairs

Low income households will find it harder to deal with the impacts of damage to their homes and property, while those with poorer health will be more affected by reductions in air quality, increased damp, flooding of homes and local areas, and more severe fluctuations in weather such as heatwaves.

We must develop an emergency response

Covid-19 has shown that we must plan for systemic risks, particularly in relation to public health emergencies. We need to recognise the impacts climate change could have on the public's health, accepting that this constitutes an emergency and acting at the pace this demands.

We also need to learn lessons from the pandemic; including on what can be achieved when citizens, communities, organisations and governments work together to respond to a crisis.

As noted by the Climate Emergency Response Group, if Scotland as a whole is to meet its 2045 target, our cities need to make faster progress and Edinburgh needs to play its part by striving to reach net zero by 2030.[11]

Adapting to unavoidable climate change

Reducing emissions is an absolute necessity. And, of equal importance is the need to prepare for and manage the risks posed by a changing climate. Dedicated adaptation actions within this strategy are mainly contained with the chapter on Net Zero, Climate Resilient Development and Growth.

However, many actions within other parts of the strategy are designed to also support adaptation as part of an approach to considering opportunities to

[9] UKCP18 Science Overview Report, Met Office Hadley Centre, 2019.

[10] National Flood and Coastal Erosion Risk Management Strategy for England, Environment Agency, 2020

[11] *Delivering on Scotland's response to the climate emergency*, Climate Emergency Response Group, September 2021

'design in' climate resilience wherever possible, across all that we do.

Many actions – such as shortening supply chains or developing local food production – can build climate resilience by reducing emissions and improving climate change adaptation at the same time. Reducing emissions and adapting the city to be resilient to climate change can also deliver social and economic benefits for the city.

Biodiversity loss

Alongside the climate crisis, we must also address biodiversity loss. These are twin crises which are interconnected and that should be tackled together. While we act to reduce emissions, we also need to change our relationship with nature to ensure we work with it, and make sure we conserve and restore ecosystems, which are critical tools for Edinburgh addressing climate change.

Planetary boundaries

Actions to reduce emissions, adapt to unavoidable climate change, reverse biodiversity loss and protect and enhance the natural environment, must ensure we stay within limits that allow the planet to thrive.

Our vision for a net zero, climate resilient city

Our climate strategy gives us a unique opportunity to think radically and differently about how we live, work, develop and manage the city.

It allows us to shape the investment and activity that goes into Edinburgh in a way that meets the net zero target and also delivers better outcomes for the city. Citizens told us in the City Vision[12] that they want Edinburgh to be:

- A thriving city that is clean, green and sustainable.
- A welcoming city that is happy, safe, and healthy.
- A pioneering city built on data, culture, and business.
- A fair city that is inclusive, affordable, and connected.

Climate action will contribute to this vision by addressing every aspect of our lives and city activity. From the houses we live in and the buildings we work in, to the way we travel about the city, the jobs we have, and the way we use our consumer power.

This strategy is about more than reducing greenhouse gas emissions. It's about creating a city which is cleaner, healthier and greener, with natural habitats helping wildlife to thrive and helping to protect the city from flooding and other climate change impacts, and where:

- People live in neighbourhoods with easy access to greenspaces and local services reducing the need to travel.
- Homes are well-insulated, energy efficient and heated and powered by low-cost, renewable energy.
- More people work from home or in local hubs more of the time.
- The city has a network of safe and attractive active travel routes, and an integrated world-class sustainable public transport system, which is affordable for everyone.
- Most citizens find they no longer need a car, and a network of car clubs and electric vehicle charging hubs is available to support those who do.
- The city centre is re-imagined as a place for people walking, cycling and wheeling, with excellent public transport accessibility and with the needs of the most vulnerable fully catered for.
- Edinburgh is a hub for net zero innovation, with a new breed of sustainable local businesses creating local jobs and skills development opportunities.

This strategy lays out how, as a city, we will enable, support and deliver action to meet our net zero ambition.

This will require collaboration between a wide range of partners across the public, private and voluntary sector, communities, and individual citizens, with governance and decision-making infrastructure that supports bold and decisive action at the scale and pace needed to respond to the climate emergency.

This strategy is supported by a detailed implementation plan which sets out the actions partners are already committing to in the early stages of our journey to net zero.

We will work with citizens and partners to develop, refine and expand this implementation plan as we

[12] Edinburgh City vision website

learn from immediate actions and seize new opportunities as technology and innovation evolves at the local, national and global levels.

For example:

- Alleviating fuel poverty for residents through improved energy efficiency in housing.
- Stimulating the economy and offer new, local, green jobs through investment in technology and innovation.
- Protecting and improving the physical and mental health of residents through quality green spaces and ecosystem services (flood alleviation, noise regulation, air purification, carbon sequestration).
- Developing community wealth building as a way to drive the systemic change needed, alongside innovative local ownership models and the new financial, governance, and business models required to deliver net zero action.
- Making it easier for people to travel by wheelchair, bike or by foot, helping to address issues such as poverty, health, and wellbeing.

Tackling climate change must be done in a way that leaves no one behind, ensuring a just and fair transition, and access to good green jobs.

What do we mean by a 'just transition'?

A *'just transition'* to a net zero economy is where governments plan, invest and implement a transition to environmentally and socially sustainable jobs, sectors and economies.

This vision for a just transition is to create opportunities to develop resource efficient and sustainable economic approaches which help address inequality and poverty.

It means making all possible efforts to create decent, fair and high value work, in a way which does not negatively affect the current workforce and overall economy.

Source: Scottish Government: Just Transition Commission

A net zero, climate resilient future for Edinburgh

The City of Edinburgh Council declared a Climate Emergency in 2019, setting an ambitious target for the city to become net zero by 2030.

What does "net zero" mean?

Net zero is when any greenhouse gas emissions put into the atmosphere are balanced out by the greenhouse gases removed from the atmosphere, so that the "net" effect is zero emissions. Edinburgh has committed to net zero emissions by 2030.

To achieve this, we must reduce the emissions we generate close to zero and, by 2030, make sure that we remove the same amount of greenhouse gases that we as a city, put into the air.

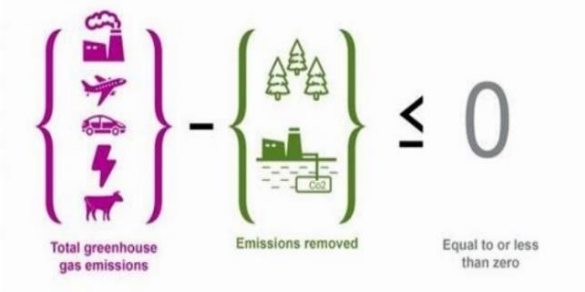


Figure 4:Graphic showing what net zero means. Source: SPICe Briefing Key Issues for Session 6: Covid-19, Climate and Constitution.

How do we define Edinburgh's emissions?

Edinburgh's net zero target boundary is defined by the territorial boundary of the City of Edinburgh Council and five key emission sources. These are:

- Stationary energy (i.e. consumption from industries, non-domestic buildings and homes)
- Transport
- Agriculture, forestry and other land use
- Industrial processes and product use
- Waste

A breakdown of the emissions output of each sector is shown in Figure 5 in the next column.

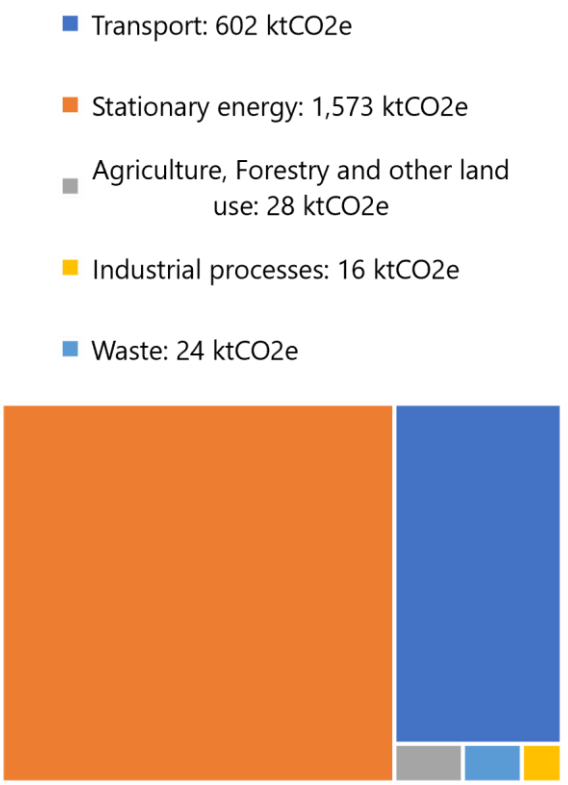


Figure 5: Edinburgh's emissions sources in 2019/20

Thinking globally

The city's emissions inventory and net zero target focus on 'territorial emissions', meaning the emissions that occur within the city's boundary. 'Consumption-related emissions' include emissions that occur in other parts of the world as a result of activities within the

City, such as purchasing, and which are harder to measure.

Tracking emissions through global supply chains is possible but also difficult with no standard methodology for cities to adopt.

The UK government has recently committed to including the UK's share emissions from international aviation and shipping in its sixth carbon budget, and these emissions are typically only considered at national level.

Although there are a number of potential approaches for allocating emissions at local authority level, there are limitations to each and current datasets only provide a split at devolved administration level (Scotland, England, Wales and Northern Ireland).

Although the city's emissions are measured on a territorial basis, we need to take action to reduce ***all sources*** of emissions.

This strategy therefore includes actions that will help reduce consumption-related emissions, by supporting:

- sustainable public sector procurement
- sustainable tourism
- a more local, circular economy
- local food systems
- innovation in construction methodology
- citizen behaviour change
- net zero business transition

It sets out how we will engage and support citizens to make more sustainable choices about what they buy and whether they fly and encourages businesses and other city partners to sign up to the Edinburgh Climate Compact and commit to reducing both types of emissions.

Emissions across the city amount to around 2.2million tonnes of CO_{2e}, and mainly come from energy used in homes and buildings, followed by transport emissions.

Further technical detail on the Baseline Emissions Inventory and net zero boundary can be found in Edinburgh's return to the Carbon Disclosure Project.

Understanding the challenge

City emissions have fallen by 42% from 2000, as a result of increasingly decarbonised electricity supply, structural change in the economy and the gradual adoption of more efficient buildings and business processes.

However, projections (including economic, population growth and improvements in energy and fuel efficiency) are that without a significant acceleration in action, city emissions will only fall a further 9% (from 2000 levels) by 2030, as shown in Figure 6 on the next page.

For the city to meet net zero, a reduction of around 200,000 tonnes of CO_{2e} would be needed year on year. This represents a significant challenge.

We will need to move at least twice as fast on reducing emissions every year to 2030. Transport emissions, which have been historically difficult to reduce - will need to decrease as much as 12 times the rate than in the last two decades (Figure 7 on the next page).

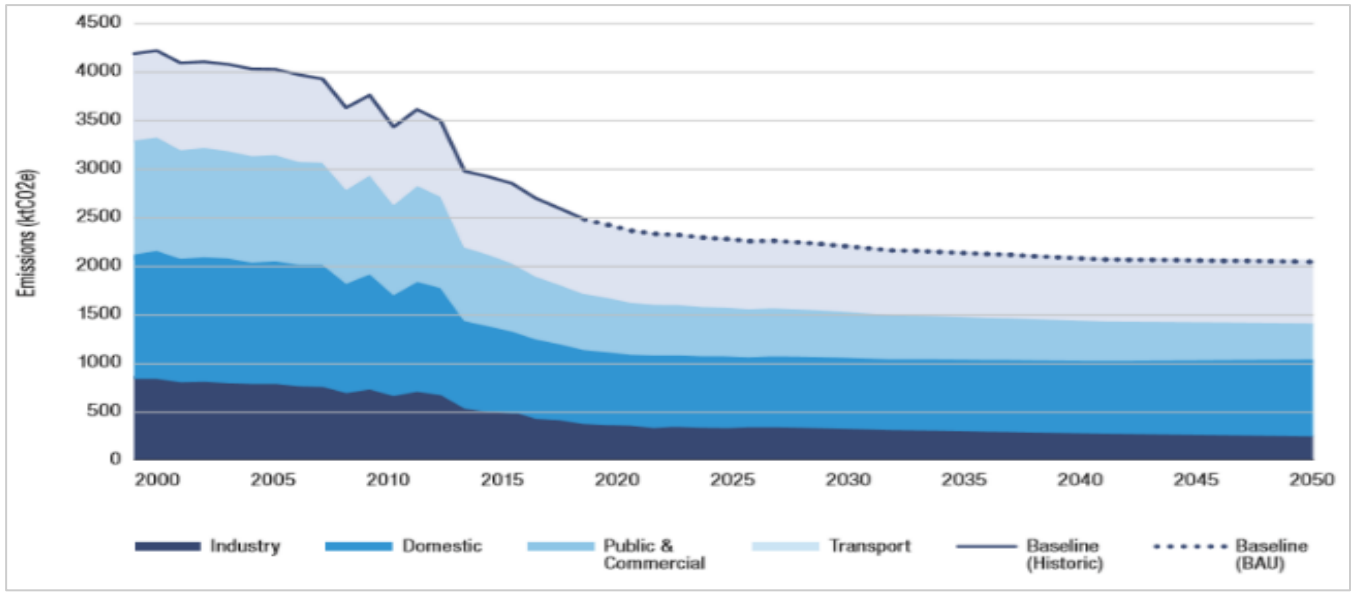


Figure 6: Cumulated emissions reduction potential by scenario. Based on 2050 baseline. A Net Zero Carbon Roadmap for Edinburgh, Place-Based Climate Action Network

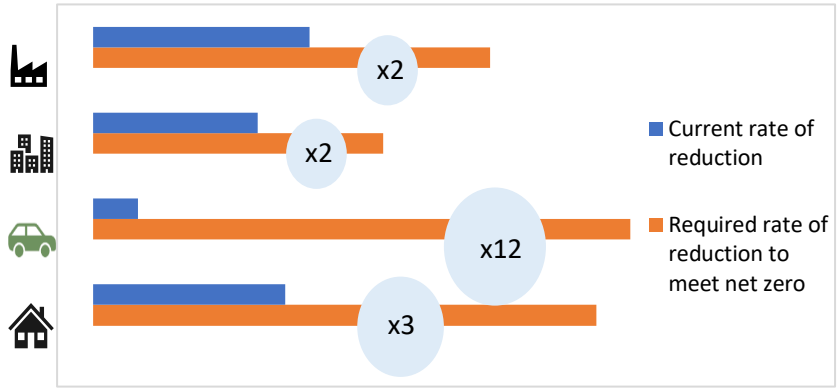


Figure 7: Current rate of reduction (average between 2000-2020) and average required rate of reduction to net zero 2030. Note that the figures are indicative of the scale of change required, based on historic and current figures sourced from PCAN

Examples of what 200 $ktCO_{2e}$ equates to are given in Table 1.

Table 1: Examples of activity required to reduce 200 $ktCO_{2e}$, by sector

Activity	Carbon reduction activity	Activity level required	Amount of expected saving (tCO_2e)
Reduction in freight km	5% reduction in HGV and LGV freight km travelled	26,000,000 km taken off the road	9,400
Reduction in personal car use	12.5% reduction in petrol and diesel car km travelled	290,000,000 km taken off the road	49,000
Retrofitting of homes	Reduction of 25% in average household electricity and gad use	50,000 homes	39,000
Retrofitting of commercial/ office space	Reduction of 20% in average electricity and gas use per m2	10,000,000m2	91,000
Decarbonisation of the electricity grid	2% reduction in the average UK grid mix		10,000
		TOTAL	**198,000**

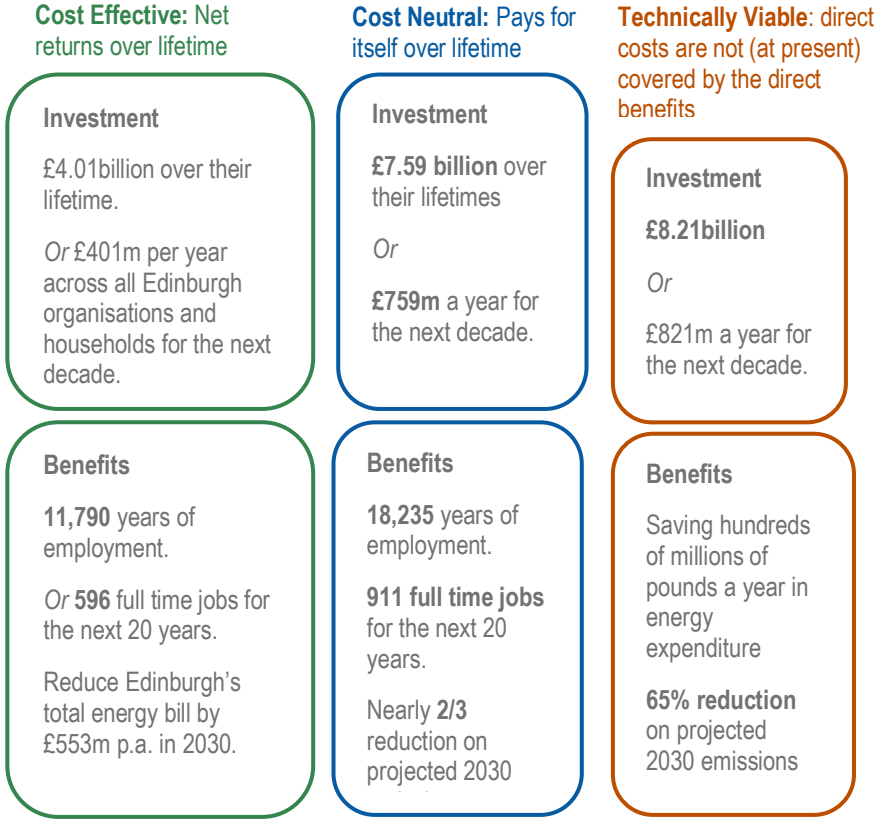


Figure 8: Investment and benefits of net zero. Adapted from A Net Zero Carbon Roadmap for Edinburgh, Place-Based Climate Action Network

The economic case for net zero and climate resilience

The need to invest in climate action is clear, but it also makes economic sense. Not acting results in costs to the economy and society from having to deal with climate change impacts, such as flooding, which far outweigh the costs of investing now to secure a sustainable future. [13,14,15]

The World Health Organisation has calculated that the value of health gains from actions to reduce global emissions would be around double the cost of implementing them.[16]

The Wellbeing Economy Alliance also reported that failure demand costs to national and local government in Scotland can be estimated at £771 million per year due to global warming, and £956 million per year due to air pollution[17].

Investing now in climate action not only prevents future costs, it can also deliver financial returns, for example through clean energy generation.

Edinburgh can get 65% of the way to net zero by investing in interventions which pay for themselves and/or deliver net returns or significant savings over time, based on economic assessment work by the **Place-Based Climate Action Network (PCAN)**.

The economic case for known possible interventions is classified into three categories:

1. Interventions that produce net returns over their lifetime (Cost-Effective)
2. Pay for themselves over their lifetime (Cost-Neutral)
3. Interventions which deliver significant savings, but where their direct costs are not (at present) covered by the direct returns (Technically Viable).

Table 2: Cumulated emissions reduction potential by scenario. Place-Based Climate Action Network; Achieving Net Zero report

Interventions	2030 Reduction on BAU Baseline
Cost Effective	51%
Cost Neutral	57%
Technically Viable	65%

More than half (51%) of the emissions reductions required to achieve net zero can be met by cost-effective interventions.

A further 14% can be achieved through cost neutral and technically viable interventions. The last 35% would need to be met through innovation and or 'stretch' options (i.e. a full transition to net zero buildings, a rapid acceleration of active travel, a reduction in meat and dairy consumption, an increase in green infrastructure).

Not all of these options need new funding, and some could be delivered by spending existing resources differently. In addition, the modelling shows how investment in net zero action will offer significant economic benefits to the city, Figure 8 on the previous page.

These figures are modelled on likely rates of uptake for key measures such as the switch from fossil fuels for transport, and from natural gas for cooking and heating.

The economic modelling also demonstrates that returns on investment from these measures will continue beyond 2030, delivering an ongoing economic benefit to the city in financial terms, as well as other socioeconomic, health and wellbeing benefits.

City innovation to achieve net zero

The model shows we can achieve net zero by 2030 by deploying innovative "stretch" measures across the city.

