NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Action Plan

2030 Climate Neutrality Action Plan of Glasgow

Glasgow CITY COUNCIL

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Summary

An abstract **summarises the content** of the 2030 Climate Neutrality Action Plan (CCC Action Plan) that is developed jointly by local authorities, local businesses, and other stakeholders.

Textual element

Glasgow's 2030 Climate Neutrality Action Plan outlines the city's strategy to achieve net-zero carbon emissions by 2030. This plan is a collaborative effort involving local authorities, businesses, and other stakeholders, aligning with the European Union's Climate City Contract initiative.

Glasgow recognises climate change as a critical global challenge and has committed to becoming a net-zero carbon city by 2030. The city has made significant progress, reducing its CO_2 emissions by 45.7% between our baseline year of 2006 until our most recent data year of 2022. The city however acknowledges that further substantial efforts are still required.

This Action Plan provides a detailed inventory of greenhouse gas emissions, focusing primarily on carbon dioxide. It highlights the major sources of emissions in Glasgow, including transport, heating, and industrial activities. The Plan identifies gas emissions, particularly from heating, as a significant challenge particularly due to the reliance on natural gas and the city's aging building stock.

Whilst this submission to achieve 'Mission Label' status marks a new chapter of collaboration and delivery toward net zero for Glasgow, the city already has a strong history of developing and implementing several key strategies to address climate change, including our Climate Plan, Local Heat and Energy Efficiency Strategy (LHEES), Glasgow Transport Strategy, and the Circular Economy Routemap. These strategies aim to reduce emissions across various sectors by promoting renewable energy, enhancing energy efficiency, and fostering sustainable transportation.

There are a number of barriers outlined in this Action Plan, some generic to cities tackling climate change and some specific to Glasgow's circumstances. These include governance challenges, infrastructure needs, and community engagement. The high cost of retrofitting buildings, the complexity of deploying district heating, and consumer behaviour are also noted as significant obstacles for the city to reach Net Zero Carbon by 2030.

Critically, moving forward Glasgow plans to address these challenges through our **"Net Zero Routemap," which has established science-based interim targets and outlined a cost-effective approach to reducing emissions.** The plan emphasises the need for innovative financing models and strong governance to drive the transition. In addition to this, Glasgow is progressing with the development of a Climate Investment Model which will seek to utilise blended sources of finance to deliver investable climate-related infrastructure projects across the city. This is outlined throughout our Action and Investment Plans.

This Action Plan stresses the importance of social inclusion and community empowerment in Glasgow's transition to net-zero carbon. It calls for actions that not only reduce emissions but also improve health, equity, and economic resilience in Glasgow.

Through this submission, Glasgow's reinforces its commitment to continually refine our approach to addressing climate change, with a key focus on integrating the outputs of the Net Zero Routemap into our approach. The city aims to engage all relevant stakeholders in this process to ensure a coordinated and effective response to the climate emergency.

Overall, the plan represents Glasgow's ambitious but necessary steps towards achieving climate neutrality by 2030, emphasising the need for immediate and transformative action across all sectors of the city.

List of figures

The list of figures **identifies the titles and locations** (page numbers) of **all visual elements:** figures, drawings, photos, maps, etc. used in the CCC Action Plan.

List of tables

The list of tables **identifies the titles and locations** (page numbers) of **all tables** used in the CCC Action Plan.

1 Introduction

The introduction outlines the local geographic and policy context in which the city´s 2030 Climate Neutrality Action Plan is being developed and describes the gap it addresses in broad terms.

Introduction

There is global consensus that climate change is the greatest challenge of our lifetime. Furthermore, it is acknowledged that if we are to keep global warming to safe limits, major transformative action and commitment will be required from a range of state actors, businesses, individuals, and communities. This is an unprecedented global emergency and, accordingly, these are unprecedented tasks – and, crucially, time is rapidly running out.

As we continue to recover from the impacts of the Covid-19 pandemic, an unforeseeable crisis, we know we need to turn once more to the emergency which we did see coming. Glasgow has been working to reduce its CO_2 emissions since 2010 and declared a Climate and Ecological Emergency in 2019, publishing a set of recommendations which were drafted by two working groups that included representation from all political groups in the city. The outputs of this work formed the basis upon which Glasgow developed its first Climate Plan in 2021. Principal amongst the outputs of the Climate Plan was a commitment for Glasgow to become **Net Zero Carbon by 2030.**

Glasgow aims to become one of the most sustainable cities in Europe. The city has already achieved (and exceeded) its target of reducing CO_2 emissions by 30% by 2020 from a 2006 baseline year, achieving this goal by 2015. Our most recent data indicates Glasgow has now reduced its emissions by 45.7% in 2022, from our baseline year of 2006. This is a testament to the ongoing success that policies and projects aimed at supporting Glasgow's transition to a net-zero city are having. Increased EV charging and cycling infrastructure are creating an environment that is convenient for residents to make low carbon choices. Increased zero emission buses serving the city are also expected to contribute to carbon reductions from transport sources. Furthermore, Glasgow continues to contribute to the national shift toward renewable electricity with the continued rollout of solar PV across the estate alongside the contributions from other generation sources such as the GRREC[1] and the Cathkin Wind Turbine. Heating and cooling in the city continue to decarbonise from our 2006 baseline with regional retrofit programmes and district heating expansion forming key parts of the city's approach moving forward.

Whilst this progress is notable, it also indicates that many of the quick wins have been realised. In this light, the city recognises that there needs to be a sharp increase in the scope, scale, and intensity of delivery of projects to set Glasgow on course to achieving its Net Zero Carbon goal for 2030.

For example, there are ongoing challenges in monitoring and reporting Scope 3 emissions which the city recognises as a key obstacle to overcome if we are to truly meet our Net Zero Carbon ambition. As such, our Net Zero Carbon target, at present, includes only those emissions from Scopes 1 and 2. The city has committed to understanding how we can begin to track and therefore reduce our Scope 3 emissions and the development of the **Net Zero Routemap** will support us the development this pathway.[2] Additionally, our Net Zero Carbon target at present relates only to carbon emissions

[1] Glasgow Recycling and Renewable Energy Centre – EfW plant in Glasgow.
[2] Proposed approach to Scope 3 emissions is located in Section 4.2.4.2 of the Net Zero Routemap

rather than the full range of greenhouse gas emissions. It is the intention of the City Council to expand the range of greenhouse gas emissions considered more wider than solely carbon and our progression towards this will be supported by the outputs of the **Net Zero Routemap.**

The Net Zero Routemap

The Net Zero Routemap complements existing strategies by (i) establishing interim, science-based targets required to reach net zero, Section 4.1 of the Routemap (ii) developing an approach for the city that allows priority emissions areas (such as transport and heating) to be addressed, Sections H, I and J of the Routemap (iii) developing an impact assessment tool, Section 5 of the report, (iv) adopting a whole-systems approach across the city, Section 6 of the Routemap, and (v) creating a novel delivery plan with costed scenario pathways, Sections 7 and 11 of the Routemap.

The Net Zero Routemap report was finalised in November 2024 and approved at this time through our Committee process. Glasgow City Council is currently going through a process of reviewing and internalising the outputs of this report. At this point the outcomes from the Routemap are in the public domain and we have an agreed set of next steps for the integration of the findings across all relevant GCC policy and delivery. The Net Zero Routemap is appended to this submission and acts as a key element in our overall submission.

This CCC Action Plan aims to clarify Glasgow's progress towards Net Zero Carbon whilst outlining where the city should place focus going forward if we are to meaningfully reach for Net Zero Carbon by 2030. This Action Plan will directly inform how the Council not only reviews and updates its existing Climate Plan but critically, **how we implement the outputs of the Net Zero Routemap (appended to this submission)**. It also serves as a call to action for residents, businesses, and organisations across the city by providing a comprehensive plan for how the city prioritises action towards Net Zero Carbon and what roles different stakeholders in the city can take to support this.

The most recent data (2022) for city emissions highlights that our total area wide emissions 2,323.5 kilo-tonnes ($ktCO_2$). This represents a 45.7% reduction from the city's baseline data (2006) and is the total emissions which will have to be balanced across mitigation and sequestration activities. Transport and heating emissions are the biggest challenge for the city, with both sectors seeing slower reductions than in other sectors. As the metropolitan heart of Scotland, there is significant private vehicle use in the city which contributes to high and persistent emissions from transport. Likewise, around 93% of domestic properties in the city are heated by gas through individual boilers. This poses significant challenges in decarbonising emissions from gas and this is further compounded by the high proportion of flatted properties with poor levels of energy efficiency (pre-1919 tenemental stock) for which decarbonisation options are limited and complex.

The city's ambition is to reduce emissions through direct mitigation as far as possible, whilst also adapting to the impacts of climate change and addressing the ecological emergency, all of which will provide carbon sequestration opportunities, whilst also improving quality of life and enhancing place-making in the city. The ratio of mitigation and sequestration of emissions will require constant review as new projects and initiatives are introduced. It is, however, the city's ambition to prioritise the reduction of emissions and utilise sequestration to manage residual emissions that have not yet been mitigated by 2030. We will endeavour to measure the amount of sequestration as a result of ecological emergency and adaptation projects. **The Net Zero Routemap (appended) outlines options for what proportion of mitigating v sequestration would enable the most efficient transition to Net Zero Carbon by 2030.**[3]

In order to achieve our ambitious Net Zero Carbon target, building adaptive capacity to climate change, addressing biodiversity decline, and bringing about a green economic recovery from Covid-19, bold leadership and substantial investment is required. We must acknowledge openly that our current momentum, though laudable, will not result in sufficient action to ameliorate and reverse the impacts of climate change so clearly demonstrated in the changing trends in weather experienced right now in the city. We must also recognise that the impact that Glasgow can make in global terms to slowing climate change is relatively small, which underlines the need to take action to increase our resilience to the impacts of climate change.

The pace of change is central to Glasgow being able to meaningfully contribute to halting the increasingly damaging impacts of climate change. Additionally, the transition to Net Zero Carbon will bring wider benefits to the citizens of Glasgow, improving air quality, enhancing equity and providing greater access to greenspace. There is therefore overlapping imperatives to act at pace in reducing our carbon emissions and then continuing to do so past our 2030 Net Zero Carbon target. One tonne of CO_2 has a persistence of around 100 years in the atmosphere, so a tonne of CO_2 saved now is worth 100 times a tonne of CO_2 saved a century later. This means that ambitious, early interventions will make almost double the CO_2 savings compared with a slower rate of change. Time is of the essence and rapid action is required to be taken right now.

Effective climate action can also bring about better, more equitable health and wellbeing, a stronger and inclusive economy, and more resilient communities. Climate-smart and low carbon places, while generating thriving economies. Glaswegian communities already experience many inequalities around income, opportunity and discrimination.

The city maintains the core principle that sustainability and social justice are intrinsically linked and interventions should address these as single, combined issues.

- Actions to address the climate crisis must not further disadvantage people, and communities who already experience significant inequalities. Ensuring that any barriers to their transition to net zero carbon are understood and addressed.
- Actions to create a safer, resilient and more sustainable city should be aimed at building a just and more equal city.

Through these principles, Glasgow has been a leader in its involvement in the Thriving City Portrait initiative, in partnership with the University of Glasgow. The Thriving City Glasgow project aims to

[3] This can be found in Section 6 of the Net Zero Routemap.

answer the question "**How can Glasgow be a home to thriving people, in a thriving place, while respecting the wellbeing of all people and the health of the whole planet?".** The outputs of this work are supporting Glasgow's participation in the C40 Thriving City Initiative. A key aspect of the initiative, which aims to establish a vision of Glasgow delivering for people and planet in conjunction, has been extensive stakeholder engagement. Between January 2022 and April 2023, **this manifested as a series of workshops to consult people from a diverse range of sectors and local communities on how best to co-produce a vision of what a thriving Glasgow would look like: The Thriving Glasgow Portrait.**

In cognisance of the absolute requirement to have citizens at the heart of the Net Zero transition, Glasgow is progressing several initiatives that support enhanced citizen participation and engagement. These are discussed in detail in section C-2.2 and include:

- Hosting a Citizen's Assembly, which informed the development of our Climate Plan
- A Youth Climate Action Fund, aimed at providing funding to youth climate initiatives
- Community Renewables Energy Framework (CREF), aimed at increasing the footprint of community owned renewables in Glasgow
- LEZ Community Climate Fund, which will use the residual revenue from LEZ funding to support community climate initiatives.
- The Climate Change Engagement Framework, currently under development. The Framework will consolidate our progress to date and establish a pathway for effective community engagement as it relates to Net Zero

The City Council recognises the scale of the transformation required to address the climate and ecological emergency, including technological innovation, behavioural change, finance and policy change. As such, the city is developing novel approaches to unlocking the finance required to reach Net Zero Carbon. The Investment Plan included in this Climate City Contract will support the Council in prioritising where investment is required and at what scale. It provides a staging post for Glasgow City Council as we begin to explore delivery models that could unlock the deployment of climate friendly infrastructure at the scale required for the city and the wider region. More information on the establishment of our Model for Climate Investment can be found here.