[13] Climate change: Consequences of inaction, OECD, Accessed April 2021
[14] The costs of climate inaction, Nature, 2018. Accessed April 2021

[15] Climate inaction costlier than net zero transition: Reuters poll | Reuters, October 2021
[16] World Health Organisation, 2018

[17] Failure Demand: Counting the true costs of an unjust and unsustainable economic system, A Chrysopoulou, M Anielski, M Weatherhead, Wellbeing Economy Alliance, 2021

Removing the final 35% of our city emissions by 2030 requires systems innovation to accelerate uptake of critical measures. Options could also include large-scale tree planting, accelerated adoption of active travel, or the electrification of industrial heating and cooling.

The model also includes deployment of new technologies for which we can model the potential for emissions reduction but where there is not yet the data for economic modelling at city scale.

Investment, development and deployment of zero carbon technologies is accelerating globally, giving confidence in the availability and effectiveness of new measures over the next decade, and the changeover to renewables in UK electricity generation has provided examples of how adoption of new technologies can rapidly accelerate emissions reduction.

Policy context

To meet our net zero ambitions, we need to take a whole system, city wide approach, ensuring we make the most of every sphere of influence, and every opportunity for transformation the city has available to it.

In June 2020, the results of the Edinburgh 2050 City Vision project were published, reporting on a three-year conversation with Edinburgh residents on their ambitions and aspirations for the future of the city. Those results set out a vision of an Edinburgh in 2050 being:

- A **thriving city** that is clean, green and sustainable.
- A **welcoming city** that is happy, safe, and healthy.
- A **pioneering city** built on data, culture, and business.
- A **fair city** that is inclusive, affordable, and connected.

This Climate Strategy is one of a number of plans and programmes designed to transform Edinburgh over the next decade and meet those long-term ambitions.

Figure 9: Promotion of the 2050 City Vision

Local plans and strategies

Edinburgh Partnership Community Plan provides a framework for collaboration between city stakeholders, with a focus on joint working to reduce poverty and inequality within the city and improve the quality of life for all citizens. This framework incorporates joint action to deliver a more sustainable future for the city, delivery of which will be informed by this Climate Strategy.

Figure 10: The three key priorities from the Council Business Plan

Council Business Plan: Our Council, Our Future was published in February 2021 and is built around three priorities to make Edinburgh a sustainable and net zero city by 2030, end poverty by 2030, and ensure wellbeing and equalities are enhanced for all, as shown above in Figure 10. This Climate Strategy is a critical part of the delivery programme to meet these ambitions.

This strategy does not stand alone, but is part of wider local, national and international policies and programmes.

Council Emissions Reduction Plan: sets out an initial pathway to net zero for the City of Edinburgh Council by 2030, targeting the Council's major emissions sources. The plan reflects the Council's commitment as a signatory of the Edinburgh Climate Compact.

City Plan 2030: will set out the policies and procedures needed to manage the sustainable development of Edinburgh over the next ten years.

- Alongside these key plans, delivery of this strategy will also be critical to meeting the city's ambitions for:
- A green economic recovery and renewal post pandemic, which is set out in a new **Edinburgh Economy Strategy.**
- An environmentally sustainable tourism sector, as set out in **Edinburgh's 2030 Tourism Strategy.**
- A safer and more inclusive carbon neutral transport system described by the **City Mobility Plan.**
- A vibrant and people-focused city centre as described by the **City Centre Transformation Strategy.**
- A fairer, more inclusive city as set out in the **End Poverty in Edinburgh** delivery plan.
- A thriving, green, biodiverse city through the **Thriving Green Spaces Strategy** and **Edinburgh Biodiversity Action Plan.**
- An outstanding historic cultural city, protected through the **World Heritage Site Management Plan** a vibrant, thriving and sustainable local food economy, as set out in the **Edinburgh Food Growing Strategy**.

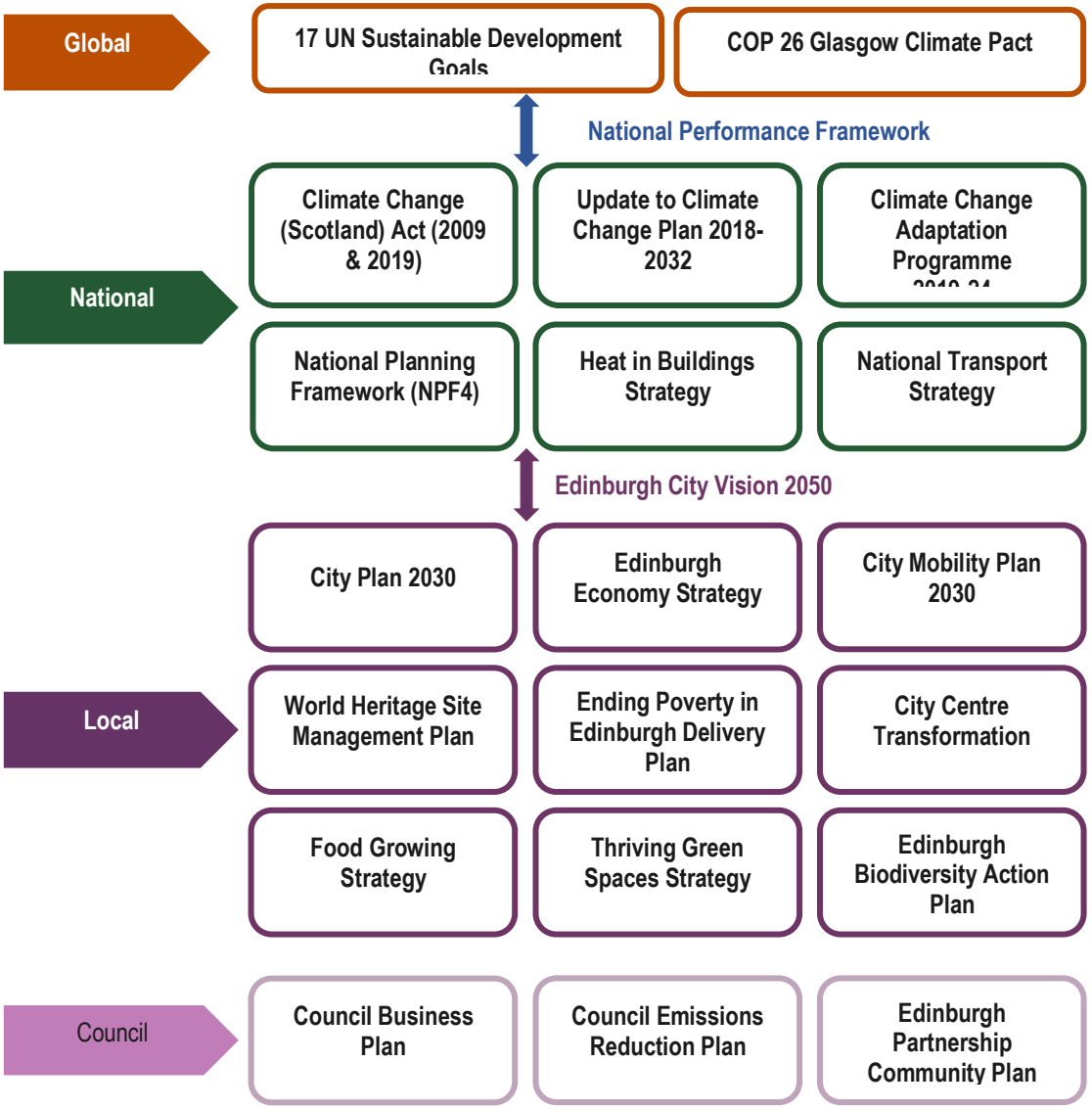


Figure 11: Summary of Policy context

National policy context

This strategy is aligned to the national net zero and adaptation programmes and sets actions to deliver net zero ahead of the Scottish target of 2045. Significant policy frameworks relevant to this strategy include:

- The Climate Change (Scotland) Act 2009.
- Update to Climate Change Plan 2018 – 2032.
- Scottish Climate Change Adaptation Programme 2019 – 2024.
- Scotland's National Transport Strategy 2020.
- Scotland's Heat in Buildings Strategy 2021.
- Draft Scotland 2045 - Fourth National Planning Framework ("NPF4").

These are detailed in Figure 11 on the previous page.

UN Sustainable Development Goals
The UN Sustainable Development Goals (SDGs)[18] have been adopted by all United Nations member states. They set out an interlinked set of priorities and actions to end poverty, improve health and education, reduce inequality, and spur economic growth, as well as tackle climate change and working to preserve oceans and forests.

Scotland's national performance framework (NPF) sets out how the 17 SDGs have been incorporated into 11 cross-cutting outcomes for Scotland which are reported through national indicators.[19]

This Climate Strategy sets out a range of actions which will also support both Scotland's NPF and the UN SDGs.

COP26 Glasgow Climate Pact
The Glasgow Climate Pact20 was signed as a result of COP26 in November 2021. It focuses on strengthened future emissions reduction pledges, financial support to developing countries for adaptation, phasing out fossil fuel subsidies, and reducing the use of coal.

Subsidiary agreements between smaller groups of parties include pledges on deforestation, methane emissions, ending sales of fossil fuel cars, and ending of investment in coal power generation.

Edinburgh's 2030 Climate Strategy will help the Scottish and UK Governments deliver on national climate commitments made as part of the UK's adoption of the Paris Agreement (in 2015) and the Glasgow Climate Pact (in 2021).

[18] Sustainable Development Goals, United Nations, accessed May 2021

[19] National Performance Framework, Scottish Government, accessed May 2021

[20] https://unfccc.int/sites/default/files/resource/cma2021_L16_adv.pdf

City partner action to achieve net zero

City partners must work together

This strategy is aimed predominantly at partners within the city who have a duty to transition to net zero, have significant city emissions footprints, and the power and budgets to make impactful change.

However, it also speaks to citizens, communities and smaller businesses, highlighting actions they could take to help drive down emissions.

Acting together, these 'city partners' can lead the way in delivering a vibrant, net zero, sustainable city where everyone can thrive.

Climate action is already underway

Citizens and city partners can, and already do, take action on climate change. Organisations across the city have their own sustainability plans and programmes of activity that are already reducing the city's emissions. If we are to achieve net zero by 2030, we must all go further and faster.

The Council has a key leadership role

The City of Edinburgh Council has a key role to play in providing city leadership on climate change. The Council is a founding signatory of the Edinburgh Climate Compact and has pledged to reduce its own organisational emissions to net zero by 2030.

It has also committed to using the levers that are within the control or influence of the Council to enable net zero action in the city. These levers include the ability to:

- Build strategic relationships and collaborations for change.
- Deliver high-quality low carbon infrastructure and services.
- Make strategic investments to drive change.
- Lobby for change as the capital of Scotland and a major UK city.

Collaborations

To maximise the Council's levers to influence change, we need to work with partners, using the city networks, and partnerships to promote opportunities to co-produce and implement real change.

Infrastructure and services

The Council has responsibility for manging and investing in key infrastructure, including housing, transport and the built environment, which can help create conditions that will support the city's transition to net zero and climate resilience.

As a major service provider for the city, the Council can also help deliver changes that support net zero. For example, through waste and recycling, providing sustainable public transport and planning frameworks.

Strategic Investments

The Council can use its considerable spending power to promote fair net zero business practices, using community benefit clauses to maximise social and environmental value for the local community.

These benefits include green jobs and training opportunities, a strengthened civil society, improvements to the local environment and mitigation of climate change impacts.

The Council can also influence strategic investment programmes (including its investment in active travel infrastructure, house building and retrofitting operational estate) to create new supply chains and green growth opportunities for the city.

Influencing for change

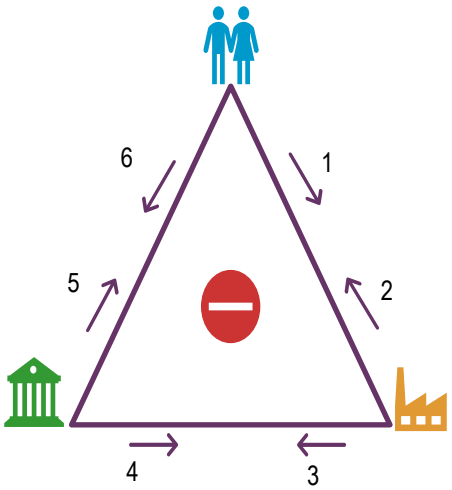
The Council has significant lobbying power as the capital city of Scotland to work with all levels of government to influencing policy and legislation. This includes opportunities to advocate for greater investment in tackling climate change and strengthened powers for local government to take net zero action change across the city.

Transforming the city means we all need to change, and that change must accelerate quickly.
No single city partner acting alone has all the powers, resources or capacity needed to achieve net zero. Transforming Edinburgh to become a net zero city by 2030 will mean city partners, citizens and communities working together in new ways.

All of us will need to be willing to change the way we do things. Whether that's the choices people make in their everyday lives, the way small businesses operate, or the strategic, policy and spending decisions made by public and private sector organisations, as demonstrated by Figure 12 in the inaction triangle.

As part of a strategic city approach, Edinburgh's impact on emissions will be far greater than the sum of its parts. As a result, the Council will convene key city partnerships to collaborate on and deliver this strategy's aims. This collective effort will ensure Edinburgh can make fast progress and be at the forefront of funding opportunities to invest in change.

Overcoming the inaction triangle



1. "Industries need to propose low carbon solutions"
2. "Consumers need to send a clear message through their purchases".
3. "The Government needs to change the rules of the game (funding, regulation etc)."
4. "Large businesses have more financial resources to start the change."
5. "We need to feel that decisions are backed by citizens"
6. "The Government needs to act first."

Shifting the responsibility to others delays action. We all need to act together.

Figure 12: Overcoming the Inaction Triangle. (Adapted from Pierre Peyretou)

Asks of city partners

To help drive change we're setting out a number of strategic asks of the key sectors within the city, focused on the actions which will have the most impact; targeting partners with the greatest emissions and the greatest power and resources to make change. We are asking:

- **All city partners** to sign up to the Edinburgh Climate Compact and pledge to reduce their emissions, adopt sustainable business practices and support their staff to make more sustainable choices in their professional and private lives.
- **Citizens** to make more sustainable choices in their everyday lives and use their democratic and purchasing power to support change in others.
- **Civil society** to support ongoing open dialogue about the transformation which needs to happen in the city and how we can collaborate to take decisions and deliver change together.
- **Public bodies** to join up budgets and work together in a place-based way to create economies of scale and design services and new infrastructure around the needs of communities. Using their purchasing power to encourage markets and green supply chain and skill development.
- **Edinburgh Climate Commission** to challenge the public sector to go faster and further on tackling climate change and call on the private sector to play a greater role in supporting change. The Commission must hold Edinburgh to collective account, while offering expert advice and support for change through initiatives like the Edinburgh Climate Compact.
- **Investors** to invest in and help city partners develop a pipeline of scalable projects to attract capital into the city. For programmes that deliver social, economic and environmental benefits, as well as financial returns.
- **Developers** to make the transition to net zero practices now, moving faster than national regulatory requirements, to ensure Edinburgh can lead the way on net zero development and growth.
- **Businesses** to adopt net zero business models as part of a green and resilient Edinburgh economy. Invest in sustainable practices which also benefit the communities they're a part of.
- **Edinburgh's universities** to turn their academic expertise into support for net zero programmes and projects. Unlock the data, innovation and research city partners need to adopt change with confidence. Target the skills needed to deliver the city's transition.
- **The Scottish Government** to provide a progressive legislative and regulatory framework, which enables local government. This needs to be devolved at the appropriate level to support scale and speed of action in Edinburgh. Lead on communication and information that supports behaviour change alongside the resources needed to help citizens and city partners make them in our homes, communities and places across the city.

Edinburgh Climate Compact

Edinburgh Climate Commission has developed a City Climate Compact which sets organisational climate commitments for Climate Champions to adopt as part of their leadership on climate action.

Signatories to the compact promise to make changes within their own organisation and sector which will support the radical reduction of Edinburgh's greenhouse gas emissions and contribute to a green recovery for the city.

The compact also asks signatories to publish their current emissions and information about their actions to reduce climate impacts and undertake benchmarking activities.

The compact currently has 18 signatories from across the public and third sectors, as well as from the construction, finance, festivals, energy and higher education sectors.

How we take decisions together

Creating a governance framework that supports effective action at speed and scale
Achieving net zero by 2030 will require city-wide collaboration at a level, depth and pace that exceeds the city response to Covid-19.

A new Climate Strategy Investment Programme Board will bring city partners[21] together to:

- Provide city wide leadership in creating a green, clean and sustainable future for the city.
- Oversee, agree and drive delivery of five thematic workstreams tasked with developing the investment pipeline for the city.
- Develop a green infrastructure investment plan for Edinburgh.

The Programme Board would be accountable to the Edinburgh Partnership Board and comprised of senior officers with the authority to commit their organisation (subject to their own governance arrangements) to the investment proposals considered.

The Board will be supported by five workstreams, led by city partners, and responsible for the strategic approach and development of the project pipeline for that theme. Workstreams will be led by key partners and will drive activity across the following priority areas:

- Adaptation
- Energy efficient public buildings
- Citywide heat and energy
- Transport infrastructure
- Just economic transition

The Local Outcomes Improvement Plan (LOIP) Delivery Group[22] will contribute to driving wider strategic climate action as part of its work to make sure that residents across all parts of Edinburgh have enough money to live on, access to work, training and learning opportunities, and a good place to live.

City Region Deal partners will be represented throughout the structures, with responsibility for interfacing with the City Region Deal Partnership to identify and action opportunities for strategic collaboration at the regional level.

Case Study: Example of wider partnerships also relevant to the strategy's delivery
Edible Edinburgh is a cross-sectoral partnership, set up in 2013, with the aim of developing Edinburgh as a sustainable food city.

A leadership group meets bi-monthly to provide overall strategic direction for the partnership and to monitor and co-coordinate implementation of Edible Edinburgh's Sustainable Food City Plan, Edinburgh's Food Growing Strategy and other sustainable food work in the city.

The partnership is chaired by the Council's Sustainability Champion, Councillor George Gordon. Three subgroups on health, economy and sustainability meet bi-monthly to co-ordinate action, foster collaboration and engagement and plan events. The subgroups comprise representatives from a range of city public, private and third sector organisations.

The wider partnership meets quarterly and includes a wider network of food organisations, community groups, growers and activists who come together to network, facilitate connections and collaboration between a broad range of food actors, supported by Edible Edinburgh's leadership group and subgroups.

Edinburgh's Climate Commission will continue to work independently to influence and provide constructive challenge and expertise to all parts of the city as we work to deliver our net zero ambition.

The strategy's delivery will be informed and driven by citizen's views – through the Council's democratic processes, through the work of the Commission, and through a new **Edinburgh Community Climate Forum,** to be established by EVOC and Our Future Edinburgh to provide citizens with information, support, and a mechanism for collaboration on climate action at

[21] Full membership of the Programme Board is under discussion with city partners. Initial core members include City of Edinburgh Council; NHS Lothian; Edinburgh University; SP Energy Networks; Scottish Gas; Scottish Water; Scottish Futures Trust

[22] The Local Outcome Improvement Delivery Group is part of Edinburgh Partnership

both the city and neighbourhood level to co-produce better outcomes for communities.
These structures are not exhaustive – there are many other groups that have a role to play in supporting whole-system climate action and the governance framework described in this strategy is intended to interact with that wider landscape as needed to drive forward city climate action at pace and scale.

Figure 13 opposite sets out proposed governance and delivery arrangements to support the city to deliver the 2030 Climate Strategy.

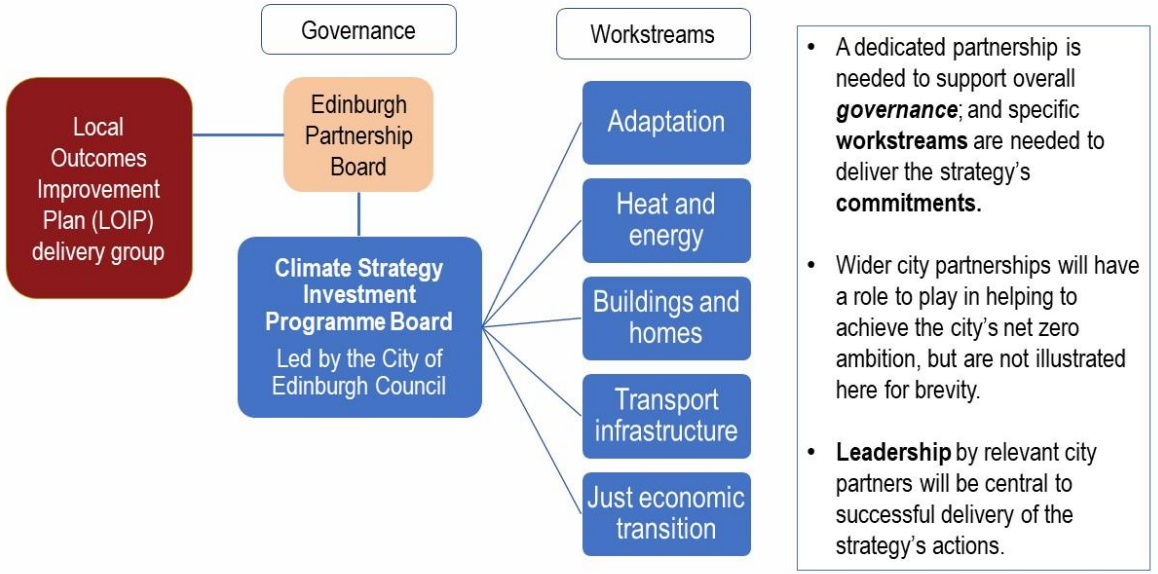


Figure 13: Proposed governance and delivery mechanisms

Net zero, climate resilient development and growth

The city's needs are growing

Like many cities, Edinburgh is growing, with our population expected to increase by 6 % to **over 560,000 people by 2030** as demonstrated in Figures 14 and 15**.** This will bring new skills to the city and help our communities thrive.

Population growth also creates demand for high-quality, affordable housing and new local services and facilities, with the city estimated to require a minimum of **50,000 new homes by 2045**.

We need to be able to meet those needs in a sustainable way which protects greenspaces and biodiversity and manages demand for land and the creation of new infrastructure such as roads.

Population:
+13 % between 2017 and 2045

- +43% aged 75 and over
- +26% pensionable age
- +12% working age
- *Stable* children population

Households:
+21% between 2018 and 2045
(~ 49,000 new homes)

Figure 14: Population projections for Edinburgh [NRS Scotland - Population Projections for Scottish Areas (2018-based): Data Tables, Table 3]

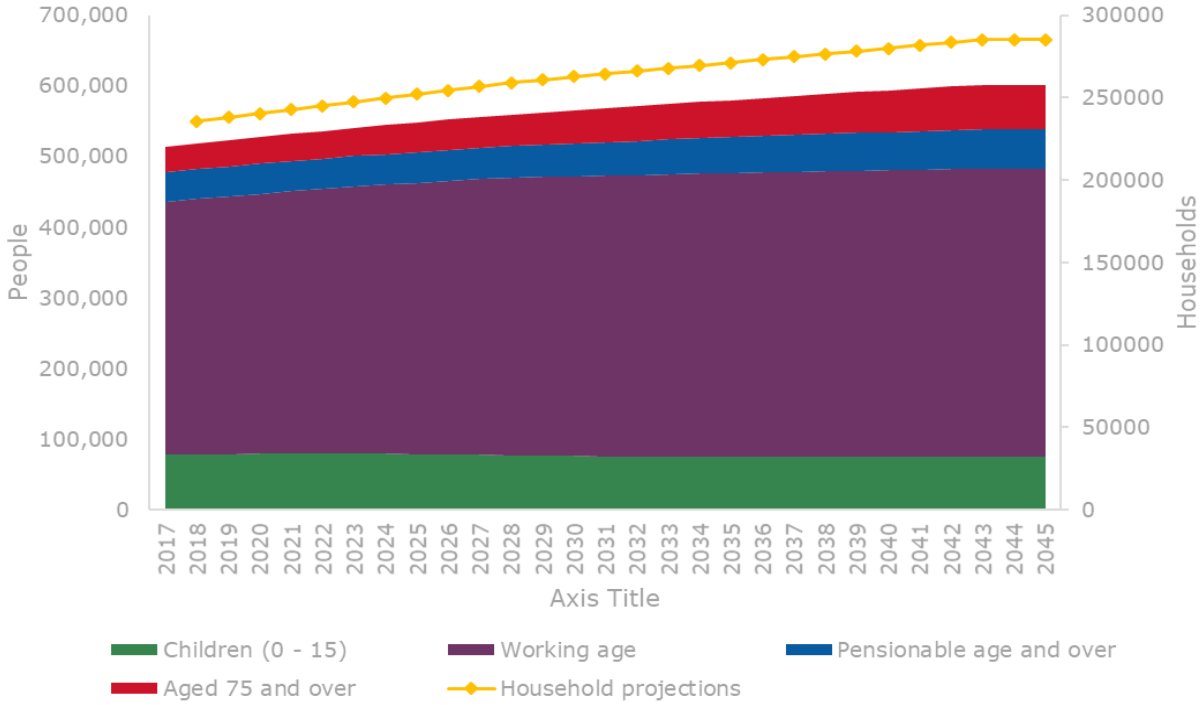


Figure 15: Population projections for Edinburgh by 2045 [NRS Scotland - Population Projections for Scottish Areas (2018-based): Data Tables. Table 3]

The way we use land can secure social, health, climate and economic benefits for the city

In developing the city sustainably, we have an opportunity to ensure investment in infrastructure and enhancing our greenspaces delivers social, health, climate, and economic benefits. We have choices about where and how this development is delivered, and an opportunity to ensure it creates local jobs and skills opportunities, uses innovative construction methodologies to minimise emissions and re-invigorates the city's urban environments.

We need to protect our greenspaces and adapt our places and communities to be resilient to climate change

Climate change will bring increased flooding, coastal erosion and more frequent severe weather – causing damage to property and disruption for citizens. We need to adapt our communities, economy, natural and built environment to be resilient to the unavoidable impacts of climate change.

In doing so, we have an opportunity to use nature-based solutions to adaptation, which also protect and enhance the city's natural environment and biodiversity.

Our vision for 2030

We will create resilient places and spaces for low-carbon living

We will provide for Edinburgh's population growth, by re-using land that has already been developed (i.e. brownfield or vacant land). The city will grow sustainably, improving biodiversity across the city and the public health of citizens.

Our residents will live in high-quality net zero affordable homes that are resilient to climate change, in thriving low-traffic neighbourhoods that meet their everyday needs – whether that be for work, family or leisure time and reduce the need to travel to other parts of the city.

New developments will provide new and better spaces for leisure, nature, and community food growing that improve residents' wellbeing and quality of life.

Edinburgh will be cleaner and have more greenspaces and natural habitats that we allow to flood periodically, as a way to help manage increased rainfall. People's gardens will have fewer hard surfaces and more natural space to help rainwater drain and provide habitats for wildlife.

Natural habitats will be preserved across the city to help improve air quality, increase the variety of plants and wildlife, and protect the city from flooding and other climate change impacts.

Our strategic approach

To ensure the city is able to grow sustainably, we will set high development standards and put in place new planning policies that enable net zero, climate resilient growth through a new local development plan – designing in climate resilience and biodiversity enhancement to deliver a 'climate ready city'.

We will work with developers and the construction industry to encourage early adoption of new low-emission standards, due for introduction in 2024.

We will prioritise **re-using land** that has already been developed to protect the city's greenspaces; **re-purpose or enhance existing infrastructure** where possible; test **innovative approaches to resilient net zero development**; and roll out place-based approaches through **20-minute neighbourhoods** which support citizen **wellbeing.** We will protect and enhance the city's **natural capital**, delivering thriving greenspaces and adapting the city's coast.

Understanding the risks climate change presents for the city

We know that climate change will impact on all sectors of the city, but we do not have sufficiently robust and detailed data driving investment decisions.

We will carry out a city-wide climate change risk assessment and economic analysis so that we understand the costs of failing to adapt, and the wider economic and social benefits that adaptation projects can deliver – using this to provide a robust evidence base for investment.

Working in partnership to deliver a whole-city approach to adaptation

City and region partners will work together to tackle regional and cross-border climate impacts, including coastal and river flooding, damage to infrastructure and transport disruption. Where possible, this will prioritise 'nature-based solutions' such as rain gardens and flood plains – helping to protect and enhance our natural and built environments.

As the next phase of Edinburgh Adapts[23], the Council will convene city and regional partners to collaborate on a long-term 'Climate Ready Edinburgh' plan

.

Delivering a transformed city centre

In 2019, the Council set out a ten year 'City Centre Transformation Programme' which will see the heart of the city re-designed to deliver cleaner, greener public spaces which prioritise access for walking, wheeling and cycling, and public transport. The economic recovery of the city centre post-pandemic is a key priority within a refreshed Edinburgh Economy Strategy, which includes actions on city centre recovery and a commitment to develop a 5-year City Centre Action Plan.

Future city development will ensure social, economic and climate benefits are evenly distributed beyond the city centre, by developing connected and climate resilient net zero neighbourhoods that strengthen local economies and improve people's health and wellbeing.

[23] Edinburgh Adapts (2016-2020) was Edinburgh's first vision and action plan to adapt and prepare the city for the impacts of unavoidable climate change.

Ensuring our buildings, homes and infrastructure are climate resilient

We will lay new planning policy foundations in the City Plan 2030.[24]

We will work with property owners, developers and the construction sector to improve design and the quality of buildings, to support climate resilient place-based approaches to development and infrastructure. This will include utilising green and blue infrastructure (such as green roofs and urban ponds) and permeable surfaces to reduce flood risk and improve air and water quality.

Working with Edinburgh World Heritage and Historic Environment Scotland, we will develop a plan to adapt Edinburgh's UNESCO World Heritage site to be resilient to climate change in a way that protects its heritage values.

Case Study: Using blue and green infrastructure to reduce flood risk

Rain gardens significantly reduce flood risk, protect rivers and waterways, and provide wildlife habitats by capturing water and slowing the rate at which it enters the drainage system.

The Royal Botanic Garden Edinburgh is using its rain garden to manage flooding across the garden and to study what trees, shrubs, and wildflowers are best suited for rain gardens.

Similar to rain gardens, Edinburgh has a number of green roofs and hollows that provide nature-based solutions to intense rainfall and flooding, and 10,000 rain gardens for Scotland mapping these sites.

Source: Royal Botanic Garden Edinburgh (RBGE)

[24] Local Development Plans are prepared through a statutory process. Edinburgh's City Plan 2030 due to be submitted to the Scottish Government for examination in 2022 and adopted in 2023.

A new approach to urban living

Through the City Plan 2030, the Council will work with developers, investors and landowners to deliver climate resilient net zero development in the city – ensuring that wherever possible housing demand and other development needs are met by re-using land that has already been developed, helping to manage pressure on greenfield land.

This means that more new developments will be higher density and mixed use, in sustainable locations, with easy access to jobs and services. Neighbourhoods like these will help cut emissions by reducing the need to travel and will create markets for new local businesses, helping to create more local jobs and strong local economies that build community wealth.

Low carbon affordable housing

Through a 10-year strategic housing investment plan, the Council will lead the way in ensuring all major new Council- housing is constructed to a new net zero design brief, which includes use of low and zero carbon technologies as an alternative to gas boilers. This will be ahead of the Scottish Government 2024 deadline for new builds to have zero emissions heating systems.[25]

We will work with national and local partners to explore approaches to construction that are net zero across both operational and embodied emissions; beginning with an Edinburgh Homes Demonstrator pilot that tests off-site manufacturing methodologies to increase performance, reduce waste and lower embodied emissions.

Learning from the pilot will be rolled out across city region partners' housing pipelines.

Investing in housing
The Council plans to spend £2.8 billion of capital investment over ten years to deliver 10,000 new sustainable and affordable homes by 2027, and to modernise existing Council-owned homes to be energy efficient.

Source: City of Edinburgh Council Budget 2021/22

Prioritising water management and nature-based solutions to climate impacts

We will prioritise nature-based solutions to water management, carrying out a Strategic Flood Risk Assessment to understand the risk to the city's homes and delivering a long term and sustainable approach to water management across the city.

Making the most of nature
The Council is committed to improving our parks, food growing sites and urban forests, and has secured £4.5 million of capital investment in 2021/22 to support this.

Source: The City of Edinburgh Council Budget 2021/22

Protecting and enhancing the city's natural assets

We will deliver the **Edinburgh Million Tree** city initiative and create a **'green and blue network'** of connected waterways, greenspaces, and active travel routes that will provide enhanced environments for citizens and protect the city's wildlife.

A **Nature Network for Edinburgh** will identify opportunities to enhance the habitat network in Edinburgh to allow species to migrate and adapt to climate change. It will also map supply and demand of several key ecosystem services within Edinburgh (e.g. flood regulation, air purification, health benefits etc.) and identify opportunities for green infrastructure with multiple benefits for both people and nature.

These initiatives will help provide nature-based solutions to flooding, improving air quality and reducing the urban heat effect through shading and cooling.

We will seek opportunities to utilize the city's public sector estate to protect greenspaces, enhance biodiversity, reduce carbon emissions and improve health.

We will deliver development frameworks that adapt the city's coast to be resilient to climate change. We will begin with the delivery of a **new coastal park** as part of the **redevelopment of Edinburgh's Waterfront** that will create jobs and provide high-quality greenspaces, supporting biodiversity and providing outdoor recreation space.

[25] New Build Heat Standard: scoping consultation, Scottish Government, December 2020

Innovation in city development

We will **deliver ambitious net zero developments at Granton Waterfront and the BioQuarter,** creating centres of excellence and using green and blue infrastructure, like living roofs, ponds and rain gardens, which enhance the city's natural habitat and build communities that are resilient to flooding and other impacts of climate change.

City partners will work with the development sector and research and innovation partners to test and develop innovative approaches to construction, energy generation, and community wealth-building.

Building resilient communities by re-designing services to localise support

By joining up services and thinking differently about how buildings are used, we can free up resources to invest in our best buildings to make them more energy efficient and develop them as 'community hubs' where people can access a wider range of services locally.

We will work with public, community and voluntary sector partners over the next 10 years to radically re-design services across local hubs in line with the 20-minute neighbourhood model, Figure 16.

This will deliver improved services to areas experiencing inequalities; focus on natural town centres; and ensure more rural communities can access services with minimal travel.

Figure 16: Features of a 20-minute neighbourhood

Case Study: Using the public sector estate
NHS Lothian are the first health board in Scotland to assess the biodiversity in its estate.

With 81 hectares of greenspace throughout its 174 hectare estate, NHS Lothian is responsible for significant natural capital that supports biodiversity and provides a wide range of benefits including regulating air quality, taking up carbon and increasing health and wellbeing.

This biodiversity audit and climate change assessment is a first step towards developing a more strategic approach to using NHS Lothian's green space as a key health and environmental asset.

A tool has been developed that will allow NHS Lothian to continue to assess its biodiversity, carbon sequestration and air quality regulation when planning or completing estate change, including calculating the net value of planned investments over their lifetime, usually 50 years.

Net zero, climate resilient development and growth

Outcomes

- People can access the support they need in the places they live and work and local neighbourhoods are resilient to the impacts of climate change.
- City development and investment deliver net zero growth and economic opportunities that protect and enhance the environment.
- The city's wildlife is thriving, and biodiversity is enhanced, protecting the city's ecosystem and helping absorb carbon.

Strategic actions

1. **Laying the policy foundations to support net zero development which designs in climate resilience**
   - 1.1. Set new planning and policy guidance within the City Plan 2030
   - 1.2. Work with developers, investors and landowners to deliver net zero climate resilient development of the city

2. **Re-designing services to meet citizen's needs locally**
   - 2.1. Re-design services and amenities to deliver sustainable 20-minute neighbourhoods across hub locations

3. **Leading the way on net zero, climate resilient development**
   - 3.1. Work with public sector partners to identify opportunities for exemplar policy approaches for new build operational estate
   - 3.2. All new Council-led housing developments within the 10-year sustainable housing investment plan will be net zero
   - 3.3. All new build learning estate projects will meet the Scottish Government's Learning Estate Investment Programme energy target and work towards the Scottish Net Zero Public Sector buildings standard.
   - 3.4. Develop innovative approaches to net zero development and construction which address both operational and embodied emissions
   - 3.5. Develop an off- site net zero construction methodology through the Edinburgh Home Demonstrator (EHD) project

4. **Renew the focus on climate resilience and accelerating the adaptation of the city**
   - 4.1. Undertake a city-wide climate change risk assessment and cost analysis (CWCCRA)
   - 4.2. The City of Edinburgh Council will convene city and region partners to collaborate on a long-term 'Climate Ready Edinburgh' plan, taking full account of the city's natural assets.
   - 4.3. Adapt Edinburgh's World Heritage Site to be resilient to the impacts of climate change
   - 4.4. Develop a regional approach to climate change risk assessment and adaptation, maximising opportunities to enhance the natural environment

5. **Developing a long-term and sustainable approach to water management across the city**
   - 5.1. Deliver a Water Management Vision and Strategy identifying the risks and co-

ordinating actions to alleviate impacts from all sources of flooding in the city.

5.2. Integrate design for water and flooding within the urban landscape using blue-green infrastructure

5.3. Deliver a network of green and blue spaces across the city which help protect our communities from climate change impacts, provide active travel routes, and protect and enhance the city's natural environment and biodiversity

6. Protecting and enhancing the city's natural capital to improve health and well-being, capture carbon, and deliver nature-based solutions to climate resilience

6.1. Deliver a co-ordinated approach to managing and enhancing Edinburgh's natural assets across key public sector operational estate sites

6.2. Deliver a city-wide programme to manage, protect and enhance greenspace and biodiversity – addressing the ecological and climate emergencies [action/milestone wording being finalised w/ teams]]

6.3. Deliver nature-based solutions to the impacts of climate change

6.4. Develop an Edinburgh Nature Network for the city

7. Protecting the City's coast

7.1. Adapt the city's coast to be resilient to climate change, beginning with delivering around 200 hectares of new and enhanced coastal park in Granton in north west Edinburgh.

8. **Delivering rapid whole-system change**

8.1. Call on the Scottish Government to use the lessons from responding to Covid-19 to enable accelerated local action and decision making on tackling the climate emergency.

9. Shared risk-taking to develop innovative solutions

9.1. Call on the Scottish Government to collaborate with the City of Edinburgh Council on shared risk-taking to develop innovative solutions to tackling climate change

10. Embedding net zero climate resilient requirements

10.1. Call on the Scottish Government to embed net zero and climate resilience requirements into new and existing policy, legislation, regulations and statutory guidance.

10.2. Call on Scottish Government to ensure Local Authorities have the powers and resources required to accelerate the pace of energy efficiency and climate resilience improvements to multi tenure tenement buildings.

Net zero energy generation and energy efficient buildings

Energy to heat and power Edinburgh's buildings is one of the biggest sources of greenhouse gas emissions in the city

Energy accounts for 70% of the city's emissions, with around half of this coming from domestic homes. Natural gas accounts for 39% of the city's emissions, with around two thirds of domestic energy, and around 40% of non-domestic, currently provided by gas.

Local renewable energy generation levels are low

The cost of electricity in comparison to gas is currently high, and Edinburgh has relatively low levels of local renewable electricity generation (currently only 2% of the city's total electricity consumption).

The city is growing, and energy demand is set to increase

The city is growing, with more people, new developments and more buildings across the public, private, commercial and domestic sectors driving the need for city-wide heat and energy generation and distribution solutions.