These are extraordinary times for Glasgow, for Scotland, and for humanity. A global pandemic has revealed the fragility of our social and economic systems, whilst at the same time underlining the need for solidarity and community cohesion. The climate emergency has not however gone away and will interact with other crises in ways which call for us all to think and act anew. At the very least, recent events have highlighted our ability to act swiftly and with determination when reacting to an emergency, an ability that needs to be utilised in dealing with the climate and ecological emergency.

This Climate City Contract is therefore about Glasgow, its citizens, and our collective role in the most significant challenge that has ever faced humanity.

2 Part A – Current State of Climate Action

Part A "Current State of Climate Action" describes the point of departure of the city towards climate neutrality, including commitments and strategies of key local businesses, and informs the subsequent modules and the outlined pathways to accelerated climate action.

2.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory

Module A-1 "Greenhouse Gas Emissions Baseline Inventory" details and describes the latest GHG inventory, where available from 2018 or more recent, referring to a clearly stated geographic boundary. The aim of this section is to establish the emission baseline and to establish the emissions gap to 2030 climate neutrality according to the inventory specifications defined in the Cities Mission's Info Kit for Cities and the process outlined in the CCC Action Plan Guidance.

Coverage of Emissions Reporting

Glasgow's emissions inventory covers the whole geographic area of Glasgow City Council's jurisdiction as a local authority. At present, it partially excludes the full range of Scope 3 and sequestered emissions. Likewise, Glasgow's reporting and monitoring of emissions does not include the full range of greenhouse gases, covering only carbon dioxide emissions. **The outputs of the Net Zero Routemap (appended) will assist Glasgow City Council in its continuing development of a methodology to track emissions across these excluded scopes, sectors, and gases.**[4]

Emissions and Energy Consumption - Data Sources

Glasgow uses data provided by the UK Government's Department for Energy Security and Net Zero (DESNZ) to monitor and report on our carbon emissions and energy consumption.[5]

1. Emissions

The DESNZ emissions dataset combines data from the UK's Greenhouse Gas Inventory with data from a number of other sources, including local energy consumption statistics, to produce a nationally consistent set of greenhouse emissions estimates at local authority level from 2005 to 2022. They show "territorial" emissions, meaning emissions that occur within the UK's borders. The data show emissions allocated on an "end-user" basis where emissions related to energy use are distributed according to the point of energy consumption. Emissions that are not energy related are distributed based on the point of emission, other than emissions from waste management which are distributed based on where the waste was produced.

[4] Section 4.2.4.2 in the Net Zero Routemap highlights plans for Scope 3 emissions. The full Routemap is relevant to how the Council is developing its approach to excluded greenhouse gases.
[5] To note, emissions data and energy consumption data are provided by DESNZ with different categorisation methodologies.

Except for the energy industry, emissions from the production of goods are assigned to where the production takes place. Therefore, emissions from the production of goods which are exported will be included, and emissions from the production of goods which are imported are excluded.

The greenhouse gases covered by these statistics are carbon dioxide, methane and nitrous oxide.[6] In accordance with international reporting and carbon trading protocols, each of these gases is weighted by its global warming potential (GWP), so that total greenhouse gas emissions can be reported on a consistent basis (in carbon dioxide equivalent units). The GWP for each gas is defined as its warming influence relative to that of carbon dioxide. The GWPs used in these statistics are from Working Group 1 of the IPCC Fifth Assessment Report: Climate Change 2013.

The UK territorial emission statistics that DESNZ publish also cover emissions from hydrofluorocarbons, perfluorocarbons, sulphur hexafluoride and nitrogen trifluoride (collectively referred to as fluorinated gases or F gases), but the UK Government are not able to estimate emissions of these gases at a local authority level at this time. Carbon dioxide, methane and nitrous oxide collectively accounted for an estimated 97% of greenhouse gas emissions in the UK in 2022, with F gases making up the remaining 3%.

A link to the data source can be found here.

To find more information regarding the methodology for producing these statistics, see here.

2. Energy Consumption

The dataset, also provided by DESNZ presents estimates of UK energy consumption by countries, regions and local authorities. Energy consumption is broken down further by sector and fuel type. These estimates are produced from combining subnational energy statistics from a number of different publications.

The data provides the estimates by local authority in thousands of tonnes of oil equivalent (ktoe) for the years 2005 to 2022. The equivalent figures in GWh are no longer provided in the publication, they can be calculated by multiplying figures by 11.63.

A link to the data source can be found here.

To find more information regarding the methodology for producing these statistics, see here.

Emissions Reporting in Scotland

In direct response to the international Paris Agreement, the Climate Change (Scotland) Act 2009 was amended by the Climate Change (Emissions Reduction Targets) (Scotland) Act 2019, increasing the ambition of Scotland's emissions reduction targets to net zero by 2045.

Scotland's net zero emissions target date of 2045 is ahead of many other countries, including the UK whose target is to reach net zero by 2050.

All of Scotland's statutory targets are economy-wide; including all territorial greenhouse gas emissions and a fair share of those from international aviation and shipping, as well as territorial removals (including from the land use sectors). The statutory framework sets a default position that the targets are to be met through domestic action alone, without any use of international offset credits.

[6] Whilst the inventory includes methane and nitrous oxide, Glasgow at present only reports on carbon emissions.

The methods used to measure emissions and removals for the purpose of assessing progress to the targets are based on international carbon reporting practice. An annual report sets out whether each annual emissions reduction target has been met.

Since 2011, Scotland's public bodies have been legally required to reduce emissions. Scotland's public sector can be proud of the role it has played in helping to halve national greenhouse gas emissions. Many bodies are already going well beyond their legislative duties to influence change and drive action across society. Public bodies are also central to Scotland's preparedness for the challenges that we will face as our climate continues to change.

Following consultation in 2019, the Scottish Government delivered its Programme for Government commitment to strengthen our legislative framework through new regulations which will support public bodies' leadership role. Public bodies must now report:

- their target date for achieving zero direct emissions from their own operations
- targets for reducing indirect emissions, for example from their supply chain
- how their spending aligns with emissions reduction
- their contribution to Scotland's Adaptation Programme

Scope 3 Emissions Reporting Requirements

There is currently no agreed methodology for baselining and monitoring scope 3 emissions across a geographic area. This is currently being developed by the Scottish and UK Government's and Glasgow continues to be an active member in these discussions.

As outlined below, Glasgow City Council is exploring how it can develop a methodology for baselining and monitoring scope 3 emissions from within the organisation. As the biggest employer in the city and the local Government authority, the Council has a duty to lead the way in such developments and as such, **creating a methodology for baselining and monitoring scope 3 emissions within the organisation is seen as a way of catalysing this type of action at city level prior to the establishment of a national approach.**

It is common for an organisation's scope 3 footprint to be significantly larger than its scope 1 and 2 footprints, therefore it is important to include scope 3 in reporting to better understand the organisation's overall climate impact. Scope 3 emissions are also likely to have significant uncertainty – however this should not be a barrier to reporting, as the poor data maturity of some areas of scope 3 reporting can be included in reporting for transparency.

As scope 3 emissions are from the value chain, they are not considered under the direct control of the organisation, however many areas of scope 3 can be heavily influenced by the organisation through behaviour, supply chain engagement and decision-making.

There are many categories of scope 3 emissions, and they will not all be relevant for all organisations, therefore public bodies must review their reporting boundary and clearly understand which categories are relevant for them.

Glasgow City Council currently reports on emissions from its own operations related to homeworking, business travel and transmission and distribution of electricity through the statutory Public Bodies Climate Change Duties Reporting. In the next 3-4 years, requirements of this reporting will increase to include reporting of waste, hotel stays and employee commute and therefore GCC will soon report on these sources. There is currently no metric to measure scope three emissions across the city.

However, work is ongoing to understand how this could be done, including through (i) analysis of construction materials and research to better understand consumption (ii) the development of a methodology for monitoring waste generated through Council activities and (iii) mapping of the Council's supply chains.

Over time public bodies in Scotland will be expected to report on their scope 3 emissions as fully as possible.

Glasgow's Progress towards Net Zero Carbon

In our most recent data year of 2022, Glasgow has reduced its emissions by 1,958 $ktCO_2$ (45.7%) from our baseline year of 2006. In 2022, carbon emissions totalled 2,323.5 $ktCO_2$. Figure 1 below highlights the trendline in our carbon emissions reductions.

The data for the previous year (2021) showed that emissions in Glasgow had 'bounced-back' after a significant drop in 2020 due to the Covid-19 pandemic. This post-covid emissions bounce back is a trend that has been seen across similar cities in the UK.

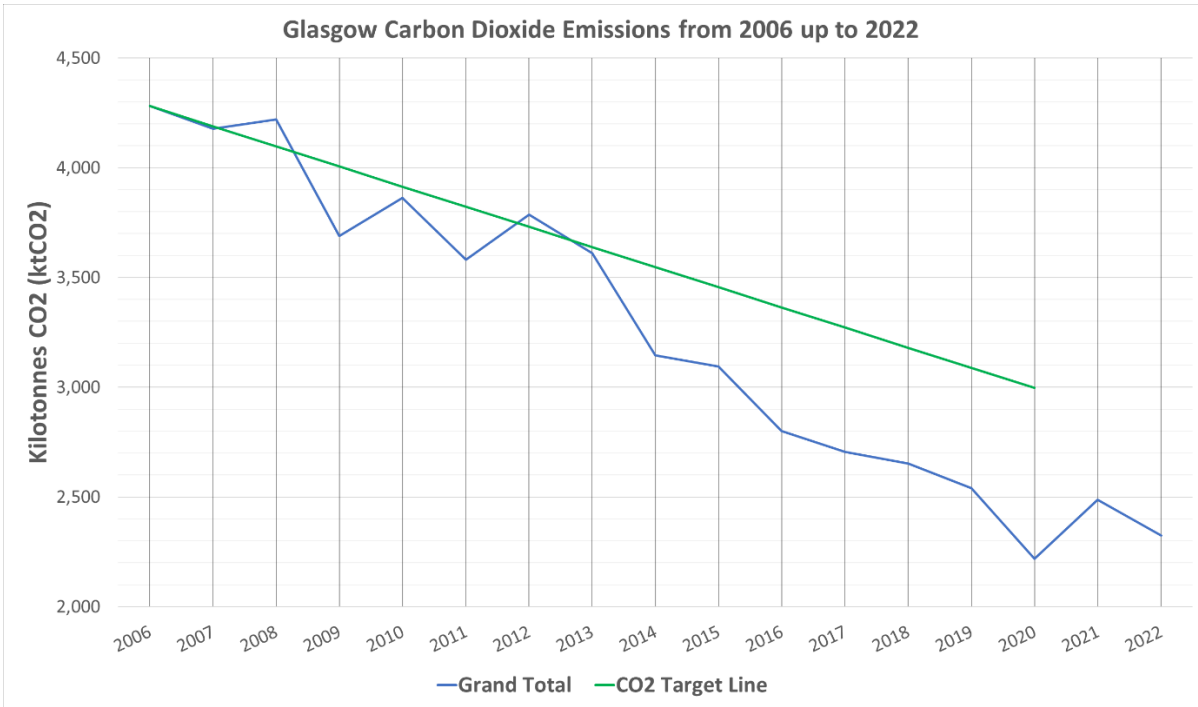

Figure 1 - Carbon Emissions Reductions 2006-2022

Sectoral Emissions

Glasgow's carbon emissions can be broken down into sectors to allow for further analysis. The sectoral profile for the period 2006 until 2022 can be found in Figure 2 below.

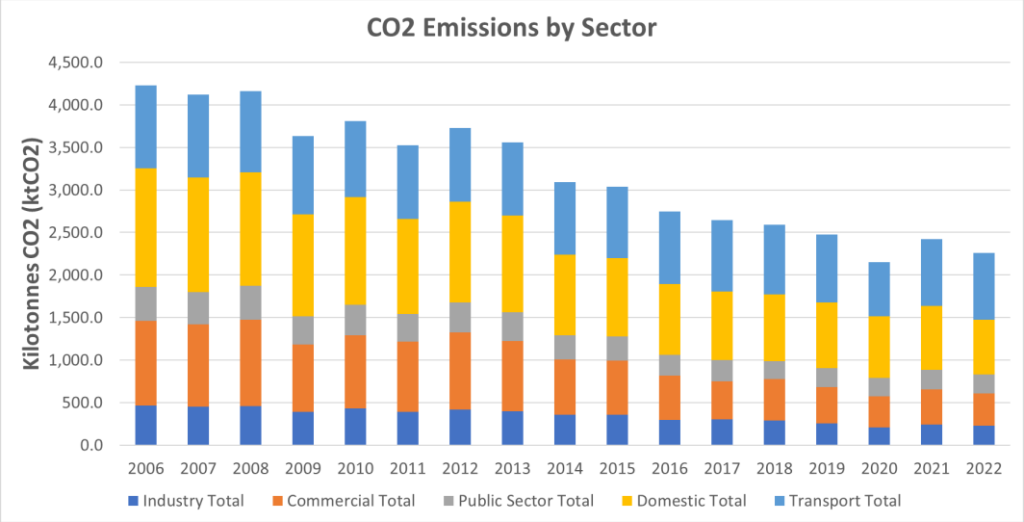

Figure 2 - Sectoral Emissions (2006-2022)

The reductions in carbon emissions per sector from our baseline year (2006) to date (2022) are outlined in Table 1 alongside some commentary below.