This will create increased demands on the infrastructure supporting our energy supply, with peak demand across the UK estimated to increase between 33 % and 58% by 2050.[26]

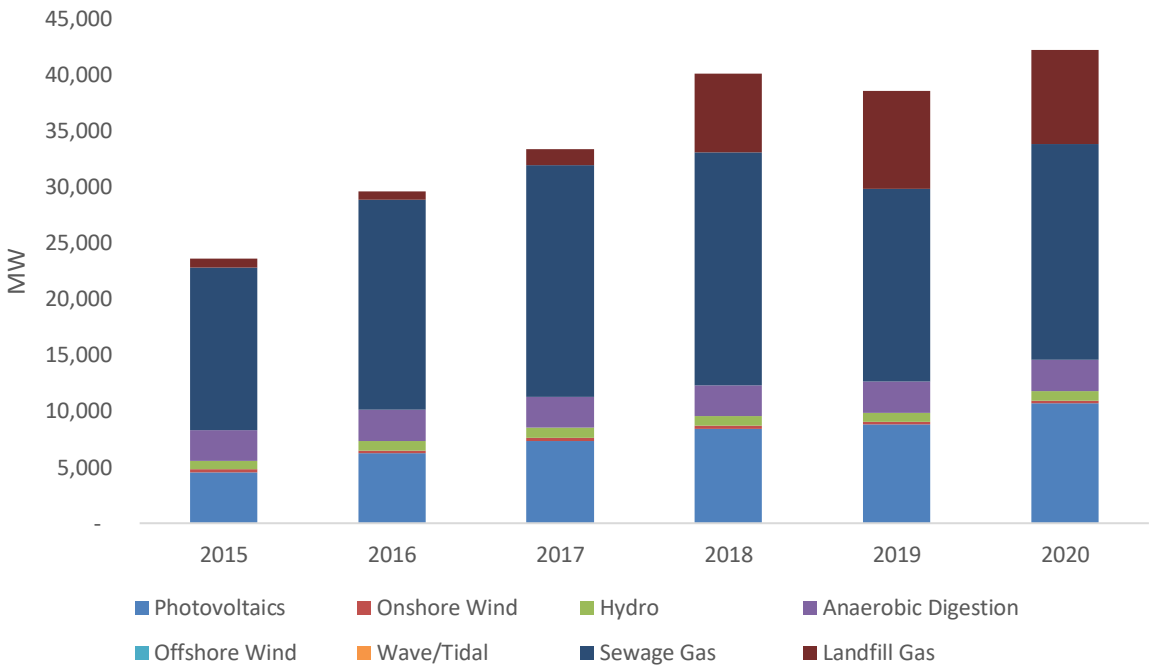


Figure 17: Renewable electricity generation (MWh/year) in Edinburgh. (Source: Department for Business, Energy and Industrial Strategy (BEIS) - Renewable electricity by local authority, September 2021)

[26] Future Energy Scenarios, National Grid, July 2020

The city's energy networks and supporting infrastructure need to change at speed

Local heat and energy generation and distribution (including heat networks) is largely considered on a development-by-development basis. This means as a city we need to make decisions in a more strategic way, and position Edinburgh to maximise the commercial, carbon reduction, energy savings and resilience benefits potentially available.

Green hydrogen may be able to offer future solutions, but the technology is still being developed and tested, and future requirements for hydrogen-ready appliances and a gas grid supporting it are not yet clear and still being piloted through innovative projects like H100 Fife or Hy4Heat.[27]. While maintaining watch on this innovation, the city will take an electricity first approach to decarbonising the city's energy.

The city has a high proportion of older buildings which need adapted to be energy efficient and resilient to the impacts of climate change

Edinburgh has a rich mix of heritage buildings and buildings in conservation areas which are an asset to the city's cultural wealth. These buildings make a major cultural, social and economic contribution to the city.

While these buildings require a lot of energy to heat and a bespoke approach to their adaptation, keeping them well conserved and maintained can improve their energy efficiency.

Edinburgh's Old and New Town is an UNESCO World Heritage Site and is already feeling the impacts of climate change. As well as its historic and cultural importance, it is a place where people live, work and study.

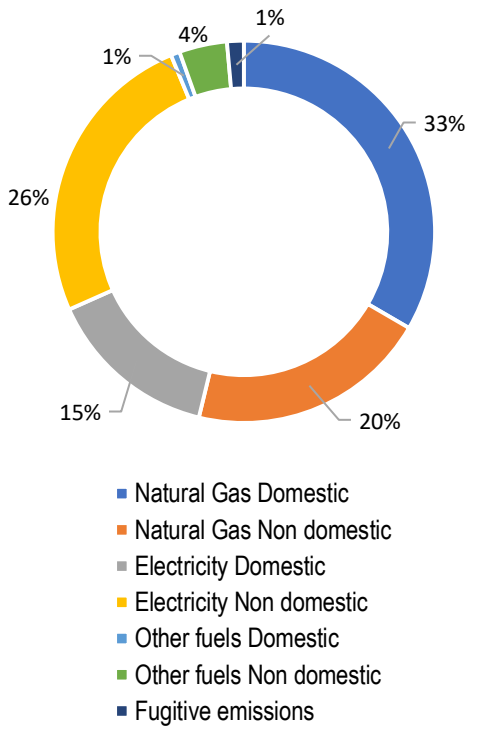


Figure 18: Greenhouse gas emissions by fuel source: (Source: Edinburgh Carbon Scenario Tool, based on Department of Business, Energy and Industrial Strategy (BEIS) datasets (2019/20 data)

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Around 48% of Edinburgh's homes were built pre-1945, with many requiring essential maintenance repairs and upgrading ('retrofitting') to become energy efficient and more resilient to future climate change.

47% of homes have energy performance certificate ratings of D or lower and measures proposed by the Scottish Government in its Heat in Buildings Strategy would mean that by 2033, all domestic properties will need to have an EPC rating of C or higher. For Edinburgh, this could be as many as 100,000 homes in Edinburgh that will require retrofitting.

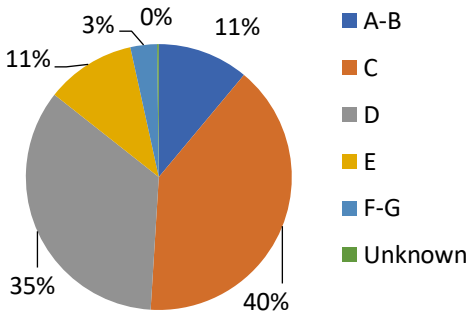


Figure 19: Breakdown of EPC data for domestic properties in Edinburgh (Source: Home Analytics v3.7 – estimate of EPC data across the Council area)

[27] H100 Fife, SGN, accessed June 2021; hy4heat, accessed June 2020

Only 15% of homes in the city are owned by the local authority or housing associations[28]. This means the city is dependent on businesses, owner-occupiers and private landlords investing in their buildings if we are to reduce the city's emissions and ensure buildings are climate resilient, with communal spaces and mixed-tenure buildings requiring owners to co-operate on organising retrofit works.

Many of Edinburgh's residents will need financial support to be able to meet the costs of retrofitting their homes to the required standards, and to reduce energy demand to a level where non-gas heating systems are affordable to run.

The costs of upgrading the city's public buildings are significant

Public sector partners also own large amounts of operational estate across the city, with the Council alone owning over 600 buildings – around 40% of which were built within the last 50 years, with 30% being over 100 years old. Other city partners, such as Edinburgh's universities and the NHS, face similar estate challenges.

The age, range, and complexity of the city's operational estate means the costs of retrofitting large operational buildings to become net zero is significant, and current financing models for resourcing retrofit have limited commercial return, making it difficult to lever the external investment needed.
Retrofitting large operational buildings takes a long time and comes with significant disruption to services given the number and size of buildings.

Ensuring action on energy delivers wider social and economic benefits

We have an opportunity to make investing in energy infrastructure and retrofitting the city's buildings an investment in Edinburgh's economic recovery.
Heat and energy development offer opportunities for public and private investment at scale, and with confidence in revenue-generating infrastructure.

Improving the energy standards of our buildings and developing new energy infrastructure presents opportunities to generate new markets, creating local jobs and skills development opportunities, delivering financial returns to be re-invested locally, which supports community wealth-building and a just transition to net zero.

Our vision

Our vision is that by 2030, citizens and businesses will be heated and powered by clean energy, and we will all live in homes that are warmer and healthier to live in.
Better-insulated, energy efficient buildings will have significantly **reduced energy demand, helping to lower costs,** and will be heated and powered by **clean energy** – including more locally generated or community-owned renewable energy – helping to reduce the risks of energy insecurity.
Schemes will be in place to ensure citizens can affordably retrofit their homes – **reducing running costs**, which in turn will help tackle fuel poverty.
Public services will be collocated in a smaller number of **high-quality energy efficient buildings,** that make better use of what we retain, to offer **joined up local services** that better meet our resident's needs, and deliver savings to the public sector that can be re-invested in services.

We will have preserved our UNESCO World Heritage site and historic buildings, taking an 'Outstanding Universal Value' approach, and protecting the embodied carbon they hold. The rest of our homes and city buildings will be fully adapted to our changing climate and will have heating and cooling systems that are able to deal with wetter winters and hotter summers.

The scale of the work required to improve Edinburgh's buildings and energy infrastructure means we will create local jobs and skills development opportunities – allowing us to support local businesses and **build community wealth**.

Our strategic approach

We will lay the foundations for change by

[28] Scottish House Condition Survey: Local Authority Analysis 2017-2019, Scottish Government, February 2021

understanding projected energy demand across the city and setting **progressive planning policies** that support change.

We will bring partners together to create an **energy masterplan** for the city and collaborate on **exemplar retrofit pilots**, using the learning to develop **joint city retrofit plans** that secure economies of scale.

We will **align city investment** in public buildings and energy infrastructure to support **20-minute neighbourhoods**, and we will **support citizens and businesses to invest** in retrofitting their buildings. We will explore the development of local community energy generation opportunities, targeting this work to ensure it supports **community wealth building** and a **just transition** to a resilient net zero city.

Energy efficient new buildings

National requirements for new domestic buildings are set to change, with no new developments being permitted to connect to the gas grid from 2024. If we are to meet our ambition for Edinburgh, we need to **go faster on low carbon heat**.

'City Plan 2030' will set high **energy standards** in new developments and require the use of **low and zero emissions technologies** to heat and power the city's new buildings.

[29] Heat in buildings strategy - achieving net zero emissions: consultation, Scottish Government, February 2021

Planning for a clean energy future

To deliver change to heat and energy over the next 10 years, we will undertake data-led energy mapping across the city to better understand current and future demand, and the opportunities for new local generation and distribution systems.

The Council will enter into a strategic partnership with SP Energy Networks to align investment in the grid and associated infrastructure with the city's future energy needs. This will help ensure the grid is able to meet increased demand and infrastructure is improved at strategic locations which support city development.

We will establish a new City Heat and Energy Partnership with key public and private sector organisations. The partnership will be tasked with co-ordinating investments and supporting the delivery of flagship actions for the city.

The partnership will develop a city-wide heat and energy masterplan which will incorporate a Local Heat and Energy Efficiency Strategy and align current and future grid development to the city's energy needs.

The strategy will also include support for renewable energy, micro grids and measures to lower the cost of electricity and tackle fuel poverty, as well as meeting national requirements[29].

This will include working with Edinburgh and South East City Region Deal partners to develop regional renewable energy solutions. This work will draw on the region's wind, geothermal, hydro and solar assets and will look to learn from the H100 hydrogen pilot.

Investing in energy

To deliver the city energy masterplan, the partnership will work with the Scottish Government and private and public sector partners to develop a long-term shared investment strategy and delivery mechanisms.

This work will focus on maximising opportunities for local revenue generation and securing a clean and affordable renewable energy infrastructure for citizens and businesses.

Supporting community energy generation

Community-owned energy generation has the potential to provide clean and cheap energy to citizens and businesses, while at the same time delivering financial returns that can be re-invested to help build community wealth.

We will develop a city-wide programme of community energy generation investment opportunities and explore the potential for creating local energy generation communities as part of a proposed net zero communities pilot.

Developing heat networks

The partnership will work with communities and developers to deliver heat networks that meet the needs of key public sector buildings and major new developments across the city (focussing initially on major new developments at Granton Waterfront and the BioQuarter).

The Council will identify heat network zones, in line with emerging regulatory requirements[30]. It will work with developers to further expand heat networks and will ensure all Council-led infrastructure investment plans will seek opportunities to connect to heat networks as they are developed, beginning with the Council's learning estate programme.

Improving the city's public buildings and energy infrastructure to support thriving local neighbourhoods

The city's public buildings need to be energy efficient, meet citizen's needs, and support 20-minute neighbourhood models that ensure easy access to local services and reduce the demand for travel.

We will collaborate with city partners, to strategically and align investment in our estates to ensure it supports **improved service delivery, improved energy efficiency and reduced emissions.**

To achieve this, we will develop a **joint public sector estate retrofit programme** that will create economies of scale, support local companies, and unlock the potential large scale retrofit has to signal future needs to the supply chain, stimulate targeted workforce and skills development, and create new local jobs in the city.

We will work with the Heat and Energy Partnership to develop supporting **place-based energy infrastructure projects** – to ensure joint public sector estate retrofits include consideration of **net zero heat and energy generation solutions, planned to meet neighbourhood's needs**.

Case study: Western General Hospital Heat Network

NHS Lothian has commenced a major programme of energy efficiency works at the Western General Hospital to deliver high energy efficiency systems and low carbon technologies.

The works are urgently needed to replace ageing infrastructure, but the overall aim of the programme is to find a pathway to net zero in line with NHS Lothian Carbon Commitments. The pathway is based on replacing the old steam network with a low temperature district heat network and commissioning a new energy centre for the site.

Phase 1 of the project is complete with part of the site now served by the new Low Temperature Heat Network. The project will be phased over a number of years, with Phase 2 extending the heat network to further buildings on the site.

The Western General Hospital is a major consumer of energy, so the plans for the site have potential to make a contribution to the net zero pathway for the city as a whole and potentially integrate with wider energy systems and heat networks.

Source: NHS Lothian

Warm, comfortable and affordable social housing

Improving the **energy efficiency of Edinburgh's existing homes** is one of the most effective steps we can take to reduce the city's emissions. Achieving this will mean bringing forward a programme to carry out **'fabric first' building upgrades** at pace, to support accelerated uptake of **new smart energy controls and low carbon heating and cooling systems**.

We will deliver an **advanced whole house retrofit programme** across existing Council homes based on the EnerPHit retrofit standard, which can deliver up to an **87 % reduction in emissions** while also improving **health, comfort and affordability** for tenants.

We will work with Housing Associations and Registered Social Landlords to secure economies of scale and extend the reach of programmes across Edinburgh's **35,000 social rented sector** homes.

[30] Heat Networks (Scotland) Act 2021

Supporting citizens and businesses

Owner occupiers, private landlords and the city's businesses will also need to invest in their buildings if we are to reduce the city's emissions. We will bring financing and energy delivery partners together to develop a mechanism for unlocking and enabling domestic and small business energy retrofit at pace and scale. We will develop **exemplar retrofit pilots** which will test innovative finance models to support retrofitting, including in challenging mixed-tenure and heritage settings. We will share learning with the Scottish Government and call on them to develop and roll out **new incentivisation models** to support citizens and businesses to invest in improving the energy efficiency of their buildings, targeting financial assistance toward low-income households to help **tackle fuel poverty**.

Energy infrastructure and markets also need to change to ensure the transition to electric heat is affordable for citizens – particularly those at risk of fuel poverty.

We will therefore call on Scottish Government to continue to urge the UK government to set out a clear vision for how the energy markets will be reformed to support decarbonisation of heat. We will also work with SP Energy Networks to ensure future grid investment helps to lower the cost of electricity by delivering the infrastructure needed to enable more citizens to sell energy back to the grid.

Case study: Integrating fabric first approaches to achieve wider community benefits in social housing

The City of Edinburgh Council manages approximately 20,000 homes which consists of a significant number of 'hard to treat' non-traditional construction types which can present significant technical retrofit challenges.
The Council is currently developing a Whole House Retrofit approach.

This approach will initially assess which advanced whole house retrofit standards (such as EnerPHit) are the most suitable from a technical and financial perspective, across the various Council housing archetypes to align with the Council's long-term net zero carbon targets and to also provide energy savings for tenants.

Whole House Retrofit focuses on fabric first measures, including improved thermal insulation, airtightness and ventilation to significantly reduce energy demand and the need to heat the home. It also helps to ensure homes deliver health, comfort and affordability benefits to tenants.

The wider Whole House Retrofit programme will be a key component of the Council's wider area-based regeneration approach which has the potential to transform neighbourhoods and provide environmental, social and economic opportunities.

Pilot projects will be developed to assess the benefits and practicalities of an advanced whole house retrofit approach across a variety of the Council's most common building archetypes, along with detailed monitoring and evaluation to assess the carbon and energy cost savings.

These pilot projects will inform the longer-term investment and roll out of the whole house retrofit programme.

A new skilled workforce, making Edinburgh a centre for excellence

A large new skilled workforce will be needed to deliver new **energy infrastructure** and **retrofit at scale and pace** across the city's public, private and domestic buildings. The Scottish Government has committed to developing a Climate Emergency Skills Action plan to support market demand for the skills required and national data suggest there could be:

- Between 1,500 and 9,000 jobs over 15+ years in zero carbon energy (including renewables, hydrogen and storage)
- Between 6,000 and 13,000 jobs over 10+ years in decarbonising buildings and broadband
- Between 2,000 and 3,500 jobs over three years in building new social housing.31 32

We will ensure these opportunities deliver economic benefits for citizens and the city by working with the

[31] Green Jobs in Scotland, STUC, accessed June 2021

[32] Green Jobs in Scotland, STUC, accessed June 2021

industry and South East Scotland City Region Deal partners on their skills development programmes to ensure the city has the workforce needed to transform with a focus on **green construction skills**.

Case study: Canongate housing development energy efficiency and conservation project
In March 2021, Edinburgh World Heritage in partnership with the City of Edinburgh Council undertook an innovative pilot to retrofit a mixed tenure tenement block of post-war B-listed development, designed by Sir Basil Spence in the late 1960s.

Focusing on 10 flats and 2 commercial units, the project aimed to both improve energy efficiency and restore or repair its original features.

Supported by funding from the Scottish Government and SP Energy Networks' Green Economy Fund, the project developed and tested innovative and replicable delivery models for the retrofit of domestic/non-domestic listed properties considered as hard-to-treat.

Source: Edinburgh World Heritage

Net zero energy generation and energy efficient buildings

Outcomes

- Heat and energy generation and distribution is clean and renewable, and buildings are energy efficient and resilient to climate change.
- The cost of heating and powering the city's homes and other buildings is reduced, helping to tackle fuel poverty.
- Retrofit and energy infrastructure projects are delivering economic and social benefits to businesses and citizens supporting a just transition.

1. Laying the policy foundations

1.1. Set progressive planning policies to increase energy standards in new buildings.

1.2. Require the use of low and zero emissions technologies to heat and power the city's buildings.

2. Meeting the city's energy needs sustainably

2.1. Convene a City Heat and Energy Partnership (CH&EP)

2.2. Develop a city-wide heat and energy masterplan

N.B. Actions to be led by the CH&EP will be reviewed by the partnership once established

3. Investing in heat and energy

3.1. Develop a long-term city partner shared investment strategy to deliver the city-wide heat and energy masterplan

3.2. Agree appropriate delivery mechanisms for the energy investment strategy

4. Meeting future energy demand

4.1. Establish a strategic partnership with SP Energy Networks

4.2. Align current and future grid development to the city's projected energy needs

5. Developing regional energy solutions

5.1. Develop regional renewable energy solutions which draw on the area's wind, geothermal, hydro and solar assets.

5.2. Learn from the H100 hydrogen pilot.

5.3. Collaborate with regional partners to decarbonise the region's energy infrastructure

6. Developing heat networks

6.1. Identify heat network zones across the city.

6.2. Ensure all Council-led infrastructure investment plans seek opportunities to connect to heat networks, beginning with our learning estate programme.

6.3. Work with communities and developers to deliver heat networks which meet the needs of key public sector buildings and major new developments across the city, beginning with Granton Waterfront and the BioQuarter.

7. Focusing on place-based energy projects

7.1. Collaborate on place-based joint energy infrastructure projects which maximise opportunities to deliver low-cost, clean, renewable energy to neighbourhoods and communities, with a focus on areas experiencing inequalities.

7.2. Align strategic investment in the electricity grid with development plans, to support increased local energy generation

8. Developing community energy generation projects which build community wealth

8.1. Explore the potential for creating local energy generation communities as part of proposed net zero communities' pilots

8.2. Develop a city-wide programme of community energy generation investment opportunities

9. Retrofitting the city's social housing and public sector estate

9.1. Develop a Whole House Retrofit delivery programme for retrofitting social housing across the city to the highest energy standards, to reduce energy demand and tackle fuel poverty

9.2. Establish an Energy Efficient Public Buildings Partnership (EEPBP) to collaborate on retrofit, align investment plans and encourage confidence in, and planning for, the business and skills supply chain needed to deliver

9.3. Ensure retrofit programmes create green jobs and fair work opportunities for citizens, targeting those at greatest risk of poverty

N.B. Actions to be led by the EEPBP will be reviewed by the partnership once established

10. Resourcing net zero public buildings

10.1. Call on the Scottish Government to work with city partners to identify and deploy sufficient resources to deliver net zero public buildings

11. Supporting small businesses, owner occupiers and private landlords

11.1. Develop a new mechanism and business plan to support small businesses, owner-occupiers and private landlords to affordably retrofit their properties.