	Emissions ($ktCO_2$)			
	2006	2022	Reduction	Reduction (%)
Domestic	1394.7	637.8	756.9	54.3%
Transport	970.5	787.2	183.3	18.9%
Industrial	468.8	225.8	243	51.8%
Commercial	993.7	384.4	609.3	61.3%
Public Sector	398.8	224.2	174.6	43.8%

Table 1 - Carbon emissions in Glasgow by sector 2006-2022

- **The domestic sector:** 72% of emissions from the domestic sector are attributed to gas consumption in 2022. This data underscores the challenges for Glasgow as it seeks to decarbonise how it heats its buildings. Low levels of energy efficiency alongside the continued dependence on gas boilers are the main challenges faced in decarbonising the domestic sector in Glasgow.
- **The transport sector:** Just under 99% of emissions from transport are attributed to vehicle use with only a small proportion coming from our railway infrastructure. During the course of the 20th century, Glasgow, alongside most other cities in the UK, sought to prioritise private vehicle use in city planning as a mechanism of enabling economic growth. For example, the construction of the M8 motorway, which bisects Glasgow city centre, presents a clear example of the type of car-centric city design that has enabled transport emissions to remain stubbornly high for Glasgow. The public outcry from the destruction that the M8 caused in its construction through the city centre resulted in the M8 being the last motorway to be built through a city centre in the UK. Additionally, whilst the City's cycle hire scheme and active travel routes such as cycle lanes are in high use in the city, inclement weather conditions experienced in the City can dissuade

citizens from travelling by bike. Furthermore, the attainment of a car is still a significant aspiration in young people and seen by many as a sign of independence and adulthood.

- **The industrial sector:** As a post-industrial city, Glasgow now has limited large industrial operations and the majority of emissions from this sector can be attributed to gas consumption which, in 2022, accounts for 49.6% of overall industry emissions. Emissions from industry have decreased by 51.8% since baseline. In comparison to commercial emissions which have dropped by 61.3% since 2006, the smaller reduction in industrial emissions may be on account of the often complex or problematic nature of decarbonising industrial processes. Glasgow industrial sector was not insulated either from the large shocks seen both from the Covid-19 pandemic and the British withdrawal from the European Union. Both events resulted in significant impacts to aspects of the city's bigger industrial sector, which is only just now beginning to show signs of recovery.
- **The commercial sector:** Emissions from the commercial sector have reduced significantly since the baseline year of 2006 (61.3%). This emissions reduction can be largely attributed to the decarbonisation of the electricity grid alongside efforts to lower energy consumption as a cost-saving mechanism for businesses. Emissions from the commercial sector account for just over 16% of the overall emissions in Glasgow in 2022.
- **The public sector:** Public sector emissions have reduced by 43.8% between 2006 and 2022. This is likely due to the ongoing efforts to provide cost-savings in the form of reduced energy demand across public sector organisations as well as increased amounts of renewables installations to provide self-generated renewable energy.

Source Emissions

For Glasgow, there are three main sources of emissions: electricity, gas, and transport. Figure 3 below highlights the trajectory of electricity, gas, and transport emissions from our baseline year to date.

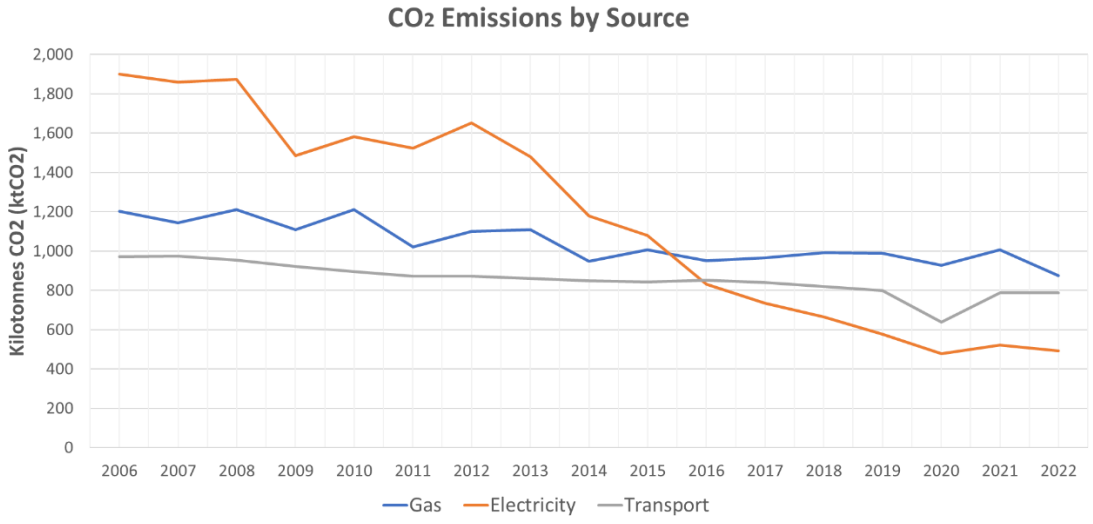

Figure 3 - CO_2 emissions by source

As shown in Figure 3 above, emissions from electricity have seen the most dramatic reduction, reducing by 74.1% since our baseline year. The city has benefited from national efforts to decarbonise electricity consumption in Scotland but this has been supported through the ongoing rollout of locally generated

electricity alongside electricity saving projects that have been successfully delivered by the city council and other city stakeholders.

Emissions from gas alongside transport have both struggled to see the same reductions as those from electricity. Gas emissions have reduced by 27.3% whilst transport emissions have reduced by just over 18.9%. Particularly for gas, one of the critical barriers in comparison to electricity is the inability to decarbonise the existing gas grid as can be done for electricity. For a compact city with high heat demand and a high proportion of old and thermally inefficient flatted properties, district heating and building retrofit forms a key part of the city council strategy towards significantly reducing gas emissions to reach Net Zero Carbon. As can be seen in Figure 4 below, gas emissions contribute an increasingly higher proportion of overall emissions in the city, rising from 28% to 38% of the total from 2006-2022.

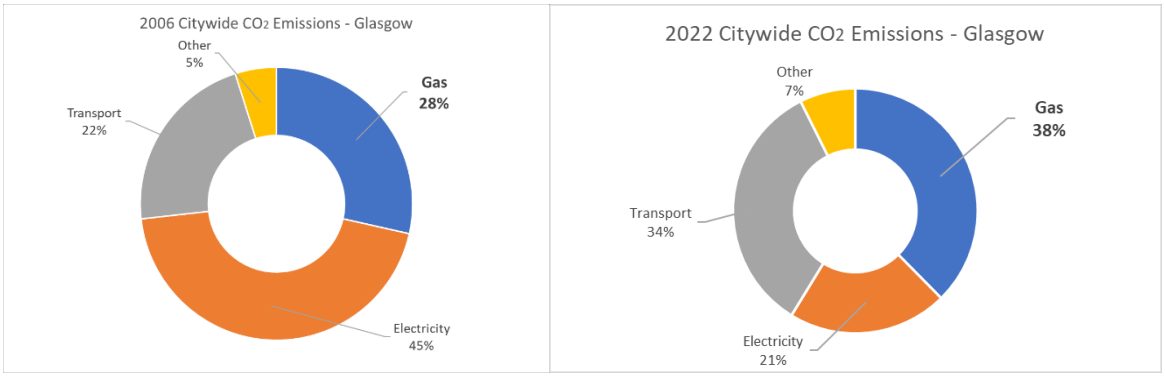

Figure 4 - Gas Emissions against Overall Emissions

Connection to Climate Neutrality Commitments

The five strategic priorities outlined in Glasgow's Climate Neutrality Commitments document have been informed in part through the emissions data the city uses to report progress. Principally, they have been developed through an assessment of how targeted emissions reductions could impact on aspects of life in the city alongside an assessment of where there exists opportunities to provide co-benefits through decarbonisation and harness the power of our citizens, communities and businesses to spearhead progress in a meaningful way. Some commentary on this link is provided below.

1. Communication and Community Empowerment. The emissions data points to the need to target reductions in gas and transport-based emissions. Invariably, this will require behaviour change from our resident, communities and businesses as the city encourages switches from fossil fuelled heating for owner occupied properties and tries to incentivise a shift away from private vehicle use into public transport and active travel methods. Empowering our communities to understand and then make these changes will be essential to a successful Net Zero transition.

2. Just and Inclusive Place. Shifting to new forms of heating, be that heat pumps or heat networks, will require a significant increase in skills capacity. This presents an opportunity for new forms of employment and training which Glasgow sees as integral to supporting reduction in heating-based emissions. Likewise, the need to improve public transport routes as a mechanism of lowering transport emissions will bring co-benefits around access to work and leisure for residents.

3. Well Connected and Thriving City. This priority directly translates across – Glasgow needs to lower its emissions from gas and transport which is underscored by the emissions data discussed above.

4. Health and Wellbeing. In addressing transport and gas-based emissions, Glasgow has the opportunity to provide meaningful, long-term benefits for the health and wellbeing of our residents. Reduced levels of air pollution alongside a reduction in our levels of fuel poverty are clear co-benefits that will be realised through our efforts to reduce emissions from priority sources.

5. A Green Recovery. Sequestration will account for a proportion of Net Zero as there will remain some emissions that the city simply cannot abate. This presents opportunity to improve access to greenspace for residents and reverse the decline in biodiversity that Glasgow, and indeed every major city, has seen over the last few decades. As we recover from the Covid-19 pandemic, ensuring that this recovery is achieved in a green manner is critical to success.

GhG Emissions Baseline inventory

A-1.1: Final energy use by source sectors			
Base year	2022		
Unit	GWh		
	Scope 1	Scope 2	Scope 3
All fuels: Domestic	3385.50		
All fuels: Transport	3236.14		
All fuels: Industrial, Commercial and Other	4285.24		
All fuels: Total	10,906.88		
Coal: Industrial	12.31		
Coal: Commercial	0.90		
Coal: Domestic	0.94		
Coal: Rail	0		
Coal: Public Sector	1.79		
Coal: Agriculture	0		
Coal : Total	15.95		
Manufactured Fuels: Industrial	0.89		
Manufactured Fuels: Domestic	1.94		
Manufactured Fuels: Total	2.83		
Petroleum: Industrial	280.17		
Petroleum: Commercial	81.55		

Petroleum: Domestic	14.16		
Petroleum: Road Transport	3025.17		
Petroleum: Rail	10.05		
Petroleum: Public Sector	54.06		
Petroleum: Agriculture	1.02		
Petroleum: Total	3466.18		
Gas: Domestic	2533.93		
Gas: Industrial, Commercial and Other	2175.51		
Gas: Total	4709.44		
Electricity: Domestic		823.93	
Electricity: Industrial, Commercial and Other		1578.46	
Electricity: Total		2402.39	
Bioenergy and wastes: Domestic	10.60		
Bioenergy and wastes: Road Transport	200.93		
Bioenergy and wastes: Industrial and Commercial	98.56		
Bioenergy and wastes: Total	310.09		
TOTAL	**19,411.37**	**2402.39**	

Please note - whilst emissions factors are included below, there is inconsistency in how energy and emissions data are categorised from the UK Department of Energy Security and Net Zero (DESNZ), the UK Government Department that provides local authority level data which is used for Glasgow's emissions reporting. This is highlighted in the difference in categorisation presented across table A-1.1 above and table A-1.3 below.

A-1.2: Emission factors applied

This data is provided by the UK Government, specifically from the Department of Energy Security and Net Zero (DESNZ).

Please note that the dataset provided for energy consumption and emissions are formatted differently. As they feature different combinations of categorisation, a direct comparison of table A-1.1 and A-1.3, using table A-1.2, is not possible. Glasgow City Council has committed to developing our understanding of the emissions profile across the city and it is one of the outputs from the **Net Zero Routemap** which will utilitise the ClimateView software to better quantify emissions.[7]

More information on the conversion factors listed below, including access to the source data, can be found here.

All figures presented below are considered in their equivalent kilograms of carbon ($kgCO_2e$).

At present, DESNZ does not provide specific conversion factors for F-gases, SF_6 or NF_3.

Primary energy/ energy source	Carbon Dioxide ($kgCO_2$)	Methane (CH_4)	Nitrous Oxide (N_2O)	F-gases (hydrofluorocarbons and perfluorocarbons)	Sulphur hexafluoride (SF_6)	Nitrogen trifluoride (NF_3)
Natural Gas (kW)	0.20226	0.00031	0.00010			
Petroleum Gas (kWh)	0.19897	0.00010	0.00010			
Electricity Generated (kWh)	0.20496	0.000896	0.001218			

A-1.3: CO2 emissions by source sectors

Base year	2022			
Unit	ktCO2e			
	Scope 1	Scope 2	Scope 3	Total
Industry Electricity		48.3		
Industry Gas	112			
Large Industrial Installations	0.3			
Industry 'Other'	65.1			
Industry Total	**177.4**	**48.3**		**255.7**
Commercial Electricity		224.3		
Commercial Gas	137.9			
Commercial 'Other'	22.2			
Commercial Total	**160.1**	**224.3**		**384.4**
Public Sector Electricity		49.9		
Public Sector Gas	159.5			
Public Sector 'Other'	14.7			
Public Sector Total	**174.2**	**49.9**		**224.1**
Domestic Electricity		168.5		
Domestic Gas	464.5			

[7] Section 3 and 4 of the Net Zero Routemap include a more robust assessment of Glasgow's emissions profile and trajectory.