11.2. Develop electricity grid infrastructure and capacity to respond to increased demand from electric-powered heat

11.3. Work with SP Energy Networks and the Scottish Government to identify measures to reduce the cost of electricity and support citizens to transition away from gas.

11.4. Call on the Scottish Government to bring forward at speed improved schemes to support citizens to fund energy efficiency upgrades and decarbonise of heat in their homes.

12. Testing innovative approaches for challenging settings

12.1. Scope and test innovative approaches to retrofit in challenging mixed-tenure settings, to develop models and accelerate progress.

Net zero emission transport

Emissions from transport are not falling

The way we move people, goods and services around the city accounts for 31% of the city's total emissions in 2020. Transport will remain a dominant source of emissions if we continue as we are.[33]

Movement of freight and goods is vital to the economy of Edinburgh but, as with other types of vehicles in the city, the number of goods vehicles continues to rise - between 2007 and 2017 the number of heavy goods vehicles registered in Scotland increased by more than 10%, with similar increases in light goods vehicles.

The significant volume of road freight movements in and through the city has implications for road safety, congestion, air quality, noise and placemaking - especially in areas with high concentrations of people and activity. Although freight in Edinburgh can be moved by road, rail, and sea, for some businesses, the use of some vehicles will be inevitable to meet their needs.

The City Mobility Plan prioritises reducing vehicle use in the city. However, we will need to develop plans to fund and deliver the EV charging and grid infrastructure required to enable a transition away from commercial petrol and diesel vehicle use in Edinburgh. [34]

High numbers of people, travel in and around Edinburgh by car

Around 95,000 people travel to work in Edinburgh each day from other council areas. Of those, 63,300 travel into the city by car. A similar number of Edinburgh residents, around 60,000, commute to jobs entirely within Edinburgh by car[35].

This is due to Edinburgh's place as the economic hub of the region and Scotland's most popular cultural destination. While this is a strength of the city, it brings high volumes of tourist and commuter travel and associated traffic.

Edinburgh's position as a national hub also means that people and goods travel to from the city by air. Governments, the science and technology community, and the aviation industry are working to develop low emission technologies to address emissions from flight. However, in 2018 flying accounted for 8% of the UK's total greenhouse gas emissions - equivalent to the carbon footprint of approximately 5.5 million UK residents.

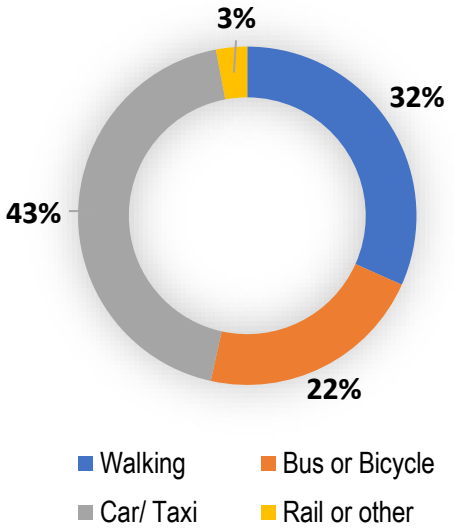


Figure 20: Main mode of travel in Edinburgh, 2019. Source: Edinburgh by numbers 2020

People's travel choices are largely determined by ability, affordability, accessibility, safety, and convenience

Many of the most disadvantaged communities are on the periphery of our city. People who live in these areas often have to travel longer distances to get to work.

Some outer areas in the city are experiencing significant population growth and are also less well-served by public transport. This is in comparison to

A Net Zero Carbon Roadmap for Edinburgh, Place-Based Climate Action Network, 2020

[34]UIIO UK Environmental Accounts 2020, Office for National Statistics, 2020

[35] Census 2011, Office for National Statistics, accessed June 2021

the high standards of public transport the rest of the city experiences.

Edinburgh's transport also needs to be fully accessible to people of different cultures, needs, ages and abilities. We want to create a city where most people don't need to own a car to move around and where people with mobility issues have access to road and parking space if they need it.

Our challenge as a city is to establish, at speed and scale, sustainable travel as peoples' preferred travel choice and to reduce the total number of miles travelled. This supporting a 'sustainable transport hierarchy' where people use active travel (walking, wheeling, and cycling) for short distances, and public transport for longer distance trips, Figure 21.

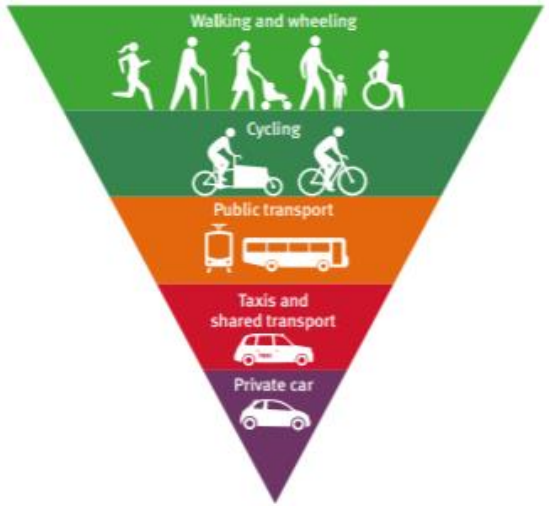


Figure 21: Sustainable Transport Hierarchy – City Mobility Plan 2020

Improve public transport to be integrated, net zero and fast

While for many, the city has an excellent public transport system, some areas are less well served, limiting opportunities for those who live there. Figure 22 shows that in Scotland, around half of 1 and 2 km journeys are taken by car.

There is an opportunity to improve and develop the existing public transport (bus, tram, and rail) network to deliver integrated, net zero public transport for all trip types. This would mean making transitions between decarbonised transport modes easier for people and include improvements to pricing and ticketing, integrated routing, regional connections, and creating a better overall public transport experience.

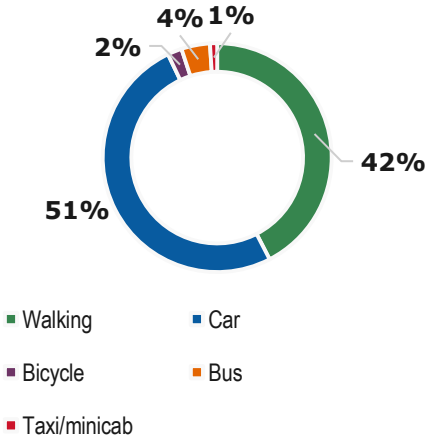


Figure 22: Share of journeys between 1 and 2 kilometres by main mode in Scotland. Adapted from Transport and Travel in Scotland 2019, Results from the Scottish Household Survey: Transport Scotland Statistics

Covid-19 has radically changed travel patterns

Covid-19 has had a substantial impact on travel patterns. Restrictions have resulted in increases to walking, wheeling and cycling, with more people making local trips and exercising closer to home. Lockdown restrictions and a shift to home working has resulted in less commuter travel and an increase in travel on foot and by wheel or bike.

The pandemic has also facilitated a shift to online shopping, socialising, entertainment, banking, healthcare, adult education, and worship.
While there has been a cost to the city from restrictions, we have also experienced some positive outcomes from lower traffic levels, cleaner air, more walking and cycling, flexible work patterns, and local trip-making.

As the city recovers from the pandemic, we have an opportunity to capture these benefits of our changed behaviours for the long-term.

Improving air pollution and congestion

Making Edinburgh a city with better, more attractive public transport and active travel choices can reduce road congestion and pollution on our streets and improve public health.

Improving the operation of the road network offers the city economic benefits through less time spent in congestion and more consistent journey times.

Currently these impacts cost the Edinburgh economy an estimated £177 million in 2019.[36]

Improving citizens' wellbeing, experience, and use of public spaces

Reducing the dominance of traffic in our city and town centres, and neighbourhoods can improve life for citizens by improving people's safety, experience, and use of streets and public spaces. Cycling in Edinburgh already takes 22,000 cars off the road every day and helps people to meet their daily activity levels, saving the NHS £1.6 million every year. [37]

We need to continue putting the needs of pedestrians, cyclists and public transport users first when designing streets.

Our vision

Thriving urban neighbourhoods that reduce the need to travel

Our vision for 2030 is that residents live in local neighbourhoods with local facilities that provide easy access to work, shops and all services they need, reducing the need to travel long distances. We will have a transport system that is net zero and has developed sustainably to meet the needs of our growing population.

Public transport will be affordable and flexible, especially for those on lower incomes.

Residents will benefit from greener, safer, more accessible and active choices for getting around the city. More people will be meeting recommended physical activity levels and local air quality will be vastly improved.

Our strategic approach

Our strategic approach will be to build on the strong programme of work set out in the Council's City Mobility Plan.

We will focus on working with citizens and businesses to bring about behaviour change towards sustainable travel models.

We will prioritise investment solutions to support the City Mobility Plan and necessary infrastructure development. Figure 24 shows that cycling in Edinburgh prevents 251 serious long term health conditions each year.

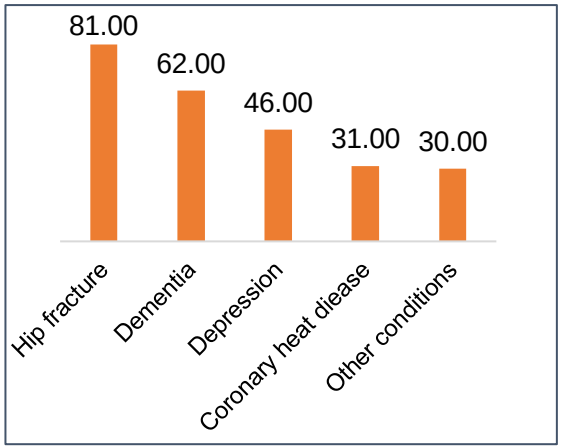


Figure 23: From Bike Life 2019, based on Sport England MOVES tool which shows the return on investment for health of sport and physical activity

Limiting the need to travel

To deliver net zero transport by 2030, we will use the city's 20-minute neighbourhood model which seeks to reconfigure services around existing communities, enabling them to access what they need without needing to travel long distances.

We will develop our strong active travel and public transport systems to better connect city and town centres, and neighbourhoods to better meet local and city needs. Working with city partners as major employers in the city, we will embed the flexible working patterns we have adopted through the Covid-19 lockdowns.

[36] Traffic scorecard, INRIX, 2019

[37] Bike Life Edinburgh, Sustrans, 2019

Invest in active travel infrastructure and decarbonising the city's public transport

We will design our city to enable a fundamental shift to people moving around the city sustainably. Our investment priorities will be to expand active travel infrastructure, connecting communities to services and amenities in their neighbourhoods.

For longer trips, the Council will create local 'mobility hubs' with facilities to ensure sustainable onward travel, supported by a bus network review, as part of a regional rapid transit network.

To ensure the bus sector is decarbonised, Lothian Buses and the Council will work with the Bus Decarbonisation Taskforce and private sector partners to agree a plan to decarbonise the city's bus fleet as part of its next business plan.

We're proposing a Low Emission Zone, which will help reduce pollution across the whole city, not just within the zone. We will continue to work with Scottish Government to look at opportunities for promoting zero carbon city centres within the LEZ structure.

Spending in transport:
Over the next ten years, the Council is committed to spending £68 million to improve road safety and to further develop cycling and active travel infrastructure

Source: City of Edinburgh Council Budget 2021/22

Sustainable mobility for goods and services

The Council will collaborate with the private sector to develop sustainable solutions to the transport of goods. This will include developing a city centre operations plan to reduce emissions by improving the way goods and service vehicles move around the city, supporting the use of innovative zero emission solutions for 'last mile' deliveries.

The focus will be the city centre initially, with the approach being expanded out to town/local centres over time.

The Council will engage with citizens and businesses on the potential benefits of introducing a Workplace Parking Levy as part of a range of measures to support the delivery of the City Mobility Plan.

Investment in EV infrastructure

Public service organisations will explore opportunities to jointly plan and invest in EV infrastructure for public service and blue light fleet at strategic locations across the city. We will work with the private sector to develop pilot proposals for public EV charging hubs in locations which align with the City Mobility Plan's aims of increasing sustainable travel and avoid adding to city centre congestion.

Supporting more sustainable transport choices

We will deliver citizen engagement and awareness raising campaigns on transport and active travel, to encourage citizens to shift to more sustainable modes of transport for more of their journeys.

Emissions from flying

The city's net zero target does not include emissions from flights as these are indirect emissions which occur outside the territorial boundary and are not under the direct control of the city. This strategy therefore focuses on the influence we do have and the action we as city partners can take.

We will call on the Scottish Government develop a national plan for managing aviation emissions and develop carbon budgets for the industry, and to work with the UK government to improve the national sustainable transport infrastructure. We will work with Edinburgh Airport as a City Partner to reduce emissions from its ground operations and support sustainable travel to and from the airport.

We will encourage city partners to sign up to the Edinburgh Climate Compact and pledge to reduce their emissions from business travel by integrating the sustainable travel hierarchy into their operations and supporting staff to make more sustainable

transport choices in their professional and personal lives.

We will deliver citizen awareness raising and engagement activities that highlight the carbon footprint of different transport modes for longer journeys, and encourage citizens to make more sustainable choices, more of the time.

Case Study: zero-emissions logistics services
SEStrans and Zedify, working with a trans-national network of city-hubs that promote innovation in city logistics, led a pilot project to deliver a pallet-worth of small packages by cargo bike per week.

The service enables packages coming into Edinburgh from national retailers or via logistics carriers to be re-routed to e-cargo bikes and trikes and consolidated with local business deliveries going to the same areas. This allows each package to be delivered most efficiently, help more businesses keep their goods moving around the city whilst significantly reducing emissions.

As part of the project, SURFLOGH SEStran and Edinburgh Napier University have been jointly researching the role of sustainable urban logistics networks and developing business models that can operate successfully in other real-world settings.

Source: SEStran; SURFLOUGH

Net zero emission transport

Outcomes

- A city where travelling by foot, wheel, or by bike is the easiest and cheapest option.
- The city has a well-connected and sustainable transport and active travel network.
- Investment in neighbourhoods, town and city centres improves citizen health and wellbeing.

1. Investing in active travel

1.1. Prioritise investment in expanding the active travel network, connecting communities to services and amenities in their neighbourhoods.

2. Developing integrated public transport

2.1. Improve the integration of our public transport system, and review routes and interchanges, within a city and regional context.

3. Decarbonising buses

3.1. Work with the Bus Decarbonisation Taskforce and private sector partners to develop a plan to decarbonise the city's bus fleet.

4. Improving local air quality

4.1. Implement a Low Emissions Zone scheme to reduce harmful emissions from transport and improve air quality.

5. Better management of the city centre

5.1. Create a city-centre operation plan to reduce emissions by improving the way goods and service vehicles move around the city, supporting the use of innovative zero emission solutions for 'last mile' deliveries.

6. Supporting public sector transition to electric vehicles

6.1. Identify opportunities to align to investment in EV infrastructure for public service and blue light fleet at strategic locations across the city, which also delivers 'down-time' availability for citizens and businesses where possible.

7. Delivering electric vehicle infrastructure

7.1. Develop electricity grid infrastructure and capacity to respond to increased demand from growth in EV use.

7.2. Develop pilot proposals for blended finance public-use EV charging hubs in locations which align with the City Mobility Plan's aims of increasing sustainable travel and avoid adding to city-centre congestion.

8. Engaging with citizens

8.1. Deliver public awareness raising campaigns on sustainable and active travel

8.2. Engage with citizens and businesses on the potential benefits of introducing a Workplace Parking Levy as part of a range of measures to deliver the City Mobility Plan.

8.3. Support the creation of 20- minute neighbourhoods and streets for people

9. Reducing emissions from flying

9.1. Encourage partner organisations to sign up to the Edinburgh Climate Compact

9.2. Work with citizens and city partners to support staff and residents to make more sustainable travel choices in their professional and personal lives.

9.3. Call on the UK Government, the aviation sector and other stakeholders, to develop a national plan for managing aviation emissions that is fully in line with the Paris Agreement

10. Developing sustainable national public transport infrastructure

10.1. Call on the Scottish Government to work with the UK Government to ensure the national public transport infrastructure supports sustainable travel

11. Streamlining processes to accelerate change

11.1. Call on the Scottish Government to remove barriers to rapid action on local transport infrastructure

11.2. Call on Scottish Government to accelerate integrated ticketing for public transport.

Net zero circular economy

Edinburgh's economy is beginning a steady, but uneven recovery from the worst economic effects of the pandemic.

Scotland's economy contracted by 9.5 % during 2020, with much of this decline driven by sectors – such as tourism and retail – upon which Edinburgh has a strong reliance.

Latest estimates from the Scottish Fiscal Commission now show that the size of the Scottish economy could return to pre-pandemic levels by April 2022, though the full value of output growth lost due to the pandemic may not be recovered until 2026 or later.

Data also shows, however that this recovery is not being experienced evenly across all sectors and many businesses remain in 'survival mode'.

Half of all tourism and hospitality firms report turnover remaining well down on expected levels; businesses across all of Scotland are experiencing the highest rise in cost burden experienced since 2008; while Edinburgh businesses took on and are now having to service an additional £0.5bn in debt as a result of the pandemic.

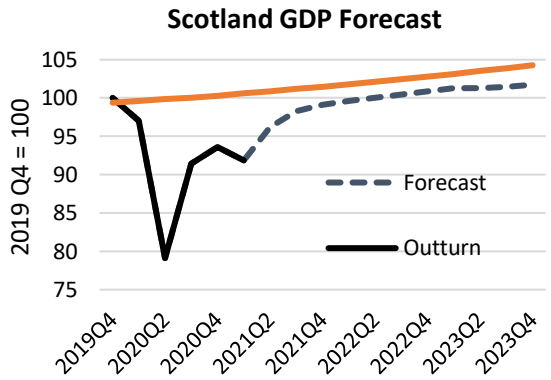


Figure 24: Scottish Fiscal Commission, Scotland's Economic and Fiscal Forecasts

At the same time, unemployment is projected to remain high over the coming months, and is not forecast to return to pre-pandemic levels within the next five years.

Within Edinburgh, the number of unemployed benefits claimants in the city has fallen slowly in the period to Autumn 2021 but remains at more than double the pre-pandemic level.

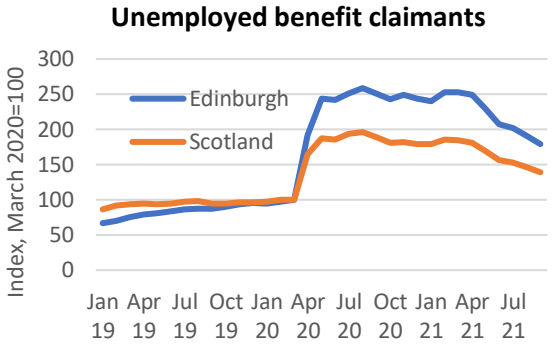


Figure 25: Office for National Statistics, Claimant Count

A just transition to a net zero economy represents one of the biggest opportunities Edinburgh has to recover from recession and remain Scotland's most vibrant and prosperous economy

Planning for a green recovery offers an opportunity for the city to rebuild on a genuinely sustainable footing – one that meets the climate emergency, as well as increasing Edinburgh's resilience to future economic shocks.

Many of the city's businesses are already rebuilding and adapting, making a strong contribution to a green recovery.

For an individual business, becoming net zero can **mean improved resilience, new markets, lower costs, increased productivity, more engaged staff**,

as well as an opportunity to meet growing consumer demands for zero carbon, zero waste options. For the city as a whole, the potential opportunities are even greater.

Our vision for 2030

A vibrant economy that is resilient to future crisis

Our vision is for **businesses of all sectors and sizes to be operating on a net zero basis by 2030** and taking their share in a growing green economy. This means Edinburgh taking the opportunity to be a global leader in green tourism, green finance, and green festivals – establishing a clear advantage over competitor cities and cementing the sustainable future of these key sectors.

More broadly, the value of output from UK low carbon industries is expected to grow to 8 % of GDP by 2030, up from 2 % in 2015.[38]

A net zero economy also offers an opportunity to meet growing consumer demands for zero carbon/zero waste options, and to ensure that Edinburgh businesses retain their share of the growing green pound. Ethical consumer spending and finance in the UK was estimated at £98bn in 2019, more than double the level recorded in 2010.[39].

Taking steps to meet this demand and transition to a net zero economy is important for recovery and growth in the short term. It is also critical if we are to ensure Edinburgh businesses can be ready and resilient to crises (economic, public health, or climate related) in the future.

Edinburgh Climate Commission 'Forward, Faster Together'

The Edinburgh Climate Commission's July 2020 Report set out recommendations for a green recovery responding to Covid-19 and climate change.
The Commission highlights Covid-19 as showing what can be achieved through a collective and urgent response.

They focus on a green recovery being one 'that **delivers for the long term**; **that catalyses job creation into growth industries, empowers citizens, improves public health and drives innovation** while all the time removing our contribution to the climate crisis'.

Circular economy

Our vision is for an economy where businesses and institutions embrace the shift towards circular economy business models – such as reverse logistics, material recovery and re-use, asset leasing, or other ways to make better use of materials and products and reduce waste. Such approaches represent new growth industries for the UK and could create over 200,000 new jobs by 2030.[40]

Case Study: Circular Edinburgh
Circular Edinburgh, managed by the Edinburgh Chamber of Commerce, is working to support the development of a more circular economy and improve the support offered to business.

Circular Edinburgh champions and supports businesses to find innovative ways to embed circular principles (of reduce, reuse, recycle) into their ways of working. It also works to connect businesses to funding opportunities to support them to explore more circular ways of doing business.

The service provides guidance for specific sectors operating in in Edinburgh, as well as events and webinars sharing information, best practice, and highlighting benefits for businesses.

Source: Circular Edinburgh

These changes will be supported by the way the city develops and builds communities, through new approaches to placemaking, promoting wellbeing, and investing in digital infrastructure. 21% of all Scottish businesses already say they intend to use home working as a permanent feature of their business model, citing increased staff wellbeing, increased productivity, and an ability to recruit from a wider

[38] UK business opportunities of moving to a low-carbon economy, Climate Change Committee, 2017

[39] UK Ethical Consumer Markets Report, Ethical Consumer, 2020

[40] Employment and the circular economy: job creation in a more resource efficient Britain, Green Alliance, 2015

geographic pool as major benefits[41]. By 2030 people in Edinburgh will work more from home, travel less distances to work and use active travel or public transport options whenever they do need to travel.

Sustainable local food systems

One key sector through which this change will be demonstrated is in food production and consumption. By 2030, people in Edinburgh will have better access to good quality food from local producers; people will have more opportunity to come together to grow food and share the health and wellbeing benefits its brings; and food waste in Edinburgh will be reduced, with improved, low carbon systems of food production and distribution.

Case Study: The role of food systems in tackling climate change: Lauriston Farm
Lauriston Farm aims to be Edinburgh's first large scale urban farm, addressing some of the issues around access to local, affordable fresh food, environmental degradation and lack of opportunities for people in cities to gain experience in food production.

The project is being taken forward by Edinburgh Agroecology Cooperative (EAC) through a long-term lease with the Council.

EAC are a Community Interest Company and workers cooperative aiming to transform this 100-acre (40 ha) farm in North Edinburgh, delivering significantly scaled up food production and improving access to affordable locally grown food, while also providing quality employment, training and volunteer opportunities with a strong focus on biodiversity enhancement, soil restoration and carbon capture.

The farm will also bring the community together through hosting community activities and events.

Vertical Farming
The use of new technologies such as vertical farming can help support local food production, especially in urban areas where demand for land is high.

Scotland's Rural College (SRUC) will be the first higher education institute in Scotland to open a vertical farm for research and education with the building of a new facility at SRUC's King's Building campus in Edinburgh.

The facility will be used for research into plant and crop science and will help support farmers, growers and small food businesses through demonstration facilities and knowledge exchange.

It will also be used as a learning facility for students, growing nutrient-dense fruit and vegetables and analysing crop yield and growth rates against resource inputs to compare their carbon footprint to other production systems.

Our vision is for Edinburgh to be a hub for net zero innovation, driven by data, with a new breed of sustainable local businesses thriving among 20-minute neighbourhoods across the city.

Good jobs and new skills

For Edinburgh to make a just transition to a net zero economy, we need this growth in opportunity to benefit all communities in the city.

By 2030 our vision is that Edinburgh's economy will be built around good quality jobs which people from all backgrounds can access through education, skills and retraining. That means firms in Edinburgh creating well paid jobs and fulfilling careers in growing sectors – including clean construction, sustainable transport, low carbon technology, buildings retrofit, and others.

That means schools, colleges, universities, and employers working more closely together to make sure that skills, training and education support is in place to help Edinburgh citizens access those opportunities.

It also means making sure the city's plans for recovery in key established sectors such as tourism, culture, and retail, are built around sustainable, net zero business models.

Over the next decade, Edinburgh should aspire to be a global leader in green tourism, green festivals, with the skills and employment opportunities that implies. These aspirations will be supported by Edinburgh's

[41] Business Insights and Conditions Survey (BICS) Weighted Scotland Estimates, October 2021

2030 Tourism Strategy and the Edinburgh Tourism Action Plan.

Strategic approach

To meet our net zero vision, we need to move at speed and at scale to connect potential investors with Edinburgh's prospectus of net zero business and development opportunities
We will work with investors, the Scottish Government, and city partners to help key projects move at pace and provide the right regulatory framework to encourage investment and innovation. We will deliver a Regional Prosperity Framework to drive investment which supports inclusive growth and a just transition to a net zero economy[42].

Working with statutory partners across the city we will aim to make sure that all procurement and commissioning expenditure made in Edinburgh is used to actively support this strategy**.**

This means aiming to secure commitment from all public sector partners to use procurement spending powers in support of the transition to net zero and promote a circular economy.

It also means, where possible and appropriate, all public sector all investment and purchase decisions are net zero by 2030 and that we take strategic decisions to create markets for circular and net zero economy businesses to thrive.

We will establish a new business-led forum to provide leadership and work with businesses to increase the number that have made their own net zero commitments, and have signed up to the **Edinburgh Climate Compact, led by the Edinburgh Climate Commission**.

To complement the Edinburgh Climate Compact, we will explore establishing a **new green innovation challenge finance scheme** to stimulate new lead markets, and support Edinburgh businesses to play a full part in a net zero economy and a green recovery.

Alongside funding, we will establish new **business mentoring and support** programmes that help businesses realign their operations to meet net zero.

This will build on the **Circular Edinburgh** programme that the Edinburgh Chamber of Commerce has managed for a number of years and champions and supports businesses to find innovative ways to embed circular principles (of reduce, reuse, recycle) into their ways of working. In addition, the principals of net zero, just transition, and circular economy will be embedded into **Business Gateway** support programmes for new and existing Edinburgh businesses.

We will deliver **Growing Locally**, Edinburgh's first **local food growing strategy**, to reduce waste and increase the proportion of the city's food sourced from sustainable local and regional supplies.

We will work with universities, colleges, schools and employers to identify emerging skills gaps, and develop the education, training and workforce development supported needed to make sure people from all backgrounds can aspire to and access rewarding net zero careers.

This will build on the work undertaken by the **Edinburgh and South East Scotland City Region Deal** to develop the skills and local supply chains needed to make construction activity in the city sustainable and low carbon.

Case Study: Integrated Regional Employability and Skills (IRES) Programme

Through the Edinburgh and South East Scotland City Region Deal, the £25m IRES programme includes two skills gateways - Housing and Construction Infrastructure (HCI) and Data Driven Innovation (DDI).

The gateways operate through the regions' universities and colleges providing skills development in housing, construction, renewables, and digital sectors to support delivery of the latest sustainable energy and construction solutions.

IRES also has an Integrated Employer Engagement programme, which creates an enhanced employability and skills service for employers, helping transition those with new skills into work.

HCI gateway's aims include providing 'into work' short courses for 800 residents facing disadvantage in the labour market; mentoring for 400

[42] Edinburgh and South East Scotland Regional Prosperity Framework (2021 – 2041)

schoolchildren and industry-led skills improvements for 5,000 residents across the region.

Sectors include waste management, electric vehicle charging point installation, renewable technologies, timber construction and engineering knowledge upskilling and environmental technologies.

Source: Edinburgh and South East Scotland City Region Deal

Net zero, circular economy

Outcomes

- Edinburgh's economy recovers from recession and key sectors are sustainable and resilient to future crises, such as those related to climate change.
- Edinburgh has a vibrant circular economy, improving resource efficiency and enhancing citizen wellbeing.
- Edinburgh's economy is built on good, green jobs which people from all backgrounds can access through education, skills and retraining.

1. Securing investment to transition to a net zero economy

1.1. Develop a mechanism for connecting those looking to invest in a net zero city, with the businesses and organisations looking to drive the changes that support speed and scale of net zero action.

1.2. Deliver implementation plans for the Regional Prosperity Framework that drive investment which supports inclusive growth and transition to a net zero economy.

2. Enabling business leadership

2.1. Establish a new business-led Forum to provide leadership on a just economic transition to a net zero city

2.2. Ensure Edinburgh's tourism sector leads the way in sustainable urban tourism

3. Delivering the Edinburgh Climate Compact

3.1. Support and encourage city businesses to sign up to the Edinburgh Climate Compact and commit to reduce their emissions

4. Exploring a green innovation challenge finance scheme

4.1. Explore establishing a finance scheme to complement the Commission Climate Compact, stimulate new lead markets, and support Edinburgh businesses to play a full part in a net zero economy and a green recovery.

5. Business mentoring and support for net zero transition

5.1. Deliver business mentoring and business support programmes to help employers take practical steps to realign their operations towards becoming net zero.

5.2. Deliver a new Business for Good programme to provide practical support and training for city businesses to transition to net zero, aligned to and complementing Council and other partner offerings

6. Supporting a more circular economy and reducing waste

6.1. Increase participation in the Circular Edinburgh programme which supports businesses to reduce, re-use and recycle as part of embedding circular economy principles into their ways of working

6.2. Increase the proportion of the City's food and drink sourced from sustainable local and regional supplies

6.3. Ensure that all public sector procurement spend actively supports this strategy so that by 2030 all new investment and purchase decisions are net zero.

7. Delivering skills and workforce development

7.1. Scope skill needs and align workforce development programmes to meet the requirements of net zero businesses, and ensure Edinburgh's workforce can deliver

on new heat and energy, retrofitting, transport and other investments

7.2. Support people from all backgrounds to access good quality jobs in a net zero economy, and ensure that new green job opportunities are accessible to, and targeted towards, those at greatest risk of poverty

8. Securing enabling powers for local government, business and city partners to respond to climate change

8.1. Call on Scottish Government to empower public sector partners to collaborate on net zero joint public procurement approaches

8.2. Call on the Scottish Government to build coherent and flexible legislative and regulatory frameworks that empower local government, business and city partners, so they can rapidly respond to the climate emergency in an agile and adaptive way.

Listening to citizens and empowering communities

Citizens have the power to drive change
Edinburgh's citizens have huge influence over the city's emissions through their power to collectively demand change from national and local government, the private and public sector, local businesses and each other.

Citizens also have the power to make choices in their lives which can contribute to climate action. Citizens must be active participants, engaging in and designing the actions to deliver a net zero city.

City partners need to engage, collaborate and listen to citizens to secure that trust and support for change. We believe the Council in particular, has an important role in supporting all citizens to be able to make changes and ensure no one is left behind: delivering a fair and just transition.

Our shared vision for 2030

Our vision is to deliver a city where all citizens are empowered, engaged and able to influence for change across the public and private sector.
Where citizens, and especially young people, are at the heart of designing the solutions, in a city where sustainable choices are easier to make, and a just transition to a net zero future is delivering social and economic benefits for all our communities.

Highlights from engagement

Awareness of the global effects of climate change is very high. Edinburgh residents are very aware of the impact on biodiversity and habitats **but only recently has understanding grown of the impact on people.**

73% **of respondents to the 2018 Scottish Household Survey, believe climate change is an immediate and urgent problem.**

70% of participants from Scotland's Climate Assembly said it was a priority that recommendations on tackling the climate emergency needed to:

1. Take into account the needs of different communities across Scotland, recognising that there is not a 'one size fits all' solution.

2. Organisations and individuals with the greatest carbon footprint must be asked to make the biggest changes.

Citizens views
Our engagement work tells us that Edinburgh's citizens are concerned about climate change and want to see more action to tackle it – by local and national government, the wider public sector, private sector and individual citizens.

They believe that it is now a question of how we take forward climate action rather than if we need it.

Our strategic approach

We will focus on creating an environment that makes acting sustainably cheaper and easier, and ask citizens to support us in making those changes.

We'll maintain an ongoing open and frank **dialogue with citizens and communities**, with the aim of designing solutions together and maintaining high levels of support for net zero action
.
We'll work to **raise awareness** and **accelerate action**, asking people to make more sustainable choices and use their influence to demand change from others.

We will engage and empower citizens to design solutions together

Empowering young people

Young people have been at the forefront of raising awareness on climate change and demanding change from those in power.

We will ensure young people are at the centre of decisions that will determine the kind of city they inherit. We will work with them – through schools and in communities – to listen to their views, to ensure young people from all backgrounds are informed and able to have their voice heard.

We will maximise opportunities to focus on climate change across our whole education system, delivering opportunities for community learning and development and working with schools, including Edinburgh's independent schools, to embed a legacy of change from COP26 being hosted in Scotland.

We will strengthen the focus on climate change within our curriculum and co-design innovative projects and programmes with young people, for example by using school buildings and grounds to engage young people on climate change, help reduce schools' emissions, and increase their contribution to greenspace and biodiversity.

Supporting citizen empowerment and community activism

Young people and community groups across the city are already taking action on climate change, and community groups and voluntary sector organisations are often closest to local issues and opportunities.

They will continue to play a vital role advocating for action on climate change and challenging government and public and private sector organisations. Civil society also has a key role to play in stimulating citizen action at the individual and collective level.

The Council is committed to supporting all its citizens to realise the significant power they have over the future of their city. We will support citizens to be informed and engaged and create spaces where we can design solutions together, including through an independent Edinburgh Community Climate Forum, co-created with EVOC and Our Future Edinburgh launched during COP26.

Through the Forum, citizens will be involved in decisions about the targeting, scope and speed of large-scale change and ask for citizen support on changes which protect the city for future generations. As the scale and complexity of actions increase, the Council will facilitate more in-depth engagement approaches, such as citizen juries or similar models, to ensure citizens views are central in decision-making.

Building and maintaining consent for change

The actions set out in this strategy at a city level are significant and will affect the Edinburgh's built environment, transport systems and infrastructure. To make these changes possible we need the input and support of residents so they can be delivered successfully when upgrades cause temporary disruption.
For example, while work is underway to make our public buildings such as schools and medical centres more energy efficient, we will need to make temporary changes to how we access and use these buildings.

We will deliver a just transition

Ensuring a fair transition to net zero

Vulnerable groups and people with poor health will be more affected by poor air quality, increased damp, and severe fluctuations in weather such as heatwaves. Those on lower-incomes may also find addressing the impacts of climate change harder– for example the costs associated with flood damage to property; or the costs of switching from gas to sustainable heating systems.

We are committed to working together as national and local government, public bodies, trades unions, the private sector and citizens and communities to ensure that climate change does not disproportionately impact anyone in our society.

Access to opportunities

It is estimated that Scotland's transition to a low-carbon economy could create up to 367,000 jobs, with Edinburgh being well-placed to secure a substantial share of these. With city partners we will work to align skills development programmes to support Edinburgh residents to access new green jobs and target those at greatest risk of poverty.[43]

[43] Green Jobs in Scotland, STUC, accessed June 2021

City Partners will ensure access for people from all backgrounds to employment opportunities created to deliver a net zero city.

Creating net zero communities

Our vision is for all of Edinburgh's neighbourhoods and communities to be net zero.

The Council will work with communities, Community Councils, Edinburgh's Universities in one of the 20-minute neighbourhood hubs to scope and develop funding bids for local pilots to understand what it would take to become net zero. The pilot scope will be co-produced with citizens and will link to Local Place Plans.

We will support citizens to reduce their emissions

This strategy calls on private, public and community and voluntary sector organisations to sign up to the Edinburgh Climate Compact and pledge to reduce their emissions. It also sets out the action city partners will take to support the city's transition to net zero But Edinburgh's residents have an equally important role to play.

Almost two thirds of the emissions reductions needed to reach net zero rely on us all making different choices[44]. Individual actions by Edinburgh's citizens are an essential and necessary part of reducing the city's emissions and securing a sustainable city for our young people and for future generations.

At present, over half the city's total emissions come from its residents. Of this, 32 % comes from car use, and 61 % from our homes – see Figure 27 below.

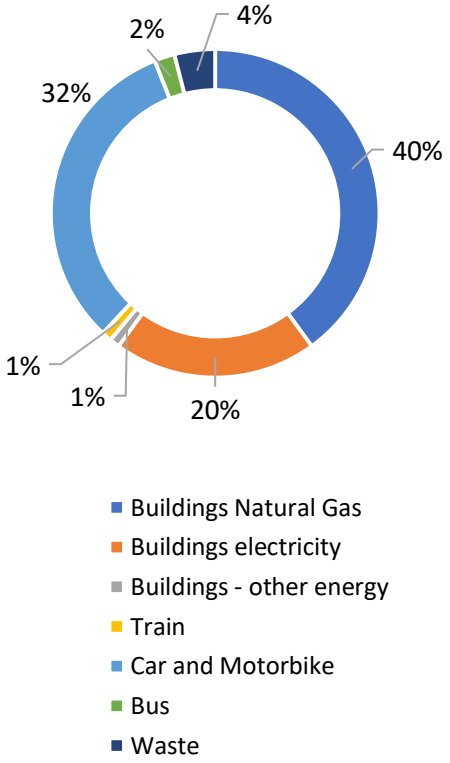


Figure 26: Breakdown of domestic emissions in Edinburgh 2017/18

Raising awareness about climate change

We know from consultation and engagement that many Edinburgh citizens are not fully aware of their carbon footprint, or all the actions they could take to reduce it.

We will deliver awareness raising campaigns to ensure people have access to information about climate change, how to measure their carbon footprint, and where to access support to reduce their emissions.

This will include information about where people can get financial and other help to make changes.
We also know that many citizens are very well-informed about climate change, but face barriers to making the changes they would like to.

We need to create a city where sustainable living is built in by design, and is the cheapest, easiest and healthiest option for everyone.

Making sustainable choices easier

This strategy sets out the actions we will take to create the conditions where sustainable choices are cheaper and easier for citizens to make. They include:

- Improving sustainable public transport and active travel infrastructure.
- Ensuring people can access the services and amenities they need locally

[44] The Committee on Climate Change estimated that, of the overall reductions needed to achieve net zero, 16 % rely on behaviour change, such as flying or driving less, and a further 43 % relying on a combination of technology and behaviour change, such as fitting and effective use of more energy- efficient heating systems. Reaching Net Zero in the UK, Climate Change Committee, accessed June 2021

- Developing sustainable models of public services which improve health and the environment.
- Developing projects to provide clean and affordable energy.
- Delivering energy efficient affordable housing.
- Developing funding mechanisms to support private owners to retrofit their homes.
- Creating new green and fair work and skills development opportunities
- Improving support for businesses to transition to net zero.
- Supporting local food growing and ensuring citizens have opportunities to reduce, re-use and recycle.

The Council will also call on Scottish Government to improve existing support schemes and develop new approaches to incentivise change – especially in decarbonising homes.

The ask of citizens

The everyday choices we all make can achieve big emissions reductions, and citizens all have power to influence others, from big business to public policy. We're asking citizens to use your democratic voice and purchasing power to be heard on climate issues.:

- **Demand** change using your power and influence. Citizens are able to influence an additional 47 % of the city's emissions coming from the public and private sector.
- **Support** city climate action. The scale of work to create a resilient and net zero city is significant and will necessitate temporary disruption. This work needs citizen input and support to be delivered successfully and become a reality.
- **Act now and plan for the future.** Achieving net zero relies on citizens and communities making many everyday choices differently- we will deliver public awareness-raising campaigns and provide support for citizens to make informed choices that help tackle climate change.

Some of the changes we need to make will require forward planning. We ask citizens to consider if these options are available to you:

- Residents can make a big difference by investing home energy efficiency measures such as insultation, secondary glazing or clean energy heating systems. These will save you money in the long run, but may have upfront costs.
- Look out for Government schemes offering financial and other support which can help make these changes easier.
- Look for the energy efficiency rating when replacing household appliances and buy the most efficient products.
- Consider replacing petrol or diesel cars with electric vehicles and making greater use of public transport, car-share schemes or bikes.
- Find out more. Use online resources to find out more about climate change and other ways you can help tackle it.

We're asking citizens to:

Understand your carbon footprint: Use online and other resources to learn what your impact on the environment is.