Domestic 'Other'	4.8			
Domestic Total	**469.3**	**168.5**		**637.8**
Road Transport (A Roads)	146.9			
Road Transport (Motorways)	306.2			
Road Transport (Minor Roads)	320.6			
Diesel Railways	2.8			
Transport 'Other'	10.8			
Transport Total	**787.2**			**787.2**
Net Emissions Forest Land	14.4			
Net Emissions Cropland	9.2			
Net Emissions Grassland	-2.2			
Net Emissions Settlements	39			
Net Emissions Peatland	1.4			
Net Emissions Bioenergy	0.0			
Net Emissions Other LULUCF	-0.3			
LULUCF Net	**61.4**			**61.4**
Agriculture Electricity		0.3		
Agriculture Gas	0.6			
Agriculture 'Other'	0.3			
Agriculture Livestock	0.0			
Agriculture Soils	1.1			
Agriculture Total	**2.0**	**0.3**		
Landfill	0.0			
Waste Management 'Other'			0.4	
Waste Management Total			**0.4**	**0.4**
Total	**1831.6**	**491.3**	**0.4**	**2323.3**

2.2 Module A-2 Current Policies and Strategies Assessment

Module A-2 "Current Policies and Strategies" lists and assesses existing policies, strategies, initiatives, or regulation from local, regional, and national level, relevant to the city's climate neutrality transition. This assessment contributes to identifying the gap (if any) between the emissions reduction due to existing initiatives and the city´s 2030 climate neutrality target. Filling this gap by identifying additional actions and levers to achieve the city´s emission reduction target is the focus of this Action Plan. The assessment of current policies and strategies offers hence a starting point for exploring the impact pathways (See Part C). The module includes:

- Comprehensive list of local relevant policies, strategies, concepts, as well as of regional and national legislation that impact local climate action.

- Descriptive assessment of the current climate-relevant policy context, summarising the objectives and implementation concepts, addressing e.g., spatial planning, energy, local economy, circular/bioeconomy, waste, transport, housing, urban greening/nature-based solutions).
- Quantification of the emissions gap (i.e., emissions reduction target minus reductions already addressed through existing climate action plans).

A-2.1: Description & assessment of policies

There are several key strategies and policies at a local level in Glasgow that are focused in whole or in part on reaching Net Zero Carbon by 2030. These are listed fully in Table A-2.2 with commentary provided on some of our key strategies below.

Glasgow Climate Plan

Glasgow's Climate Plan was unanimously approved by the City Administration Committee in June 2021 and remains the primary consolidation of the city's approach to the climate and ecological emergency. It outlines the city's approach, pathway and strategic actions towards Net Zero Carbon emissions, healthy biodiversity and climate resilience.

The Plan sets out the city's ambition to reduce emissions through direct mitigation, while also adapting to the impacts of climate change and addressing the ecological emergency, all of which will provide carbon offsetting opportunities, whilst improving quality of life and place for all in the City. The Climate Plan adopts an iterative approach, including a commitment to undertake an annual progress review and provide an update to Committee on successes, challenges, recommended additional action or support required.

Local Heat and Energy Efficiency Strategy (LHEES).

The concept of a Local Heat & Energy Efficiency Strategy (LHEES) was introduced following Scottish Government consultation in 2017. This was followed by the Heat in Buildings Strategy published in October 2021 which confirmed that the introduction of area based LHEES are fundamental to the Scottish Government's approach to heat decarbonisation. This action will significantly contribute to realising the outcomes of the Glasgow Climate Plan on renewable heating and a just transition.

The ambition of Glasgow's LHEES is to provide affordable, reliable and low carbon heat that helps the city reach its net zero carbon target in a just and inclusive manner by 2030. Successful delivery of this ambition will be achieved by focusing on reducing demand, decarbonising supply, and decentralising systems. The LHEES is the primary vehicle for tackling heating-based emissions in the city which have been identified as a key challenge in module A-1 of this submission.

Glasgow's LHEES has four key focus areas, each of which have been determined by an assessment of the challenges and opportunities unique to Glasgow's net zero heat transition. These include (i) accelerating the deployment of heat networks (ii) identifying areas for the deployment of individual or communal heating solutions (iii) improvement of domestic energy efficiency as a mechanism of

reducing fuel poverty rates and (iv) addressing the challenges of decarbonising the city's pre-1919 tenemental stock.[8]

Significant analysis was done in developing the LHEES to understand what areas of the city would be the most viable for district heating. This involved assessment of linear heat density across the city alongside analysis on where there are opportunities to harness locally available low carbon or renewable heat (this includes the River Clyde, our EfW plant, disused mine workings, standard and deep geothermal opportunities, and Glasgow's wastewater infrastructure). The LHEES also confirmed that the Council was exploring what commercial models would support the delivery of district heating and other capital-intensive infrastructure projects that would support the city in reaching Net Zero Carbon by 2030.

Glasgow Transport Strategy.

The Glasgow Transport Strategy is set to play a central role in the fight against climate change but also seeks to support economic success, create thriving, liveable neighbourhoods and grapple with poverty.

Over 100 policies have been laid out within the strategy, which sets an overall target of reducing vehicle kilometres travelled in Glasgow by 30% by 2030 ahead of the national target of reducing kilometres travelled by 20% by 2030. According to Department of Transport figures, 2.17 billion vehicle kilometres were travelled in Glasgow in 2022 - the largest distance for any local authority area in Scotland. The Glasgow Transport Strategy is identified as the primary vehicle for tackling emissions from transport which have been identified as a key challenge in module A-1 of this submission.

With the final phase of the Transport Strategy, the Spatial Delivery Framework, agreed by Councillors, Glasgow is now in position to take key decisions that will influence travel behaviour and encourage a shift to more sustainable forms of transport, such as buses, trains and active travel.

The Spatial Delivery Framework will help to identify the best use of limited space within Glasgow when locating key infrastructure such as bus priority corridors, new park and ride stations and mobility hubs where different forms of transport can link together. The Spatial Delivery Framework follows the principles of the national transport hierarchy and will inform decisions on how finite roads space can be best allocated to ensure travel is as safe and efficient as possible for all modes of transport. Ensuring plans for the Clyde Metro are fully aligned with other transport initiatives in Glasgow will also be guided by the framework.

Circular Economy Routemap.

This Circular Economy Route Map sets out a framework to allow Glasgow to truly embrace a sustainable economic future. It presents a vision for a circular city and provides the context in which our local economy is seen as an engine for environmental and social regeneration. There is a growing urgency to build upon the momentum created by the declaration of a Climate and Ecological

[8] Tenemental flatted properties in Glasgow built before 1919 are complex and costly to retrofit. As such, the LHEES and the upcoming Housing Retrofit Strategy which builds on the LHEES, both have a key focus on developing an approach to this archetype.

Emergency, the impending United Nations Climate Change Conference (COP26) and the need for a green recovery in response to the Covid-19 pandemic.

These major events have disrupted social norms across the city and on a national and global scale. Glasgow must now capitalise on the need for change to shape our city in a positive manner and provide the lasting legacy of a new economic model that is truly sustainable.
The circular economy must be at the very core of this green recovery to benefit:

- **The Environment.** Reducing carbon emissions and the overconsumption of waste and scarce valuable natural resources.
- **The Economy.** Improving design and production methods and relying on materials that are already in use within the city eco-system rather than exploiting more virgin resources.
- **Our Communities.** Localising the economy to ensure it is based on social inclusion, justice and wellbeing and opens up opportunities for employment and wealth creation with those communities.

City Development Plan

Glasgow's City Development Plan (CDP) was adopted in March 2017 and sets out the Council's vision and strategy for land use whilst also providing the basis for assessing planning applications along with its associated Supplementary Guidance.

The Plan's framework will involve achieving a city where natural and built resources contribute towards high environmental quality, are accessible to all and help Glasgow to adapt to the effects of climate change as well as contribute towards a low carbon and energy efficiency future.

The second iteration of the CDP is currently under development and will be critical in determining from a spatial perspective where in the city the Council and stakeholders should progress with delivery of Net Zero Carbon related projects and initiatives. The outcomes of the Net Zero Routemap (appended) will form an integral aspect to the development of the CDP2 as it will provide a platform by which the City Council and associated stakeholders can prioritise and coordinate the delivery of Net Zero from an infrastructure perspective.

Resource and Recycling Strategy

Glasgow City Council launched its Resource and Recycling Strategy in 2021 with the strategy outlining a vision statement of "empowering Glasgow to become a Net Zero city". The implementation of the new strategy requires everyone - residents, businesses and council staff - to contribute towards minimising waste, and where it is unavoidable, to increase re-use of materials and to increase the quantity and quality of materials collected for recycling.

Forest and Woodland Strategy

The Planning (Scotland) Act 2019 requires Glasgow City Council to prepare a Forestry and Woodland Strategy. The Forestry and Woodland Strategy directs tree planting to the most appropriate locations where there are opportunities to contribute towards mitigating climate change and increasing

biodiversity, while also providing multiple benefits such as improving amenity and green networks, increasing carbon capture, and contributing to water management.

Approved in June 2024, the Forestry and Woodland Strategy will inform the City Development Plan and the emerging City Development Plan 2, and will be the Council's primary strategy and policy document relating to all woodland and tree planting in the city.

By working together, sharing knowledge and resources, Glasgow aims to increase the level of tree canopy cover in the city, while delivering the multiple benefits which trees can provide.

In this light, The Forestry and Woodland Strategy sets out:

- A 10 year **Vision** for the city to have increased canopy cover, providing multiple benefits to residents and visitors; and
- A **Spatial Strategy** which sets out guidance to support planning initiatives and projects, inform the design of proposals, and assist in the determination of planning applications.

Where are we now?

Whilst there is a dense policy landscape for Glasgow surrounding our Net Zero Carbon target, there are several gaps that need to be addressed by upcoming policy and projects. In this respect, Glasgow's CCC Action Plan, as presented in this submission, provides a consolidation of effort to date whilst clearly outlining the next steps that the city will require to take to ensure a holistic approach to Net Zero Carbon. Some of the identified gaps that Glasgow will require to fill include:

- **Quantifying and Tracking Scope 3 Emissions.** At present, there is no nationally established mechanism for quantifying and tracking scope 3 emissions. Glasgow City Council have committed to developing an approach to this and will use both this Action Plan alongside our Net Zero Routemap (appended) to frame how the city approaches this challenge. Glasgow is working with local partners as well as through international partnerships, such as the Carbon Neutral Cities Alliance, to explore how scope 3 monitoring can be improved in a consistent way in Glasgow and across the world.[9]
- **Targeted Sequestration Planning.** Glasgow has multiple policies and strategies aimed at enhancing biodiversity and greenspace (discussed further in Table A-2.1 below) which will all have a positive impact on the sequestration capacity for the city. However, the city has yet to develop a tailored approach to this. The Net Zero Routemap will assist the city in understanding the likely scenarios that will result in a Net Zero Carbon position by 2030, utilising sequestration to manage the residual emissions that we cannot abate.[10]

[9] An assessment of Scope 3 emissions can be located within Section 4.2.4.2 of the Net Zero Routemap
[10] An assessment of sequestration can be located within Section 6.3 of the Net Zero Routemap

- **Costed and Measurable Actions**. At present, the city's Climate Plan does not have costings or emissions reductions attached to each of the actions in the action plan. This has been identified through this submission as a key gap in our approach to Net Zero Carbon. The Net Zero Routemap (appended) provides more detail in this area.[11]

Please note - A critical next step for the city, using this CCC Action Plan as a framework, will be our Net Zero Routemap (appended). The Net Zero Routemap complements existing strategies by (i) establishing interim, science-based targets required to reach net zero, Section 4.1 of the Routemap (ii) developing an approach for the city that allows priority emissions areas (such as transport and heating) to be addressed, Sections H, I and J of the Routemap (iii) developing an impact assessment tool, Section 5 of the report, (iv) adopting a whole-systems approach across the city, Section 6 of the Routemap, and (v) creating a novel delivery plan with costed scenario pathways, Sections 7 and 11 of the Routemap.

The Net Zero Routemap has been finalised. Glasgow City Council is going through a process of reviewing and internalising the outputs of this report.At this point the outcomes from the Routemap are in the public domain and we have an agreed set of next steps for the integration of the findings across all relevant GCC policy and delivery. The Net Zero Routemap is appended to this submission and acts as a key element in our overall submission.

Role of this Climate Neutrality Action Plan

This submission to the Net Zero Cities Mission presents Glasgow with the opportunity to reflect on progress to date and provide robust analysis of where upcoming work items require to focus in efforts to bridge the gap between our existing plans and our Net Zero by 2030 target. This Action Plan will feed directly into the ongoing management of the Net Zero Routemap which itself will address some of the critical gaps and challenges in our Net Zero ambitions. Likewise, our existing Climate Plan is currently under review and the outputs of this Net Zero Cities submission, alongside the Net Zero Routemap, will provide a solid foundation upon which to develop and execute the next steps of our Net Zero journey.

In this respect, action specific emissions reductions are not included in this submission as (i) Glasgow has not undertaken this exercise to date and (ii) this is an output of the Net Zero Routemap and is currently being assessed for integration.[12]

[11] An approach to costing Net Zero, alongside costed actions from both an emissions reduction and CAPEX perspective can be found in section 7 (ROMC) and appendices H, I and J. OPEX assessment for some interventions remains challenging and does not feature heavily in the Net Zero Routemap.

[12] Actions with associated emissions reductions required to reach Net Zero by 2030 sit within Sections 5 and 6 of the Net Zero Routemap.

A-2.2: List of Relevant Policies, Strategies and Regulations				
Type	**Level**	**Name and Title**	**Description**	**Relevance**
Legislation	National	Climate Change (Scotland) Act 2009	Introduced a statutory framework for greenhouse gas emissions reduction. The Act introduced a greenhouse gas emissions target of 80% reduction by 2050 from the baseline year 1990, with an interim target of 42% by 2020.	National emissions reductions targets frames the scale and pace at which Glasgow must move towards net zero carbon.
Legislation	National	The Climate Change (Duties of Public Bodies: Reporting Requirements) (Scotland) Order 2015	Imposes a duty on all Public Sector Bodies to report to the Scottish Government through Public Bodies Climate Change Duties (PBCCD), reporting on an annual basis.	Monitoring for Glasgow City Council's emissions ensures that organisational are tracked and considered.
Legislation	National	Climate Change (Emissions Reduction Targets) (Scotland) Act 2019	Legislation setting targets for the reduction of greenhouse gases emissions	National emissions reductions targets frames the scale and pace at which Glasgow must move towards net zero carbon.
Legislation	National	Waste (Scotland) Regulations 2012	Regulations provide for the collection, transport and treatment of dry recyclable waste and food waste, and for related matters	Reducing emissions from waste will be critical for Glasgow to reach net zero carbon by 2030.
Legislation	National	The Environmental Protection (Single-use Plastic Products) (Scotland) Regulations 2021	Prohibits the manufacture and the supply in the course of a business of the listed single-use plastic products	Reducing emissions from waste will be critical for Glasgow to reach net zero carbon by 2030.
Legislation	National	Deposit and Return Scheme for Scotland Regulations 2020	Establishes legal framework to implement a deposit return scheme in Scotland	The introduction of a deposit return scheme, similar to those seen in other parts of European will enable Glasgow to reach a higher recycling rate whilst cleaning the city. This also supports the city's transition to a circular economy.
Legislation	National	The Single Use Carrier	Introduced mandatory financial charge for purchase of carrier bag.	Such legislation supports the city's

		Bags Charge (Scotland) Regulations 2014		transition to a circular economy.
Legislation	National (UK)	Energy Act 2023	Legislation to make provision about energy production and security and the regulation of the energy market including regulation of heat networks sector.	The Energy Act has established Ofgem as the regulatory body for heat networks in the UK. The provision of a regulatory framework for consumer protections and technical standards heat networks supports the delivery of Glasgow's Local Heat and Energy Efficiency Strategy (discussed below)
Legislation	National	Heat Networks (Scotland) Act 2021	To make provision for the regulation of heat networks in Scotland	The Act, still in development, will provide a regulatory framework for Scotland to accelerate the deployment of heat networks by providing investor and consumer confidence. The Act works in conjunction with the Energy Act (UK) which provides regulation for technical standards and consumer protections as these factors are not within the devolved competence of the Scottish Government.
Legislation	National (UK)	Environment Act 1995	Introduced a duty on local authorities to designate any relevant areas whether air quality objectives are not being met as Air Quality Management Areas and develop an Air Quality Action Plan to improve air quality in that area.	Regulation to support Glasgow's policy on improving air quality. Glasgow has recently revoked one of the city's AQMAs, leaving only one AQMA left in the city centre.
Legislation	National (UK)	Utilities Act 2000	Regulates the gas and electricity markets in the UK	The basis for regulating gas and electricity in the UK, provides framework for activity to decarbonise energy in Glasgow.

Legislation	National	Flood Risk Management (Scotland) Act 2009	Makes provisions about the assessment and sustainable management of flood risks.	Supports the ongoing delivery and development of Glasgow's adaptation agenda.
Legislation	National	Nature Conservation (Scotland) Act 2004	Legislation setting out a series of measures to conserve biodiversity and enhance biological and geological natural heritage of Scotland.	Provides regulatory framework that support the delivery of Glasgow's Local Biodiversity Action Plan.
Legislation	National	Procurement Reform (Scotland) Act 2014	Introduces duties on public bodies to consider how procurement could be used to improve the wellbeing of their local areas, including the impact on the economic, social and environmental health of the area.	Provides regulatory framework to support procurement reform for public bodies in Glasgow.
Legislation	National (UK)	Plastic Packaging Tax (General) Regulations 2022	Introduce a new tax designed to encourage the use of more recycled plastic and applies to plastic packaging produced in, or imported into, the UK and that does not contain at least 30% recycled plastic.	Such legislation supports the city's transition to a circular economy.
Legislation	National	Transport (Scotland) Act 2019	The Act was designed to help make Scotland's transport network cleaner, smarter and more accessible.	Transport emissions constitute a significant proportion of Glasgow's carbon footprint.
Legislation	National	The Building (Scotland) (Amendment) Regulations 2022	Regulations amend parts of the Building (Scotland) Regulations 2004.	The amendment introduced an additional energy target for new buildings and increased the improvement target for aggregate emissions in new homes to 32% and new non-domestic buildings to 20%.
Legislation	National	The Building (Scotland) Amendment (No. 2) Regulations 2022	Regulation introduces two new building standards to ensure a minimum level of electric vehicle infrastructure in new and domestic and non-domestic buildings.	These regulations are likely to lead to an increase in electric vehicle charge points across Glasgow. This supports ambition to reduce transport related emissions.
Legislation	National	The Town and Country Planning (General Permitted Development)	Amendment extends permitted development rights for EV charging installations, reducing obstacles to installing EV charging installations.	These regulations are likely to lead to an increase in electric vehicle charge points across Glasgow. This supports ambition to

		(Scotland) Amendment Order 2023		reduce transport related emissions.
Legislation	National	The Town and Country Planning (General Permitted Development) (Scotland) Amendment Order 2024	Amendment extends permitted development rights for (i) domestic and non-domestic renewable technologies, such as solar panels, wind turbines and heat pumps and (ii) Alteration/replacement of windows to improve energy efficiency.	These regulations will support the accelerated deployment of renewable technologies in Glasgow.
Legislation	National (UK)	Public Charge Point Regulations 2023	These Regulations require charge point operators to ensure that contactless payment is offered to consumers on an ad-hoc access basis, without requiring a consumer to enter into a pre-existing contract with the operator.	These regulations are likely to lead to an increase in electric vehicle charge points across Glasgow. This supports ambition to reduce transport related emissions.
Strategy	National	National Transport Strategy 2	Sets out long-term plans for Scotland's transport system for the next 20 years.	The NTS provides strategic framing for Glasgow to deliver reductions in transport related emissions, which constitute a significant proportion of overall emissions in the city.
Policy	National	National Planning Framework 4 (NPF4)	Long-term plan looking to 2045 that guides spatial development, sets out national planning policies, designates national developments and highlights regional spatial priorities.	NPF4 will support the use of local planning policy as a mechanism of reducing emissions from Glasgow's built environment.
Strategy	National	Land Use Strategy 2021-2026	Sets out Scotland's vision, objectives and policies to achieve sustainable land use.	Supports an approach for Glasgow that can incorporate reducing emissions with biodiversity and ecological improvement across the city.
Strategy	National	Heat in Buildings Strategy	Long-term plan to reduce heating-based emissions and tackle fuel poverty in Scotland	Provides a national framework for the delivery of Glasgow's Local Heat and Energy Efficiency Strategy (discussed below)
Strategy (draft)	National	Scottish National Adaptation	The Scottish National Adaptation plan sets out Scotland's approach	Provides a national framework for the delivery of Glasgow's

		Plan 2024-2029	to adapting to climate change across 5 key outcomes	Adaptation Strategy for which national alignment is critical
Strategy (draft)	National	Scottish Biodiversity Strategy to 2045	Sets out our clear ambition for Scotland to be Nature Positive by 2030, and to have restored and regenerated biodiversity across the country by 2045.	Provides a national framework for the delivery of Glasgow's Local Biodiversity Action Plan (discussed below) for which national alignment is critical
Strategy (draft)	National	Scottish Circular Economy and Waste Route Map	The Route Map sets out Scotland's strategic direction for delivering the comprehensive vision of Scotland circular economy from now until 2030.	Provides a national framework for the delivery of Glasgow's Circular Economy Routemap for which national alignment is critical
Strategy	Local	Just Transition Skills Action Plan	Action plan to define and steer the role that skills will play in securing a just transition to a net zero and climate resilient economy with a clear focus on what needs to happen in Glasgow to enable this transition.	Provides a strategy to ensure that Glasgow's transition to net zero is achieved in a just manner that leaves no-one behind.
Strategy	Local	Glasgow Transport Strategy	The Glasgow Transport Strategy (GTS) sets out a Policy Framework and Spatial Delivery Framework to guide decision-making on transport up to 2030.	Targetted plan for reducing transport related emissions in Glasgow by decarbonising existing forms of transport and supporting increased public transport use and active travel.
Strategy	Local	Local Heat and Energy Efficiency Strategy (LHEES)	The Glasgow Local Heat and Energy Efficiency Strategy (LHEES) sets out to provide affordable, reliable, and low-carbon heat to help the city achieve its net zero carbon goal.	Provides a strategic framework for Glasgow to reduce heating-based emissions. Due to the heat dense nature of Glasgow, as the biggest city in Scotland, the LHEES has a key focus on accelerating the deployment of heat networks across the city.
Strategy	Local	Local Housing Strategy (LHS)	Glasgow's Local Housing Strategy (LHS) lays out the strategic direction, policies, and plans to guide investments and resource allocation towards delivering high-quality housing and services.	The LHS will support local planning on how emissions from our domestic buildings can be reduced.

Strategy	Local	Plastics Reduction Strategy	Strategy for reducing consumption of single use plastics in the city.	Strategy provides a targetted focus on single use plastic waste to support the broader circular economy agenda across the city.
Strategy	Local	Glasgow's Resource and Recycling Strategy 2020-2030	The Resource and Recycling Strategy sets out the framework for developing the city's recycling and waste services over a 10-year period.	This strategy provides a framework for how Glasgow can improve on how it manages its waste which will support reduced carbon emissions from the waste sector.
Strategy	Local	Circular Economy Routemap for Glasgow 2020-2045	The Circular Economy Route Map sets out a vision for Glasgow to become a circular city.	Sets out the ambition for Glasgow to transition from a linear to circular economy.
Strategy	Local	Sustainable Procurement Strategy 2023-2027	The Sustainable Procurement Strategy (SPS) sets out to provide sector leading procurement and support delivery of high quality, sustainable and resilient public services.	The SPS will support Glasgow City Council to reduce scope 3 emissions associated with the products and services the organisation procures.
Strategy (draft)	Local	Forestry and Woodland Strategy	The Draft Forestry and Woodland Strategy (FWS) 2024 outlines how the Council will manage trees and woodlands in the context of climate and biodiversity emergencies.	Scope 3 emissions are understood to form a significant part of Glasgow's overall emissions profile. As such, understanding how Glasgow can maintain and improve upon its sequestration capacity will be critical in reaching net zero carbon.
Strategy	Local	Open Space Strategy	The OSS sets out how the City can utilise its many, varied open spaces to help deliver the three outcomes,: resilience, health and liveability	Understanding how Glasgow can use our open spaces to complement multiple priorities around health, resilience and the environment will support the city in ensuring that net zero is reached in a way that provides benefits to all in Glasgow.
Strategy	Local	Local Biodiversity Action Plan	A strategy to conserve and enhance natural habitats in the city,	Addressing the ecological emergency alongside the climate

			and to address the decline in biodiversity	emergency is a stated policy priority for Glasgow, the LBAP will ensure the city is taking a holistic approach to this.
Strategy	Local	City Development Plan 2	Sets out the Councils strategy and vision for land use whilst also providing the basis for planning applications	CDP2 is currently in development but, once published, will provide a framework to ensure that achieving net zero is embedded into planning related decision making.

Analysis on Glasgow's emission gaps has been completed via our Net Zero Routemap, a screenshot of this is highlighted below. Sections 5 and 6 of the Routemap discuss the emissions gap in more detail.