Make the easy decisions: Like leaving the car at home for shorter trips or reducing your food waste. These could save money or time and can often improve quality of life too.

Consider and explore investment: Many changes, such as home insultation or heating, have an upfront cost but repay that cost over time.

Use your purchasing power: You can send powerful signals to businesses by choosing products and services that are more environmentally friendly, this includes locally grown food, low-packaging items, and goods and services which use renewable energy and recycled materials.

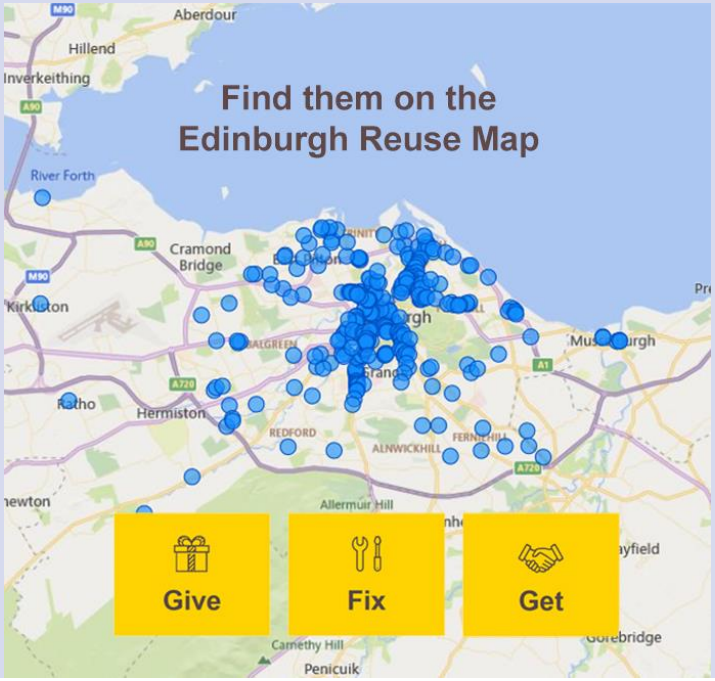
Use your democratic power: Make your voice heard in local and national decision-making and tell elected representatives what future you want.

Stay involved: Keep engaging with local services, community groups and neighbours. Support the right changes when you see them, advocate for change when you don't.

Case Study: Changeworks' Edinburgh Reuse map.

Created by Changeworks, in partnership with the City of Edinburgh Council, this online map details facilities for donations of surplus household goods to new homes, as well as eco-friendly recycling and repair services, all contributing to Edinburgh's circular economy.
Citizens can select the type of good they want to give, fix or get, and can search by postcode to find locations in their area that can help.

Source: Changeworks



Listening to citizens and empowering communities

Outcomes

- Citizens are engaged and empowered to respond to the climate emergency.
- Citizens are acting to influence the public and private sector to go further on tackling climate change.
- Edinburgh is a city where sustainable choices are cheaper and easier to make, and people are taking action to reduce their carbon footprint.

1. Citizen engagement and dialogue

1.1. Maintain an ongoing open dialogue with citizens about the transformation that needs to happen in the city, sponsoring a new independent Edinburgh Community Climate Forum to collaborate on how we take decisions and deliver change together.

1.2. Maximise opportunities to focus on climate change across our whole education system, all City of Edinburgh and other schools.

1.3. Call on the Scottish Government to work with city partners on awareness raising campaigns which support a frank discussion on climate change action.

2. Delivering sustainable services that enhance community wellbeing and economic benefits

2.1. Develop sustainable models of public services interventions which deliver improved environmental and population health outcomes

2.2. Develop a city-wide programme of community energy generation investment opportunities

3. Information about climate change

3.1. Deliver awareness-raising campaigns

3.2. Support citizens to make informed choices that help to tackle climate change

4. Supporting and engaging young people

4.1. Work with young people in schools and in communities, to embed a legacy of change, drawing on COP26 coming to Scotland

4.2. Maximise opportunities to use school buildings and grounds to engage young people on climate change, help reduce schools' emissions and increase their contribution to greenspace and biodiversity

4.3. Strengthen climate change within our curriculum

4.4. Deliver a hydrogen education programme and schools challenge

5. Net zero communities

5.1. Work with communities to develop proposals and seek funding for a pilot to understand what it would take for one of the 20-minute neighbourhood hubs to become a net zero community.

Investing in change

Development of place-based investment programmes and innovative finance models

Edinburgh is the financial capital of Scotland and a leading global economic hub which is one of only six European cities rated among the top 20 centres for finance in the world.

London is the only other UK city in the top 20 and Edinburgh has been progressing up the index in recent years, driving Scotland's economic growth and playing a leading role on the global stage.[45]

Regulatory changes and consumer pressure in the financial sector mean that investors are increasingly seeking 'impact investment' opportunities - where returns are also measured in terms of social and environmental benefits. This means they are also assessing investment opportunities according to 'ESG investment criteria' (economic, social and governance measures), as well as financial return.

Edinburgh is uniquely placed to accelerate this progress as the host of one on the most dynamic financial services industries in the world, as a world leader in research and data innovation, and as a city with significant net zero development opportunities across transport, heat and energy, house-building and retrofitting, and climate adaptation.

There are opportunities for Edinburgh to work with Scottish Government to develop **innovative finance models** which lever this private capital and align it with re-configured place-based public sector **investment programmes.** This would ensure risks and rewards are shared more equitably, delivering revenue returns and other co-benefits to communities.

Innovative finance models and investment could prioritise community wealth-building and reduce the financial risks associated with failure to adapt to impacts of climate change, as the costs of not acting far outweigh the costs of acting now.

Managing budget and capacity shortfalls

Cities are experiencing a budget and capacity shortfall crisis, despite access to debt at historically low interest rates. This comes at the same time as the urgent need to decarbonise, and to adapt to the effects of climate change, both of which will require investments of billions of pounds per city. Even with the availability of low-interest finance from the public purse, **the public sector alone will not be able to meet the financial challenge**.

Connecting capital to investible projects

The city faces challenges in raising the level of up-front capital investment urgently required now, to deliver long-term financial returns, significant emissions reductions and wider co-benefits.
We also face challenges in developing 'ready to go' projects and opportunities at the scale needed to attract public and private sector investment into to the city. Institutional investors typically require portfolios worth upwards of fifty million pounds to achieve economies of scale, with few sources of finance being available to support the research and development of investable projects.

Financial decision-making in the city also often prioritises short-term risk and reward, in a way that limits the city's ability to respond to the long-term investments that are needed, if we are to tackle climate change.

Ensuring investment responds to communities' needs

Organisations and businesses across the city are already investing in climate action through their fleets, their buildings, their energy sources and their work practices. But new investment will still be needed and in particular; investment to support access to upfront capital investment in buildings and infrastructure.

National funding streams often focus on very specific objectives that don't always align with city priorities or support more holistic place-based interventions. This means city partners have to invest significant time and resources in 'weaving together' multiple bids to be able to invest in a 'place' in a way that responds to the systemic challenge of net zero and the full range of that communities' needs.

[45] The Global Financial Centres Index 27, Long Finance, March 2020

Our vision

By 2030, Edinburgh's' transition to net zero will mean the city is benefiting from large-scale and co-ordinated **public and private investment** that is designed around the needs of citizens.

Investment will be deployed in a way that supports **place-based approaches** and a just transition to a net zero city. Citizens have **affordable and easy access** to **low carbon technologies** for insulating, heating, and powering their homes, and **returns from investments** will be delivering **benefits for Edinburgh's economy**.

Our strategic approach

We can achieve over 65% of our emissions target with technology that currently exists and through investment that would pay for itself over time
.
We will **align public sector budgets** to share risk and maximise efficiency and opportunity in net zero actions.

We will invest in the capacity and expertise needed to develop the city's pipeline of projects and **maximise opportunities for attractive joint projects for investment**.

We will strengthen the city's partnership approach to infrastructure projects to support net zero, to **ensure Edinburgh is well placed** to successfully access new national **public sector funding streams** focused on supporting the transition to net zero.

We will **unlock private investment**, testing **innovative finance models** and use learning from innovations to bring forward **net zero investment programmes** at scale and pace.

Aligning public sector budgets

Public sector organisations such as the Council, the NHS, the Scottish Ambulance Service, Edinburgh's universities, Police Scotland and the Scottish Fire and Rescue Service have legal duties to transition to net zero and are already investing in climate action.

Through stronger more focused partnership working and a new Climate Strategy Investment Programme Board, we will align our operational and investment plans – where that makes sense – to maximise the collective impact on carbon emissions, share knowledge, skills and capacity as well as investment and operational risks and opportunities.

Maximising national funding opportunities

By strengthening the city's partnership approach to heat and energy infrastructure; public building retrofit; place-based development; active travel and EV charging infrastructure, we will make sure that Edinburgh is well placed to successfully access the funding which will be available over the coming years from UK Government, Scottish Government and other funding bodies such as the National Lottery.

We will focus on accessing funding streams that allow us to meet strategic objectives of:

- Adapting to new post-covid realities, such as repurposing town centres, and enhancing active travel infrastructure.
- Preparing the city for the development of clean energy heat networks.
- Adapting to the effects of climate change by using ecosystem services and enhancing biodiversity.
- Partnering with Scottish Government to develop and test new financing models for transformational interventions, including the retrofitting of the privately-owned housing stock across Edinburgh.

Developing large scale place-based investment programmes

We will develop a Green Investment Plan for the city, including a develop a pipeline of large-scale/aggregated investible projects that focus on delivering the major heat and energy, transport, EV, greenspace, and energy efficient housing infrastructure projects that are needed to make the transition to net zero.

These projects will provide an opportunity to create systemic change, enable rapid decarbonisation and adaptation to climate change, while creating new jobs, new green markets for local industry, and improving quality of life for citizens.

We will work with UK finance and academic experts to develop strategic approaches to mobilising place-based climate finance. We will call on the Scottish

Government to work with us to connect national funding to a more strategic place-based approach.

Fostering Edinburgh's investment potential

Edinburgh is the financial capital of Scotland and a recognised leading global economic hub. Investment in green technology and business practices is increasingly at the heart of the finance industry and the city is uniquely placed to accelerate progress as a world leader in research and data innovation.

In doing so we will create opportunities for testing long-term approaches to place-based investments that create community wealth and support rapid decarbonisation and a climate-ready city.

We will foster the investment potential of Edinburgh by working with partners to develop ambitious and attractive projects and proposals, test innovative finance models, including blended finance, and new approaches to sharing risk and reward.

We will create a Green Investment Prospectus that will enable us to easily match investors to suitable projects in Edinburgh. These projects include responding to major challenges, such as how to retrofit residential properties across the city, and preparing the city for the effects of climate change through adaptation.

Creating innovative demonstration projects

We will identify opportunities for Edinburgh to develop demonstrator projects with citizens that can pave the way to solving the biggest challenges on the journey to sustainability.
Demonstrator projects will be explicitly designed with citizens to build local skills capability and capacity, and test new financing structures.

Case study: Nature climate bonds

We're working with Abundance Investment to explore the potential for using 'Nature Climate Bonds' in the city. These are an approach to financing climate change and biodiversity loss actions by allowing local citizens to invest directly in nature-based projects in Edinburgh.

First steps include developing a pipeline of nature-based projects, designed to enhance the natural environment and improve citizens' health and wellbeing.

Source: The City of Edinburgh Council

Case study: Collaborating to access investment
Edinburgh is working alongside other ambitious UK cities, through the Edinburgh Climate Change Institute and as part of the Place-Based Climate Action Network (PCAN), to explore how net zero and resilience goals can be better connected with sources of finance and investment - aiming to scale up financing within participating cities and regions.

The network aims to better connect place-based climate programmes to the right sources and models for investment. Through this work, we aim to extend Edinburgh's reach by working as a collective, connecting and contributing to the development of innovative finance models and engagement with large financing bodies.

Source: Edinburgh Climate Change Institute

Unlocking private investment opportunities

We will connect investors to city opportunities. In doing this, we will look to move away from a public sector funding model which has limits to the amount the city can raise and often uses public borrowing to de-risk investments – to a 'city as enabler' model which connects investors to city opportunities, shares risk and reward more equitably, and allows much larger sums of money to be raised through private sector investment.

By working with providers of capital, such as Lothian Pension Fund, we will identify compelling opportunities to match patient finance to large-scale net zero projects which will benefit both investors and citizens. We will work with UK finance and academic experts to develop strategic approaches to mobilising place-based climate finance.

This includes working with the Place-Based Climate Action Network (PCAN) to explore how place-based net zero and resilience goals can be connected with sources of finance and investment and aiming to scale up financing within the core PCAN cities, including Edinburgh.

By working alongside other ambitious UK cities, and drawing on the academic and other expertise available through PCAN, we will aim to extend Edinburgh's reach and engage with large financing bodies as a collective – including, but not limited to, banks, investors, the Green Finance Institute, Impact Investing Institute, and the new Centre for Greening Finance and Investment.

Investing in change

Outcomes

- City partner budgets are aligned towards a just transition and net zero place-based investment
- Edinburgh is a centre for global capital investment, supporting the infrastructure projects needed to transition the city to net zero
- Investment in Edinburgh is also delivering social and economic benefits for citizens

1. Providing an evidence base to support data-driven innovation and strategic sustainable investment at scale

1.1. Develop Edinburgh's Carbon Scenario Tool (CST) to build capacity for evidence-based decision making and benchmarking across cities.

1.2. Ensure population health data drives strategic planning for action on climate change.

1.3. Harness the city's intellectual capital to support the development of innovative and financially sustainable interventions to tackle the climate emergency.

2. Developing partnerships for city net zero infrastructure investment

2.1. Establish thematic city partnerships to identify opportunities for collaboration, align investment plans, and develop joint place-based approaches to net zero infrastructure investment in support of a city Green Investment Plan.

3. Developing and testing new finance models and scalable tests of change to support innovation

3.1. Develop innovative finance models that share risk and reward and deliver economic and social benefits for Edinburgh's citizens by exploring, for example, city investment bonds.

3.2. Seek funding to deliver scalable tests of change which use innovative finance models to deliver place-based net zero projects.

4. Collaborating to develop a citywide pipeline of green investment proposals and Green Investment Plan

4.1. Increase capacity and resources to develop feasibility studies and business cases that enable the development of a pipeline of investible projects.

4.2. Collaborate with green finance experts to support the resourcing and delivery of major city climate projects, beginning with the city Water Vision.

4.3. Develop a Green Investment Plan and programme for the city, aligning investment and infrastructure proposals to support increased net zero investments in the city.

5. Delivering place-based net zero investment at scale

5.1. Develop strategic approaches to mobilising place-based finance for net zero development and investment.

5.2. Call on the Scottish Government to work with public bodies to develop joined-up funding streams to deliver place-based

investment at a scale which supports the transition to net zero.

5.3. Call on Scottish Government to ensure Edinburgh retains the economic benefits flowing from city partner investment in net zero action.

6. Developing a city-wide approach to dealing with residual emissions

6.1. Develop a city-wide approach to off-setting residual emissions in support of achieving net zero by 2030.

Measuring success

Monitoring city emissions

In 2020 and 2021, Edinburgh, along with almost 1,000 cities, states and regions across the globe, including more than 30 local authorities in the UK, reported through the Carbon Disclosure Project (CDP) reporting system.

CDP is an international non-profit organisation for companies' and cities' environmental reporting. It is the largest climate change focused data collection and assessment programme in the world.

A key element of the disclosure is the submission of emissions inventories which breakdown total emissions by activity. They are essential to help understand where progress has been made, and where efforts need to be accelerated.

Edinburgh is one of 95 global cities recently named as new generation of climate leaders on CDP 2021 A-List, meaning it has been recognised by CDP as a city that is taking bold leadership on environmental action and transparency.

Tracking and reporting

City emissions will be tracked on an annual basis and progress measured against a target trajectory, as illustrated in Figure 27.

This trajectory assumes that citizen and partner action will take time to build and will rapidly accelerate from around 2026 as learning from early action, innovation, and investment come together to drive whole-system change at pace.

This trajectory will be reviewed as required to take forecast residual emissions into account. City and Council emissions will be monitored and disclosed publicly on an annual basis through CDP[46] and the Public Bodies Climate Change Duties Report.[47] They will also be reported annually to the Council's Policy and Sustainability Committee, convened by the Council Leader.

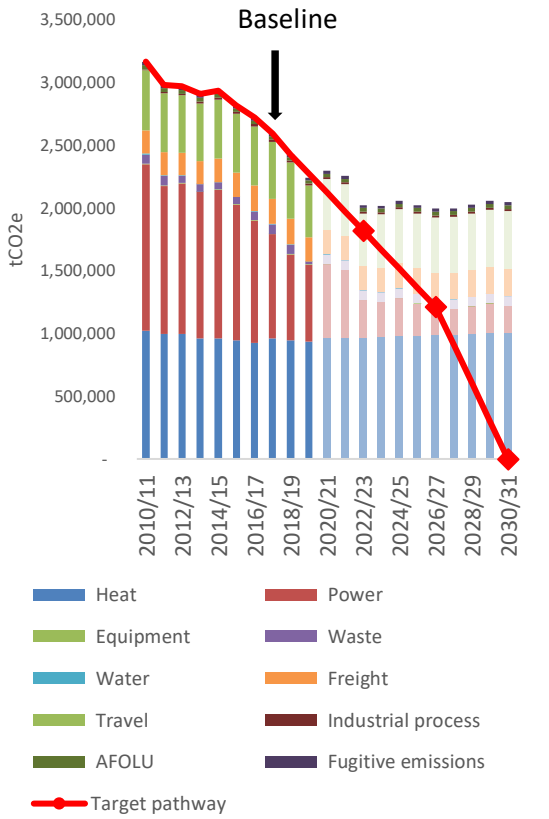


Figure 27: Edinburgh emissions sources and target pathway to 2030 (note: City's emissions based on the new Net Zero boundary. Darker shades represent historic emissions. Lighter shades represent Business as Usual projections

[46] City of Edinburgh Council Response, Carbon Disclosure Project, accessed June 2021

[47] Public Bodies Climate Change Duties reporting submissions, Sustainable Scotland Network, accessed June 201

Signatories of the Edinburgh Climate Compact have also committed to monitor and disclose their organisational emissions.

Progress towards the strategy's delivery will be monitored through the strategy implementation plan, which sets out the following for each of the strategy's actions:

- Key deliverables
- Milestones and timescales for delivery
- Lead delivery partner(s), wider delivery partners, Council contact
- Resources

Measuring co-benefits

The reporting priority will be on the achievement of the net zero emissions target by 2030 (both for the Council's operational emissions and the city), but a range of other indicators will also be used to monitor, measure and report progress against the strategy's wider outcomes.

This will provide a comprehensive view of Edinburgh's wider sustainability progress and achievement of co-benefits.

These indicators are detailed in the implementation plan which accompanies this strategy and will be reviewed and revised as more data becomes available.

Reporting on the 2030 Climate Strategy will not replace existing reporting by the council and city partners.

Carbon Scenario Tool

The Council has collaborated with the Edinburgh Climate Change Institute (ECCI) to develop an open source quantitative emissions calculation tool. The 'Carbon Scenario Tool' has been designed to inform Council decision making, by giving councillors and officers validated data on emissions impact at project, programme or city level, presented as a dashboard which includes wider sustainability impacts, such as air quality.

The tool allows the assessment of a wide range of projects, spanning from housing or transport to renewable energy generation – depending on the range and quality of data available for input. The tool is being further developed to help build capability for embedding climate impact into decision-making across Scotland through working with Scottish Government and the Scottish Cities Alliance.

Climate coalitions

Edinburgh is also a member of a range of other climate coalitions and reporting schemes, detailed at Annex 3. These include the Global Covenant of Mayors, for which the city received the maximum award of six badges in 2020 and 2021.

Annex 1: Offsetting

The need for offsetting

Even with a radical shift in the way we live to drastically reduce emissions, it is unlikely we will be able to reach *absolute zero*. The scale of the challenge is such that it is not practically achievable to avoid all greenhouse gas emissions and some 'residual emissions' will remain.

For example from waste management as recycling uses energy, or from electricity (as it is likely the UK grid will not be fully decarbonised by 2030).