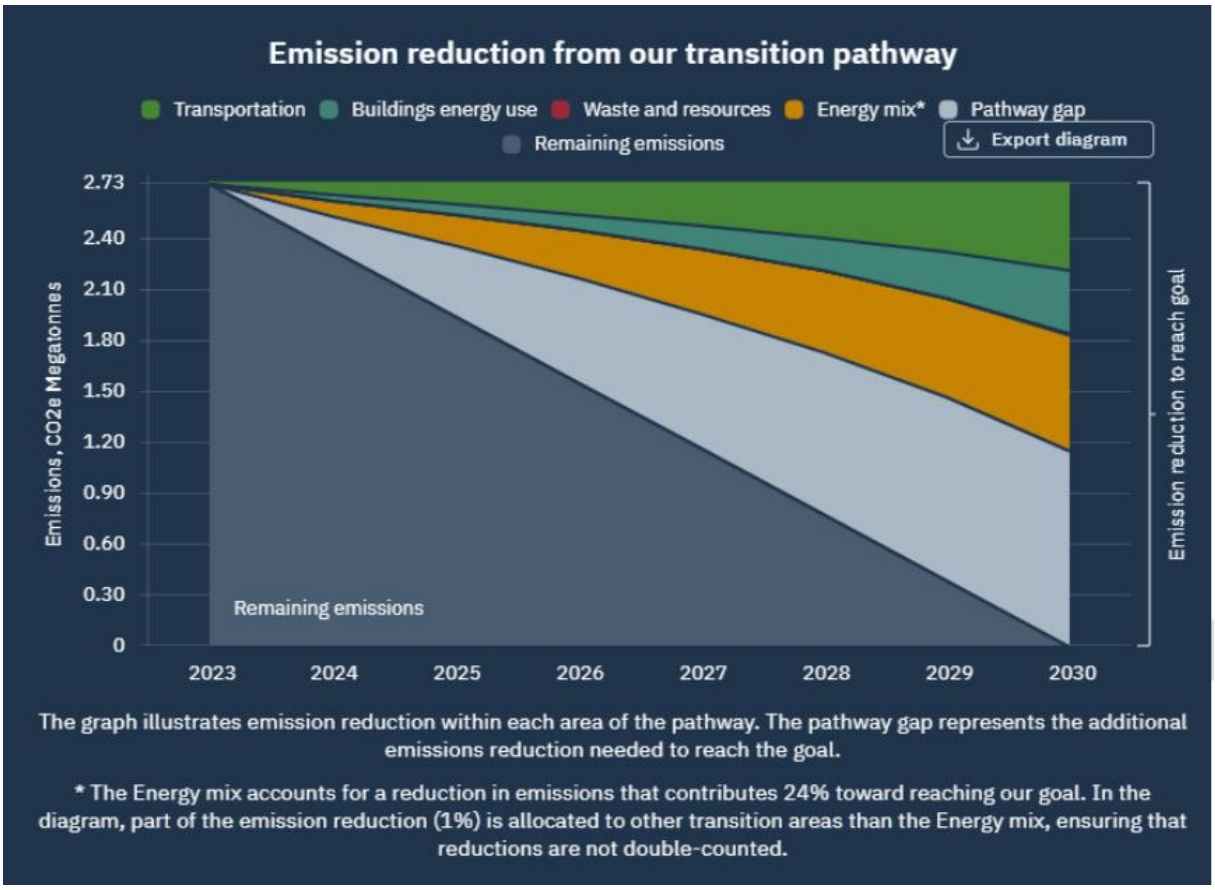

Figure 5 - Projected Pathway to Net Zero (current policy)

2.3 Module A-3 Systemic Barriers and Opportunities to 2030 Climate Neutrality

This module aims to document the conclusions of systems and stakeholder mapping aimed at identifying systemic barriers and opportunities. In conjunction with the GHG inventory and the policy baseline analysis in the previous two modules of Part A, the analysis reported here serves as a basis for designing actions that address these barriers or exploit the under-utilised opportunities in Part C. The results of this analysis as provided here include:

- A description of the main systems related to the city´s GHG emission domains, e.g., technological/infrastructural, institutional/ regulatory, organisational, financial, political, social and behavioural systems.
- A description of barriers and opportunities for each of the systems above. This includes gaps (infrastructural/ technological, institutional/ regulatory, organisational, political, financial, behavioural or social) as well as an evaluation of unexploited resources (e.g., renewable energy sources, digital technologies, etc) or circumstances.
- A map of stakeholders involved for each of the systems above. This includes relevant actors per systemic element at different levels of governance throughout the whole policy cycle, such as local, regional, national, and EU/supranational administrative bodies and agencies, civil society, non-governmental organisations (NGOs), academia, community-based organisations, social movements, steering groups, private sector actors etc.

A-3.1: Description of urban systems, systemic barriers, and opportunities

As Glasgow's moves closer towards Net Zero Carbon by 2030, systemic barriers become an increasing priority to address and plan for. For this submission to the Net Zero Cities mission, Glasgow has identified three systemic barriers as key focus areas. Some brief commentary on these is provided below followed by a more comprehensive assessment of barriers categorised by the source of emissions they relate to. The systemic barriers outlined below then translate across to the systems and impact pathways discussed in sections A-3.2 and B-1.1 below.

Systemic Barriers

- **Governance/Policy.** Glasgow is a major city in the UK with many stakeholders and competing priorities. As such, effective governance and policy is critical to ensuring that can present barriers to holistic progress. Ensuring that progress is aligned across the city is a key challenge for Glasgow to reach Net Zero Carbon by 2030. This barrier relates to all of the Strategic Priorities as identified in our Climate Neutrality Commitment.
- **Infrastructure.** Key to Glasgow achieving Net Zero Carbon is the requirement for a significant increase in Net Zero infrastructure. Increasing utilisation of active travel and public transport options is heavily dependent on the successful deployment of suitable infrastructure. Additionally, the priority in Glasgow to significantly increase the use of district heating in the city will require the successful deployment of large-scale infrastructure at an unprecedented pace. For both of these priorities, the lack of adequate infrastructure and the corresponding need for deployment, presents a significant systemic barrier. Furthermore, deploying such infrastructure typically requires high level of upfront capital and investment alongside sufficient resource and expertise, adding further challenges to delivery. This barrier relates to the **Well Connected and Thriving City** Strategic Priority as identified in our Climate Neutrality Commitment.

- **Communities/Businesses.** Whilst Glasgow has made notable progress to date in addressing its carbon footprint, the remaining challenges that the City has to tackle require to be addressed in partnership with our communities, residents and businesses to ensure a just transition to Net Zero Carbon. This presents a systemic barrier and one that the next stages for Glasgow will require to address. This barrier relates to (i) the **Communication and Community Empowerment** and (ii) **Just and Inclusive Place** Strategic Priorities as identified in our Climate Neutrality Commitment.

Barriers – Source Emissions

There are numerous complex and significant barriers for Glasgow as it seeks to achieve Net Zero Carbon by 2030. Whilst the city has made notable progress in reducing carbon emissions by 42% from a baseline year of 2006, the remaining carbon emissions will be proportionately harder to eliminate and doing this will likely come at a greater cost. As such, a systemic approach to reaching Net Zero has been adopted by the City Council and partners. **This systemic approach has been manifested in the Net Zero Routemap (appended) which proposes science-based interim targets for reaching net zero and outline a costed approach to support prioritisation**.[13] As such, this CCC Action Plan provides a framework to steer the managemen of the Routemap outcomes in a manner cognisant with Glasgow's success to date. Some of the key barriers are outlined below. These are categorised by source in reference to the national data used to report on Glasgow's emissions.

It should be noted that the barriers outlined below do not account for the full portfolio of action the city council is taking in response to the climate and ecological emergency. Rather, these barriers present some of the main challenges that the city faces.

Gas Emissions

Gas emissions account for the highest proportion of total carbon emissions in Glasgow and this proportion has been increasing due to the ongoing decarbonisation of electricity in the UK. These emissions are broadly attributed to how the buildings are heated in the City, with 93% of domestic properties being heated using natural gas. An outline of the barriers to decarbonising heating are presented below:

- **Building Stock.** Many of the buildings in Glasgow are old and have correspondingly low levels of energy efficiency. Retrofitting these buildings as a mechanism of reducing the demand for heat is a strategic priority for the Council. However, retrofit costs tend to be quite high (particularly for the older pre-1919 stock)[14] and the payback period is typically long and often uncertain. Incentivising owners and landlords to retrofit their stock in the context of uncertain and lengthy payback periods is therefore a key barrier. For the more technically complex retrofit projects, there is no clear pathway to undertaking this retrofit in a competent and cost-effective manner.
- **Costs of Low-Carbon Heating.** The upfront costs of installing a heat pump or indeed connecting into a heat network are often high and there are barriers to mobilising this capital. Additionally, the current regulatory framework for the UK's energy market, particularly in the differential between gas and electricity prices per kWh, means that switching to an electric form of heating can result in higher fuel bills. Whilst this is not the case in every instance, it is

[13] Science-based interim targets can be found within Section 4.1 of the Routemap whilst costings for reaching Net Zero can be found within Section 7 and appendices H, I and J within the Routemap.

[14] A recent pilot study in Glasgow looked to retrofit a pre-1919 tenemental block (consisting of 8 flatted properties) to EnerPHit standard. The project was successful in its objective to confirm that it was possible from a technical standpoint to retrofit tenemental stock to a high level of energy efficiency. However, the cost per unit (or 'flat') was c £88,000 (approx. €103,686) which is prohibitively high. More information, including the final report, on this project can be found here.

highly dependent on property archetype and there remains significant levels of uncertainty over where running costs for heat pumps may be cost-neutral in comparison to gas and where it may be higher.

- **Lack of Appropriate Infrastructure.** The success seen in the decarbonisation of electricity is largely due to the ability to input renewable sources of electricity into the existing electricity grid. This is not the case with heating. The only existing grid is the gas grid so for heat dense urban environments (such as Glasgow, where district heating presents the likely appropriate intervention), the costs and complexity associated with installing an entirely new grid to transport low carbon heat between buildings presents a significant barrier.
- **Planning/Regulation.** In respect to the deployment of district heating, which Glasgow has identified as a strategic objective in decarbonising heat, there is at present a lack of sufficient regulation and legislation to support delivery. Demand assurance (investor confidence that, if a heat network were built, a sufficient volume of customers would connect to ensure an attractive return on investment) is a key barrier and whilst regulation and legislation is in development to de-risk investment and build demand assurance, it is not yet in place.
- **Consumer Awareness.** There is a general lack of awareness and understanding among residents and businesses in Glasgow as to the benefits and options for low-carbon heating and this can slow uptake. Additionally, where there is awareness, there exists significant misinformation with respects to suitability of heat pumps in different property types with a general scepticism that installation of a heat pump will increase fuel bills. For district heating, there are low levels of awareness of the potential benefits of the technology. Where there is awareness, this can be characterised by a general scepticism over the monopolistic nature inherent to district heating which can impact on consumer confidence.
- **Competing Priorities.** In parallel with decarbonising heating, it is a strategic priority and statutory duty for Glasgow City Council to lower the rates of fuel poverty in the city. Given that some low carbon or renewable heating system carry a risk of increased fuel bills, delivering these priorities in alignment can be complex.
- **Behaviour Change.** Consumer behaviour is a key barrier to reducing Glasgow's reliance on gas to heat our buildings and homes. Encouraging individuals to shift from gas boilers to renewable heating technologies requires a shift in mindsets and habits. Many consumers are hesitant to invest in new technologies due to concerns around cost or that their minimum service requirements will not be met. Additionally, changing behaviour on a large scale is a complex task that is not the responsibility of one organisation which create coordination challenges across multiple stakeholders.

Electricity Emissions

Emissions from electricity account for 20% of Glasgow's carbon emissions that are currently measured. Emissions related to electricity consumption have reduced by 73% since the city's baseline year of 2006 which represents a notable achievement. However, there are still barriers to the continued decarbonisation of electricity in Glasgow. Some of the key barriers are outlined below:

- **Grid Constraints.** The grid at present is not designed to incorporate the fundamental differences that renewable electricity sources bring with them. Historically, with larger centralised fossil fuelled generators, the grid transported electricity from these points of generation to consumers. However, with the onset of small-scale, decentralised renewable generation, the grid has had to adapt to having power pushed onto the grid in the opposite direction from that which the grid was designed to manage. As a result, the grid has constraints that limit that amount of energy that can be fed onto the grid. These constraints are exacerbated in areas of high density and high demand, thus limiting the amount of renewable energy that can be deployed in cities like Glasgow without significant and expensive grid reinforcement work. This can result in lengthy delays. Additionally, as Scotland and the UK seeks to largely electrify heating and transport, there requires to be a significant

increase in grid capacity and planning this at large scale, in anticipation of future developments such a heat networks, can be problematic.

- **Storage.** One of the major barriers for Glasgow in continuing to progress in decarbonising electricity is the challenge of intermittency in renewable energy. Matching supply with demand in real-time can be challenging when renewable supplies are not always present. The key to this barrier is the ability to store electricity when supply is high and demand is low for use when supply is low and demand is high. Storage of electricity comes with significant obstacles also however including (i) high capital costs (ii) absence of standardisation (iii) inadequate regulatory landscape.
- **Land Availability.** As Glasgow is at the centre of the largest metropolitan area in Scotland, access to land in which to install solar PV or wind turbines can present a major obstacle. In addressing this barrier, Glasgow City Council is exploring a range of options including (i) utilising vacant and derelict land (ii) land that may be unused and owned by city stakeholders (iii) installing solar PV onto roofs of buildings within the Council's estate
- **Regulation.** A recent change in regulation from Ofgem (the organisation responsible for regulating energy markets in the UK) has made the business case for private wire electricity connections more challenging. Private wire electricity had previously been able to provide electricity to any consumer connected at a comparatively lower cost than grid supplied electricity due to the absence of policy and regulatory charges that typically burden grid supplied electricity. The regulation change by Ofgem has reduced the margins between grid and private wire electricity and this presents barriers, in conjunction with grid capacity issues, to the implementation of small-scale renewables in the city. This has brought challenges when considering the electrification of heating due to the notable differential in gas and electricity prices.
- **Behaviour Change.** Changing consumer mindsets and habits around electricity is also recognised as a barrier to achieving Net Zero Carbon in Glasgow. Many individuals and organisations are accustomed to relying on fossil-fuel based electricity sources. Many are resistant to change due to concerns around reliability, cost and lack of information regarding renewable energy options.

Transport Emissions

Transport accounts for just under one third of emissions (30%) in Glasgow. Additionally, transport emissions have reduced by 18% since 2006 which, in comparison to the significant reductions seen in electricity emissions, outlines how problematic it can be to reduce transport emissions in a large city. Some of the key barriers for Glasgow in reducing its transport emissions are as follows:

- **Infrastructure.** Glasgow has made significant progress in the installation of EV infrastructure. However, there still requires to be additional infrastructure in order to fully support the shift to electric vehicles. Developing robust investment cases for increased EV charging infrastructure can be challenging as typically the supply is required ahead of confirmed demand, as a mechanism of confirming said demand. This uncertainty creates barriers to rollout at scale. The perceived inadequate coverage of EV infrastructure can also fuel concerns around 'range anxiety' in consumers still deciding on whether or not to transition to an electric vehicle.
- **Cost.** At present, electric vehicles are still significantly more expensive than petrol or diesel vehicles. Incentivising residents in the city to buy electric vehicles can be challenging in this context and control of this variable sits largely outside of the remit of a local authority such as Glasgow City Council.
- **Behaviour Change.** Implementing behaviour change is challenging for any level of government. Particularly for Glasgow, behaviour change presents a significant barrier to encouraging individuals to take up active travel or use public transport. Compounding the challenges of incentivising active travel choices is the often cold and wet weather that

Glasgow experiences which can discourage walking and cycling. Behaviour change also requires significant resource to initiate change and then maintain that change in behaviour as evidence shows that without continued reinforcement, people will return to old behaviours relatively quickly.

- **Public Transport Accessibility.** There is a common perception that public transport in Glasgow is unreliable and expensive. This is a complex challenge that compounds behaviour change issues with national infrastructure issues around rail and busses. It has arguably fed into reduced patronage numbers on public transport in Glasgow in the last ten years.
- **City Planning.** Historically in Glasgow, and indeed most cities in the UK, city planning has prioritised private vehicle use over walking and cycling. Unwinding years of city planning to this effect adds an additional barrier to reducing transport emissions.

Emissions from Waste

Whilst emissions from waste account for a small proportion of overall emissions, it is of strategic focus for the city. Given that scope 3 emissions are currently not fully reported and monitored in the city, it is likely that waste emissions account for a higher proportion of overall emissions than the current reporting mechanism indicate. Some of the key barriers to reducing the carbon footprint of Glasgow's waste management include:

- **Waste Generation.** Glasgow, like most cities in the UK, generates a significant volume of waste. This has been embedded into our society over decades and it can be a significant challenge to lower the volume of waste generated in the city. The high volume of waste creates corresponding challenges in terms of inadequate infrastructure to process the waste.
- **Lack of Infrastructure.** The onset of single use products witnessed by Glasgow in the 1990s has changed the profile of how waste is generated in the city. Significant financial and resource constraints placed upon Glasgow City Council makes it challenging to provide infrastructure that can accommodate for the shifting waste profile.
- **Behaviour Change.** Implementing successful behaviour is a key barrier across all emissions sources. However, given that waste generated is a function of behaviour, it is a key obstacle in lowering the carbon footprint of Glasgow's waste management. Incentivising and educating residents and organisations to properly recycle can be challenging and in addition to this, there is a general lack of awareness or misinformation surrounding waste management in the city that results in many residents and business disengaging. Behaviour change also requires significant resource to initiate change and then maintain that change in behaviour as evidence shows that without continued reinforcement, people will return to old behaviours relatively quickly.

Emissions Sequestration

Alongside the establishment of a 'Net Zero Carbon' target came the acknowledgement that Glasgow will never deliver a 100% reduction in emissions. Invariably, sequestration will form a key component of Net Zero Carbon, ensuring that for those emissions the City cannot mitigate, there is appropriate sequestration capacity. However, there a number of key barriers for Glasgow as the City seeks to increase the capacity for sequestration including:

- **Land Availability.** Glasgow, as the heart of the biggest metropolitan area in Scotland, has limited land availability in which to progress sequestration projects.
- **Ash Dieback.** Glasgow has around 250,000 Ash trees which contribute to the city's existing sequestration capacity. Hoaccewever, these trees are at risk from Ash Dieback disease. The risk posed by Ash Dieback in Glasgow present a major obstacle to increasing the sequestration capacity of the city's trees.
- **Long Term Commitment.** Sequestration projects typically entail a long-term commitment. Tree planting, for example, comes with it the need for a long term budgetary and resource

commitment to maintain the trees. This presents a barrier for Glasgow City Council which, as a local authority, has existing challenges around short-term planning and resource.

Monitoring and Reporting.

There is at present no common or standardised framework for monitoring and reporting on sequestration. As this can be a prerequisite to certain funding streams, the lack of an efficient mechanism by which to report ongoing sequestration presents a barrier. In the absence of this, quantifying sequestered emissions and reporting this on an annual basis can be complex and resource intensive.

A-3.2: Systems & stakeholder mapping

System	Stakeholders	Influence on the city´s climate neutrality ambition	Interest in the city´s climate neutrality ambition
Governance and Policy	Glasgow City Council, Scottish Government, UK Government, other Local Authorities	Set direction of policy, legislation and regulation. Can unlock and direct capital funds to deliver net zero programme	Statutory obligation to deliver emissions reductions Remit of responsibility of citizens within respective jurisdictions
Partnership working	Glasgow City Region, Clyde Gateway, Sustainable Glasgow Partnership	Capitalise on efficiencies of cross-organisation working Maximise impact of climate related projects Build resilience by collaboration and alignment Influencing and advocacy as a pooled resource Knowledge exchange	Self-interest in minimising impacts of climate change on respective organisation Reduced resource and capital costs of delivering the changes necessary to reach net zero
Finance/Economy	Chamber of Commerce, Scottish Government, Glasgow City Council, Private investors, Scottish National Investment Bank, Strathclyde Pension Fund, Invest Glasgow, Private sector finance, Foreign Direct Investment	Establish monetary policy including taxation and funding. Provide investment into net zero related projects Act as an intermediary in communicating the net zero agenda to the	Ensuring that there is a confident case for investing capital or providing funding for net zero projects Achieving net zero carbon in a fiscally responsible manner

		business community and stakeholders in the economy	Ensure that damage to businesses and the economy is minimised in the transition to net zero Create high value jobs Generate return on investment Engineer the market economy to enable net zero transition Build the local economy as a result of the net zero transition
Skills	Skills Development Scotland, Scottish Enterprise, Academia, Trade Unions	Influence on policy Stakeholder engagement and collaboration Knowledge exchange with Glasgow City Council Regulatory alignment across organisations Provide training and apprenticeships in green technologies and roles	Produce the quantity and quality of skills required for the net zero transition Ensuring a just transition by reskilling those in carbon intensive sectors
Business	Small, medium and large enterprise in Glasgow, Scottish Enterprise, Chamber of Commerce, Best Bar None, Skills Development Scotland	Influence in local economy Provide capacity in skills and resource to deliver net zero projects Steer business community toward net zero in alignment Engagement with business community	Regulation may require net zero action Net zero action may provide future economic benefits Moral incentive to contribute to the net zero transition in Glasgow

Infrastructure	Scottish Power, Scottish Power Energy Networks, Scottish Water, Scottish Water Horizons, Scotia Gas Networks, heat network operators, broadband providers, Strathclyde Partnership Transport, Network Rail, Glasgow City Council, Scottish Government, UK Government	Provide investment in projects that deliver carbon emissions reductions for Glasgow's infrastructure Steer infrastructure development in a manner complementary with net zero goals Knowledge exchange with local and national government	To make infrastructure related decisions and investment that are in alignment with net zero trajectory Ensure investment is resilient to ongoing decarbonisation of Glasgow Ensure investment is resilient to the increasingly significant impacts of climate change Provide core services to users whilst supporting net zero transition Moral incentive to contribute to the net zero transition in Glasgow
Communities	Residents, Community Councils, local Councillor, intermediary groups, housing associations, Wheatley Group	Build mandate for climate related action Engage with local residents Feedback resident concerns and issues to local and national Government Attract local funding for climate related action Voting in elections	Ensuring that the net zero transition brings cross-benefits for communities and residents in relation to health, wellbeing and finance. Minimising the impact of climate change upon residents and communities Protection of future generations in Glasgow from climate change
Academia	Universities and colleges in Glasgow, further education organisations around the world	Influence local and national government on policy and decision making Decarbonising internal estate (which are	Statutory requirements to decarbonise organisation. Incentive to align research with strategic

		typically large with correspondingly large carbon footprints) Provide targeted research to support policy Provide innovation- and technology solutions to challenging aspects of the net zero transition Knowledge exchange across other cities in the UK	direction of local and national government Moral incentive to contribute to the net zero transition in Glasgow

3 Part B – Pathways towards Climate Neutrality by 2030

Part B represents the core of the CCC Action Plan, shaped by local authorities, local businesses, and stakeholders, comprising of the most essential elements: scenarios, strategic objectives, impacts, action portfolios and indicators for monitoring, evaluation, and learning.

3.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

Module B-1 "Climate Neutrality Scenarios and Impact Pathways" lists and describes impact pathways, early and late outcomes and direct and indirect impacts (co-benefits) according to and adapted from the NetZeroCities Theory of Change and the CCC Action Plan Guidance – clustered by fields of action.

B-1.1: Impact Pathways Introduction

These impact pathways to Net Zero Carbon are founded upon both the systemic barriers and emissions source-specific barriers outlined in section A-3.1 above. The need for increased infrastructure, governance and community involvement in relation to our energy systems is evident. For example, for the successful deployment of district heating, Glasgow will not only require to navigate a complex and large infrastructure initiative but this will require a robust backdrop of governance arrangements and appropriate policy to ensure such infrastructure is deployed in a manner supportive of the wider climate ambitions of the city. Likewise, success will require our residents, communities and businesses to engage with the initiative and connect in to any network that is build proximate to their location. With respect to mobility and transport, the context is much the same. Infrastructure rollout will only provide benefits if our communities and businesses utilise it.

Alongside this, the 5 strategic priorities outlined in the Commitments section of this submission have informed the development of our Impact pathways:

- **Strategic Priority 1:** Communication and Community Empowerment
- **Strategic Priority 2:** Just and Inclusive Place
- **Strategic Priority 3:** Well Connected and Thriving City
- **Strategic Priority 4:** Health and Wellbeing
- **Strategic Priority 5:** A Green Recovery

Please note - The main rationale for focusing on these impact pathways relates to the established policy trajectory set by Glasgow to achieve Net Zero Carbon alongside an acknowledgement that the Net Zero Routemap and Climate Plan review will provide updates on this section.

As such, these should be considered in the context of Glasgow's position at present.

The identified pathways may be subject to revision post-adoption of our Net Zero Routemap and as such, this Net Zero Cities submission should be treated as a living document. These impact pathways should be treated as an indicative update on the delivery of the Climate Plan and an outline of what areas of our Climate Plan may be subject to revised thinking through the Net Zero Routemap.