To reach net zero, we can:

- directly remove these emissions locally - for example by planting trees within the city, or using 'negative emissions technologies' such as carbon capture and storage;

and / or

- purchase offsets from an accredited scheme which removes emissions from anywhere in the world (Figure 28*)*

Figure 28: Explainer of carbon offsetting. Source: UN Environment Programme

There is scepticism around offsetting as there is a risk it can be seen as mitigating the need to focus on bringing about transformational change now. However, in almost all emissions scenarios analysed by the Intergovernmental Panel on Climate Change (IPCC), negative emissions technologies like the ones illustrated on Figure 29, play a role in achieving targets.

In other words, we will have achieved net zero emissions when:

a) The city's greenhouse gas emissions, expressed in tonnes of CO_2 equivalent (CO_2e), have been **reduced as much as practically achievable.**

b) As a last resort, residual emissions are counterbalanced by removing greenhouse gasses from the atmosphere (either directly within the city's boundary, or through the purchase of offsets), and or capturing and storing at least as much CO_2e as was emitted by the city.

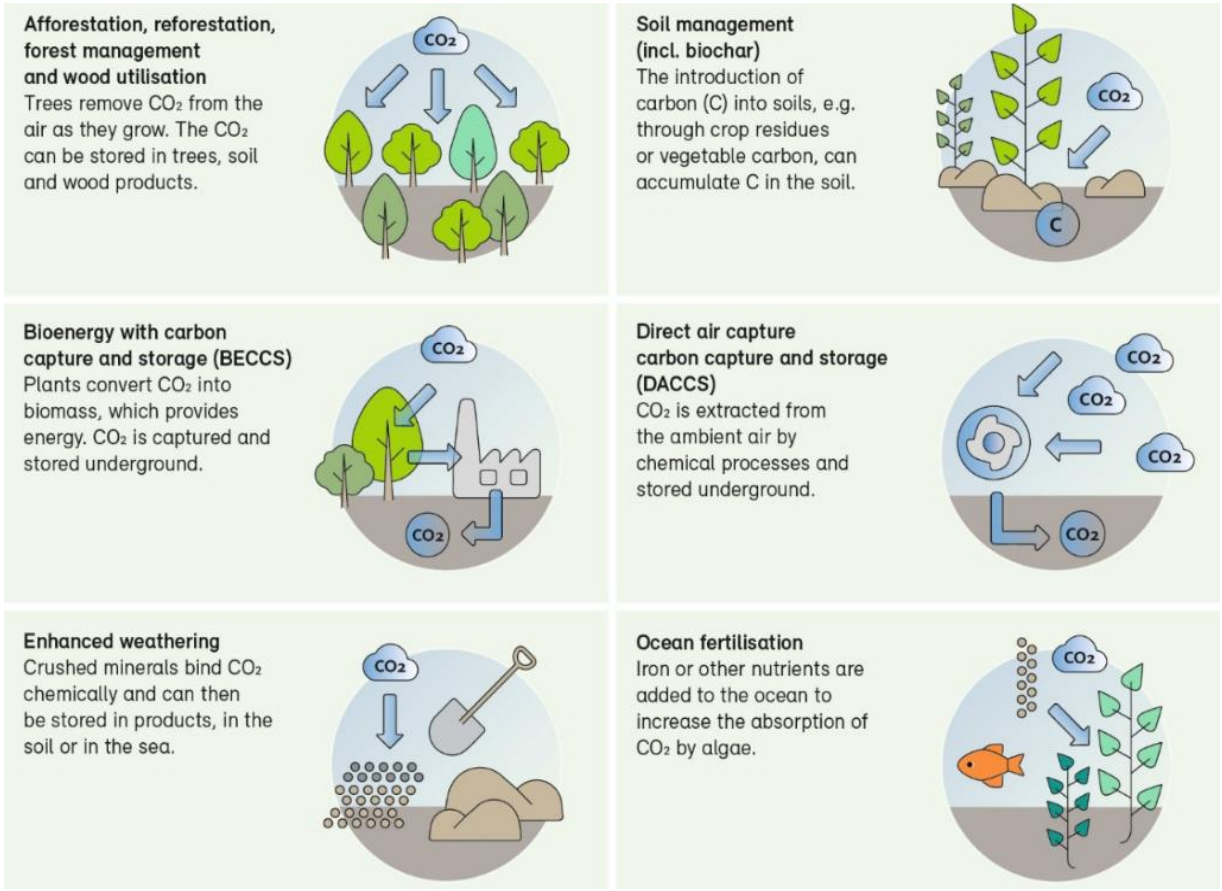


Figure 29: Possible approaches for negative emissions Source : Swiss federal office for the environment

Different ways to remove carbon

Offsetting strategies that rely only on tree planting require a lot of space[48], and in an urban location, are unlikely to be feasible for the Council or city partners. According to the Royal Society, it is best to use a portfolio of approaches.

There are different options as illustrated on Figure 29 on the previous page. They range from new technologies like Direct Air Capture and Carbon Storage (DACCS) to innovative agricultural practices with techniques to introduce more carbon into soils, green towers and vertical planting, or intelligent forest management to ensure optimal tree growth.

There are also techniques based on chemical reactions with CO_2, turning carbon from a gas into a solid. All these techniques are referred to as negative emissions technologies (NETs).

Carbon management hierarchy

Some organisations that have adopted offsetting have also made a policy decision to only use offsetting as a last resort, at the point that emissions have been reduced as far as practicable. How organisations choose to define 'as far as practicable' and 'last resort' may differ, as can how cost is considered - for example, where further emissions reductions would be technically possible, but would come at significant financial cost – potentially reducing the resources available to invest in other elements of climate action, such as adaptation.

Where organisations do choose to purchase off-sets, many will look to use schemes which have robust and transparent standards of verification and meet accredited quality principles. However, there is currently no universally accepted accredited scheme covering all the different types of offsets.

Local or global?

Scotland's target is a "net zero within boundary" target, meaning that the Scottish Government will not use international offsets to do its fair share to limit global warming.

Local or regional offsetting projects ensure the money spent stays locally and can deliver a multitude of co-benefits like habitat provision for wildlife; recreation and wellbeing; flood protection; urban cooling, or cleaner air.[49] However, at the very local level, different areas have different limits on the options available to them – for example, space to plant trees, or availability of underground carbon storage capacity.

A city-wide approach?

Offsetting is technically complicated and requires political and policy decisions, including the definition of quality principles and verification standards. At present, city partners each decide whether to offset and what approach to take, in line with their organisational responsibility for their policies and budgets.

For the city as a whole to be able to demonstrate it has met the net zero target, there will be a need to determine how off-setting should be treated and accounted for. There is a range of possible approaches, with each requiring further consideration and development.

Agreeing a city-wide approach to off-setting would allow city partners to develop a set of principles for off-setting – enabling a common approach to some of the policy issues described in this chapter.

There may also be scope to develop a city scheme for off-setting funds which partners could pay into, enabling local off-setting and the delivery of some of the co-benefits mentioned above. Membership of any scheme could be conditional upon signing up to the Edinburgh Climate Compact, to ensure that partners are also taking action to reduce their emissions as a priority.

There may be opportunities to learn from city partners such as universities, who are already thinking about sector-wide approaches, and there could be scope to work at a regional, or even national level, to allow offsetting between Scottish local authority areas based on land availability or other factors.

Getting an approach to offsetting right for the city is an important part of the strategy. We will therefore work with city partners, and potentially other local authorities

[48] For example, A Net Zero Carbon Roadmap for Edinburgh, Place-Based Climate Action Network research modelled emissions reductions of 65 % from current levels and concluded that 517 million trees would need to be planted to off-set the remaining emissions. This would need land more than four times the total area of the city. A Net Zero Carbon Roadmap for Edinburgh, Place-Based Climate Action Network, 2020

[49] Advice on using nature-based interventions to reach net zero greenhouse gas emissions by 2050, Natural Capital Committee, 2020

and Scottish Government, over the longer term to consider and agree the best approach.

This will include jointly considering a policy position, strategy and budget for off-setting that clarifies when off-sets would be used and which quality principles must be met, including the standards of verification to be applied to different types of off-sets.

Annex 2: Glossary

Term	Meaning
20-minute neighbourhood	The '20-minute neighbourhood' model is an approach to designing and locating public services and amenities so that people can meet most of their daily needs within a short trip by foot, cycle, or public transport from where they live. (Source: Council's business plan 2021-2026)
Adaptation	Climate change adaptation is the process of adjusting to current or expected climate change and its effects. (Source: IPCC)
Active travel	Making journeys by physically active means such as walking, cycling, wheeling, or scooting.
Biodiversity	Biodiversity collectively describes millions of unique living organisms that inhabit earth, and the interactions among them. (Source: European Environment Agency)
Carbon dioxide (CO_2)	A naturally occurring gas and one of the most abundant greenhouse gases in the atmosphere. Carbon dioxide is also a by-product of industrial processes, burning fossil fuels and land use changes.
Carbon dioxide equivalent (CO_{2e})	Universal unit of measurement used to compare the relative climate impact of the different greenhouse gases. The CO_{2e} quantity of any greenhouse gas is the amount of carbon dioxide that would produce the equivalent global warming effect.
Carbon neutrality	When CO_2 emissions caused by humans are balanced globally by CO_2 removals over a specified period (Source: IPCC SR15). This does not apply to other greenhouse gases.
Carbon footprint	The sum of all emissions (in CO_2e), which were produced by an individual or organisation in a given time frame. Usually a carbon footprint is calculated for the time period of a year.
CCC	Committee on Climate Change. The Committee on Climate Change is an independent body established under the Climate Change Act (2008) that advises the UK Government on setting and meeting carbon budgets and on preparing for the impacts of climate change.
Circular economy	The principle of designing out waste and pollution, keeping products and materials in use, and regenerating natural systems. (Source: Ellen MacArthur Foundation)
City partners	Public, private, community and voluntary sector organisations who can have an impact on the city's emissions by reducing their own footprints or collaborating to unlock change.
Civil society	Civil society refers to a wide array of organizations: community groups, non-governmental organizations [NGOs], labour unions, indigenous group organisations, charitable organizations, faith-based organizations, professional associations, and foundations. (source: The World Bank)
Clean energy	Energy that comes from renewable, zero emission sources which do not pollute the atmosphere when used
Climate change	The large-scale, long-term shift in the planet's weather patterns or average temperatures.
Co-benefits	The positive effects that a policy or measure aimed at one objective might have on other objectives. (Source: IPCC 5th Assessment Report) Within the context of this strategy, these are the positive benefits related to the reduction of greenhouse gases, and range from improved public health, job creation, ecosystem preservation and biodiversity improvement, noise reduction, to improved access to mobility services, plus others.
Community wealth building (CWB)	Community wealth building (CWB) is a system-changing approach to community economic development that works to produce broadly shared economic prosperity, racial equity, and ecological sustainability through the reconfiguration of institutions and local economies on the basis of greater democratic ownership, participation, and control. (Source: Community-Wealth.org)
EnerPhit/ Passivhaus	EnerPHit is the established standard for refurbishment of existing buildings using the PassivHaus basic principles and components. The Passivhaus Standard for new construction is not always achievable for works to existing buildings. For this reason, PHI (Passive House Institute) developed the

	'EnerPHit – Quality Approved Energy Retrofit with Passive House Components' certification process for existing buildings. Significant energy savings of between 75 % and 90 % can be achieved even in existing buildings The basic 5 principles of the Passivhaus Standard are still used to achieve the EnerPHit Standard; • optimising thermal insulation levels • reduction of thermal bridges • high thermal performance windows • considerably improved airtightness • good indoor air quality maintained by a ventilation with heat recovery system with highly efficient heat recovery levels
ESESCRD	Edinburgh South East Scotland City Region Deal is a collaboration of partners from six Scottish Local Authorities that partners with UK Government and Scottish Governments to deliver transformational change to the city regional economy
Fabric first	An approach to building design which involves maximising the performance of the components and materials that make up the building fabric itself, before considering the use of mechanical or electrical building services systems. (Source: Carbon Futures)
Greenhouse gas (GHG)	The collective term for emissions which contribute to the greenhouse effect by trapping heat from the sun. Carbon dioxide is a greenhouse gas, but other gasses such as methane also contribute to the greenhouse effect.
Green recovery	Making sure that a cleaner, greener future is at the heart of plans to rebuild a strong economy after Covid-19.
Green infrastructure	Green infrastructure is a network of multi-functional green space and other green features, urban and rural, which can deliver quality of life and environmental benefits for communities – for example street trees, green roofs or walls, rain gardens etc. (Source: Adapted from TCPA)
Green/grey/brown hydrogen	Hydrogen, in itself, is a clean fuel. Manufacturing hydrogen fuel, however, is energy-intensive and has carbon byproducts. Brown hydrogen is created through coal gasification. Grey hydrogen is created from natural gas and throws off carbon waste. Blue hydrogen uses carbon capture and storage for the greenhouse gases produced in the creation of grey hydrogen. Green hydrogen production is the ultimate clean hydrogen resource and uses renewable energy to create hydrogen fuel (Source: Utility Analytics Institute)
Green/ blue network	A strategic network of woodland and other habitats, active travel routes, greenspace links, watercourses and waterways, providing an enhanced setting for development, connecting and linking habitats and providing improved opportunities for outdoor recreation, well-being and cultural activity.
Greenspace	Any vegetated land or water within an urban area. This includes, parks, gardens, playing fields, children's play areas, woods and other natural areas, grassed areas, cemeteries and allotments. It also includes green corridors like paths, disused railway lines, rivers and canals and derelict, vacant and contaminated land which has the potential to be transformed (Source: Greenspace Scotland)
Geothermal	Relating to or produced by the internal heat of the earth.
Grid decarbonisation	Decarbonising the grid means decreasing the emissions per unit of electricity generated. The electricity grid will decarbonise over time thanks to the UK generating an increasing proportion of its energy from wind power and other renewable sources.
Heat network	Heat networks (also known as district heating) supply heat from a central source to consumers, via a network of underground pipes carrying hot water. Heat networks can cover a large area or even an entire city or be fairly local supplying a small cluster of buildings. (Source: Department for Business, Energy and Industrial Strategy)
IPCC	Intergovernmental Panel on Climate Change, a research group created by the World Meteorological Organization and the United Nations Environment Programme, responsible for surveying and synthesising scientific work on climate change.

Just transition	A just transition seeks to ensure that the benefits of a transition to a green economy are shared widely, while also ensuring those facing disadvantage are not negatively impacted – be they countries, regions, industries, communities, workers or consumers. (Source: Adapted from European Bank for Reconstruction and Development)
Landfill	Disposal of waste material by burying it under layers of earth.
LOIP DG	The Local Outcome Improvement Plan Delivery Group is part of the structures supporting community planning in Edinburgh. It is accountable to the Edinburgh Partnership Board and has a remit to lead, deliver and progress Edinburgh's local outcome improvement plan. Group membership is drawn from community planning partners across a range of sectors
Nature-based solutions	Working with nature to address societal challenges, providing benefits for both human well-being and biodiversity.
Negative emissions technologies (NETs)	NETs are novel processes that aim to remove greenhouse gases from the atmosphere and hold them in long-term storage.
Net zero emissions	Where any greenhouse gas emissions put into the atmosphere are balanced out by the greenhouse gases removed from the atmosphere, so that the "net" effect is zero emissions. (source: Scottish Government)
Offsetting	The process of trying to reduce the damage caused by releasing carbon dioxide into the environment by doing other things that remove carbon dioxide, for example, by planting trees". (Source: Cambridge Dictionary)
Rain garden	A rain garden is a garden designed to temporarily hold and soak in rainwater runoff that flows from roofs, driveways, patios or lawns. Compared to a conventional lawn, rain gardens allow for 30 % more water to soak into the ground. A rain garden is dry most of the time. It typically holds water only during and following a rainfall event. (Source: Groundwater Foundation)
Retrofit	Modifications to existing buildings that improve energy efficiency or decrease energy demand and may include installation of low carbon heating systems.
Resilience	Resilience is defined as the capacity to recover quickly from difficulties or shocks. Climate resilience is the ability to anticipate, prepare for, and respond to hazardous events, trends, or disturbances related to climate. Improving climate resilience involves assessing how climate change will create new, or alter current, climate-related risks, and taking steps to better cope with these risks. (Source: Climate Resilience Portal)

Annex 3: Edinburgh coalition involvement

Building meaningful connections to accelerate climate action

National and global climate networks enable knowledge sharing between members to quickly scale up climate action across the world, raise the voice of local governments and their partners on the global stage, and highlight the role of cities, and their collective power in delivering on the ground carbon reductions.

Edinburgh has joined a number of coalitions and networks:

EIT Climate-KIC

Edinburgh is one of only 15 European cities to be part of the EIT Climate-KIC Healthy, Clean Cities Deep Demonstrator programme. This allows us to work with the Climate Knowledge Innovation Community and its partners to learn from other European cities and design a series of 'tests of change' to be implemented in the next five years.

Edinburgh Climate Commission

In February 2020, the Edinburgh Climate Commission for was launched, co-sponsored by the Council. The Commission brings together city partners from across the private, public, academic and community and voluntary sectors to offer independent advice, expertise and challenge to the city to support accelerated action on tackling climate change.

In December 2020, the Council signed the Edinburgh Climate Compact launched by the Climate Commission, along with nine other signatories representing the health, finance, energy, construction, education, transport, arts and culture sectors. Signatories pledged to deliver key climate commitments.

Global Covenant of Mayors for Climate and Energy

Edinburgh signed up to the Global Covenant of Mayors initiative in 2011 and to the Mayors Adapt initiative in 2015. Since 2016, both initiatives have merged within the Covenant of Mayors for Climate and Energy - a global coalition of city leaders addressing climate change by pledging to cut greenhouse gas emissions and prepare for the impacts of climate change. In 2020 and 2021, the City has been awarded with the maximum of six badges recognising its climate mitigation and adaptation efforts.

CDP (A List city for 2021)

In 2020 and 2021, Edinburgh, along with almost 1,000 cities, states and regions across the globe, voluntarily reported through the Carbon Disclosure Project (CDP) reporting system. CDP is an international non-profit organisation for companies' and cities' environmental reporting (*cf monitoring success section*).

Edinburgh is one of 95 global cities recently named as new generation of climate leaders on the CDP 2021 A-List; meaning it has been recognised by CDP as a city that is taking bold leadership on environmental action and transparency.

UK 100

The City of Edinburgh Council is also a member of UK100 (and of its ambitious net zero local leadership club), a UK network for locally elected leaders who have pledged to do everything within their power to rapidly cut greenhouse gas emissions.

Cities CAN-B

Edinburgh joined Cities CAN-B,[50]a global movement designed to mobilize hundreds of thousands of people (citizens and organizations) to collaborate in pursuit of the UN Sustainable Development Goals.

This movement aims promote a cultural change that redefines the way we assume our responsibility and our impact on the cities we build and inhabit.

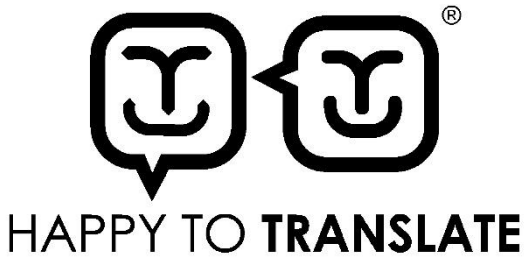
Building momentum in the run up to COP26 coming to Scotland

COP26 is a major United Nations climate change summit taking place in Glasgow from 1-12 November 2021 under the presidency of the UK government, and is being hosted in Scotland for the very first time.

COP26 represents an important opportunity for Edinburgh to demonstrate the steps we are taking as Scotland's capital, to tackle climate change and build the partnerships we need to help deliver a net zero city. Edinburgh has joined four initiatives connected to COP26:

- UN COP26 Cities Race to Zero is a global campaign to rally leadership and support from businesses, cities, regions, investors for a healthy, resilient, zero carbon recovery that prevents future threats, creates fair work, and unlocks inclusive, sustainable growth.
- UN COP26 Cities Race to Resilience, a sibling campaign to Race To Zero. The campaign sets out to catalyse a step-change in global ambition for climate resilience, putting people and nature first in pursuit of a resilient world where we don't just survive climate shocks and stresses but thrive in spite of them.
- UK100 Net Zero Pledge, a public commitment to bring council organisational emissions to Net Zero by 2030 and wider communities' emissions in line with Net Zero as soon as possible (and by 2045 at the latest).
- The establishment of a COP26 Edinburgh events steering group, with members to include the City of Edinburgh Council, Edinburgh University, Festivals Edinburgh, Edinburgh business and other partners, to maximise opportunities for the city from participation and attendance at COP26 and associated events.

[50] Cities CAN-B, accessed June 2021



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