B-1.2: Impact Pathways

Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Energy systems	Governance/Policy	Establishment of delivery vehicle to support net zero infrastructure projects	Expanding scope of delivery vehicle		Reduced fuel poverty, warmer homes, reduced air pollution, improved health and wellbeing
		Designation of heat network zones	Deployment of district heating, expansion of heat network zones		energy security, affordable heating
		Development of a Net Zero Routemap	Optimally efficient reduction of carbon emissions		Co-benefits generic to climate action
	Infrastructure	New Energy from Waste plant	Connection into district heating Reduced carbon footprint of electricity		Improved waste performance Benefits from heat network connection Grid constraint relief
		Increased Solar PV on Council estate	Pathway development for PV installation		Energy security Council cost saving Grid constraint relief Land constraint relief
		Installation of wind turbines	Pathway development for wind turbine installation		Energy security Council cost saving Grid constraint relief
		Deployment of heat network supplied via the GRREC (EfW plant)	Pathway development for citywide rollout of district heating		Energy security Affordable heating Improved efficiency of GRREC plant Improved waste management performance
		Identify Vacant and	Unlocking increased		Land constraint relief

		Derelict Land sites to support renewable electricity expansion	expansion by land allocation		Energy security
		Continued engagement with DNO (SPEN) to support expansion of energy storage infrastructure	Increased use of renewable energy due to increased storage capacity		Energy security
		Promote the development of green infrastructure and nature based solutions	Infrastructure works completed in a manner harmonious with the natural environment		Improved biodiversity and natural systems
	Communities/Business	Framework developed for community owned renewable energy infrastructure	Expansion of community owned energy schemes		Support local economy Provides low cost energy to end users in Glasgow
		Guidance for businesses to reduce their emissions including possible heat network connection	Reduction in emissions from the commercial and industrial sectors		Energy security Affordable heating Support for heat network business cases
		Improve how the Council uses Communications to effectively inform and influence communities and businesses	Communities and businesses better informed to make low carbon choices		Behaviour change Norm establishment
Mobility and Transport	Infrastructure	Increase in bicycles lanes	Increase in cycling rates		Improved health and wellbeing Reduced air pollution

					Reduction in cost of living
		Expanded EV charging infrastructure	Increase in use of EVs		Reduced air pollution
		Further development of the Clyde Metro project	Successful delivery of the Clyde Metro project		Improved sustainable transport access Better access to education and work Reduced air pollution Reduced car journeys Increase rail capacity
		Expanded bus corridor network	Increase in bus patronage		Reduced car journeys Better access to education and work Reduced air pollution Improved journey times
		Promote the development of green infrastructure and nature based solutions	Infrastructure works completed in a manner harmonious with the natural environment		Improved biodiversity and natural systems
	Businesses/Communities	Implementation of Liveable Neighbourhoods	Improved access to public and active travel		Air pollution reduction Improved access to education and jobs Reduced car journeys
		Deployment of freight distribution hubs	Reduction in commercial delivery associated carbon emissions		Reduced air pollution Improved CSR for businesses
		Deployment of ‘last mile’ delivery hubs	Increased use of active travel methods for delivery of goods		Reduced air pollution Improved CSR for businesses
		Promote remote working and workplace	Reduction in transport emissions through reduced		Reduced air pollution Improved CSR for businesses

		parking licenses	travel requirements		
		Improve how the Council uses Communications to effectively inform and influence communities and businesses	Communities and businesses better informed to make low carbon choices		Behaviour change Norm establishment
		Ensure the transition to Net Zero is a Just Transition for communities and businesses	Communities and businesses will feel the benefits of transitioning to net zero rather than be negatively impacted by it.		Wellbeing Economic opportunity Job growth
Waste and Circular Economy	Infrastructure	Redevelopment of Easter Queenslie waste management centre	Reduce the volume of waste being sent to landfill		Increased circularity in local economy Cost saving for the Council
		Construction of South Clyde Energy Centre (new EfW plant)	Reduce the volume of waste being sent to landfill Renewable electricity generation Heat supply to local heat network		Increased circularity in the local economy
		Promote the development of green infrastructure and nature based solutions	Infrastructure works completed in a manner harmonious with the natural environment		Improved biodiversity and natural systems
	Governance/Policy	Further segregation of recycling bins for residents	Increased recycling rates		Increased awareness of climate action from residents and businesses Behaviour change

					Norm establishment Reduced volume of waste sent to landfill Cost saving for Council
		Implement the Deposit Return Scheme for Glasgow	Significantly increased recycling rates for items eligible for the Scheme		Increased awareness of climate action from residents and businesses Behvaiour change Norm establishment Reduced volume of waste being sent to landfill Cost saving for Council
	Social	Improved communication to residents on Council's recycling services	Residents are more informed to make climate friendly decisions in respect to their waste management		Norm establishment Behaviour change
		Promote shift to local food consumption and reduced meat consumption	Residents benefit from lower carbon food alongside supporting the development of the local economy		Norm establishment Behaviour change
Buildings	Governance/Policy	Develop a Retrofit Strategy with a focus on pre-1919 tenemental properties	Solutions/approaches developed to unlock retrofit of challenging archetypes at scale		Affordable warmth for residents Energy resilience
	Businesses/Communities	Increased communications to residents (owner occupiers and private rented) and businesses	Increased rates of retrofit across the city		Behaviour change Increased resident/community/business empowerment Affordable warmth

		on rationale/benefits to improved energy efficiency			Energy resilience
		Improve how the Council uses Communications to effectively inform and influence communities and businesses	Communities and businesses better informed to make low carbon choices		Behaviour change Norm establishment

3.2 Module B-2 Climate Neutrality Portfolio Design

Please note - Module B-2 "Climate Neutrality Portfolio Design" contains a project description for each action planned in the CCC Action Plan. This includes interventions targeted at creating/enhancing carbon sinks to address residual emissions.

At present, Glasgow City Council is finalising the outputs of our Net Zero Routemap (appended) which will reinforce our existing Climate Plan by (i) establishing interim, science-based targets required to reach net zero, Section 4.1 of the Routemap (ii) developing an approach for the city that allows priority emissions areas (such as transport and heating) to be addressed, Sections H, I and J of the Routemap (iii) developing an impact assessment tool, Section 5 of the report, (iv) adopting a whole-systems approach across the city, Section 6 of the Routemap, and (v) creating a novel delivery plan with costed scenario pathways, Sections 7 and 11 of the Routemap.

Critically, the Net Zero Routemap assesses how far towards Net Zero Carbon our existing policies will take us, what the 'gap' left is and provide broad actions to address the identified gap and take Glasgow to Net Zero Carbon by 2030. This is discussed in Section 5 of the Routemap.

The Routemap is in the process of finalisation. As such, Glasgow's CCC submission refers to our existing Climate Plan and the actions in the Plan are reflected below in B-2.1. These are interlinked with the impact pathways listed above, with both informing the ongoing evolution of Glasgow's approach to Net Zero.

Once finalised, Glasgow City Council will then go through a process of reviewing and internalising the outputs of this report, undertaking work to present a clear Routemap for approval through our Elected Member Committee reporting process in November 2024, at our Net Zero and Climate Progress Monitoring City Policy Committee. At this point the outcomes from the Routemap will be in the public domain and we will have an agreed set of next steps for the integration of the findings across all relevant GCC policy and delivery. The report to Committee will also provide next steps on city wide engagement to ensure that all relevant stakeholders understand and are aware of the role they play in supporting Glasgow to achieve its 2030 Net Zero target. The Net Zero Routemap is appended to this submission and acts as a key element in our overall submission.

B-2.1: Description of action portfolios - textual or visual			
Fields of action	**Portfolio description**		
	List of actions	**Descriptions**	**Stakeholders**
Mobility and Transport	Promote homeworking and videoconferencing to reduce traffic congestion, as part of	Building on effective home working during the pandemic, city council to develop and implement remote working policy. The city will enable staff	Scottish Government

	a range of effective working practices in post COVID 19 world.	to work remotely where possible reducing the need to travel and identifying emissions savings	
	Explore options to utilise the ongoing development of the city centre. Glasgow's Low Emission Zone to contribute towards carbon reductions from transport in the city centre.	Glasgow's Low Emissions Zone set vehicle emissions standards within Glasgow's city centre. Any vehicle entering the city centre area is viable for penalty if non-compliant with the standard.	Scottish Government, Transport Scotland, Strathclyde Partnership for Transport (SPT), bus operators
	Develop a Glasgow Bus Partnership in line with the provisions of the Transport (Scotland) Act 2019.	Glasgow will explore other options for bus delivery in the City as described in the Transport (Scotland) 2019 Act and with the aim of achieving the best bus service possible for the citizens of Glasgow, whilst contributing to a greener, better connected City	SPT, Transport Scotland, Transport interest groups
	Explore alternative options for bus delivery in Glasgow in line with those options laid out in the Transport (Scotland) Act 2019.	As above	SPT, Transport Scotland, Transport interest groups
	Deliver a comprehensive active travel network, incorporating the spaces for people measures (following consultation) and enabling 20-minute neighbourhoods through the liveable neighbourhood's plan.	Develop a proposed network of feasible routes that will connect communities and support habitat connectivity. Assess active travel routes for opportunities to enhance and connect biodiversity. Undertake stakeholder engagement on the proposed network. Develop Active Travel Strategy and Action Plan.	Sustrans, Scottish Government
	Enable a rapid and strategic shift to electric vehicles through increasing the current rate of deployment of EV charging infrastructure.	Work is ongoing to develop an approach to a step change in delivery of public Electric Vehicle Charging Infrastructure in Glasgow, using funding from Transport Scotland's Electric Vehicle Infrastructure Fund. Delivery models being assessed and an Expansion Plan produced by external consultants as part of work for	Scottish Government, Transport Scotland, Sustainable Glasgow

		Glasgow City Region & individual local authorities.	
	Deliver rapid transition of council's fleet to electric, supporting the city's existing fleet strategy's target of becoming low carbon by 2030.	Glasgow City Council is the largest employer in Glasgow and as such should lead the way in decarbonising its fleet. To date 102 EV charging units have been installed providing 215 EV charging bays through a mixture of single and double head charging units.	Scottish Government
	Reduce the need to own and use a car through measures in the City Development Plan 2, Glasgow Transport Strategy and the Liveable Neighbourhoods.	City Development Plan to set out how 20-minute neighbourhoods can be achieved with the Liveable Neighbourhoods Plan proposing the specific interventions. The Local Transport Strategy will to set out how the city will achieve decarbonisation of the transport network and consider proposals to pilot free public transport within the City. Low Emission Zone to be implemented and extension to be considered CDP2, to include measures to make using a car less attractive, use of Public transport, active travel more attractive. locational policy (vis-àvis sustainable locations)	Transport Scotland, SPT, Sustrans, Scottish Government
	Explore the feasibility of subsidised public transport through salary sacrifice scheme similar to that available to on site staff.	As the largest employer in Glasgow, the City Council aims to develop novel approaches to incentivising employee use of public transport methods when travelling to and from the workplace	SPT, Scotrail and bus operators
	Undertake a feasibility study about a Workplace Parking Licensing (WPL) scheme, ring fenced to fund sustainable transport in the city.	This action is currently in development. If approved, it would see funding raised from a requirement for businesses in the city to pay a fee for having parking spaces at their workplace.	Scottish Government
Built Environment	Continue to work with Scottish Government to maximise funding for Area Based Schemes (ABS) to invest in improving	Area Based Scheme is a key funding mechanism for local authorities in Scotland. It is recognised that there are barriers to unlocking the maximum potential of the funds	Private landlords, Scottish Government, RSL's, owner occupiers, Energy Company Obligation (ECO) contractors,

	energy efficiency and tackling fuel poverty in private sector.	and work is required across national and local levers to understand and overcome said barriers.	utility companies, Home Energy Scotland, Energy Advice Provider
	Prepare an investment improvement plan for older (pre- 1919) tenements and private sector housing.	Glasgow's pre-1919 stock, both domestic and non-domestic, are classed as 'hard-to-treat' from a retrofit perspective. There is not a clear pathway for retrofit of these archetypes and additionally, any pathfinder projects have confirmed that retrofitting pre-1919 buildings will come at a high cost.	Housing Associations, Scottish Government, Private Sector Landlords
	Require Glasgow's Gold Hybrid plus 20% low and zero carbon generating technologies (LZCGT) or better, to be achieved for all new build new homes.	This action will be implemented through the new City Development Plan and with support from Building Standards colleagues.	All development sector
	Require Glasgow's Gold Hybrid plus 20% low and zero carbon generating technologies (LZCGT) or better, to be achieved for all new non-domestic development.	As above	All development sector
	Encourage and enable retrofit of all existing owner-occupied housing to EPC level C or above, and to reduce flood risk (where appropriate.)	Owner occupied properties are challenging to incorporate into strategic retrofit planning in comparison to socially rented or, to an extent, private rented properties. A targetted approach is required to ensure owner occupied properties are thermally efficient and are prepared to adapt to the impacts of climate change in the city.	Scottish Government, Home Energy Scotland
	Upgrade insulation and heating of all building stock in the city and install measures to reduce flood risk, city council leading by example.	Glasgow's domestic and non-domestic building stock is typically of a poor level of energy efficiency. Reducing the demand for heat alongside decarbonising the supply of heat is a key objective of the City Council.	Sustainable Glasgow, Housing Associations, Scottish Government, Glasgow City Region

Built Environment, Adaptation	Ensure that historic buildings are resilient to the impacts of climate change, protecting Glasgow's rich heritage.	Glasgow has many historic buildings that will need to adapt to the increasingly notable impacts of climate change.	Glasgow City Heritage Trust, Glasgow Life
Built Environment, Energy Systems	Ban gas heating systems in all new buildings within the city boundary.	The city council will collaborate with local partners to implement and enforce guidance established through updated Building Regulations for Housing.	Scottish Government, Sustainable Glasgow, District Network Operators (DNOs)
	Continue to deliver on the Local Heat and Energy Efficiency Strategy (LHEES) which identifies areas suitable for investment in renewable energy generation and heating in the city.	Glasgow's LHEES was approved in November 2023 and established the city ambition to accelerate the deployment of district heating alongside providing spatial analysis as to where district heating may be the most feasible.	Scottish Government, Sustainable Glasgow, all development sector, DNOs
	Deliver heat and energy generation projects including distribution of heat and energy from parks in Glasgow based on existing feasibility studies.	Heating Glasgow's buildings accounts for a significant proportion of overall emissions. Identifying where heat may be drawn from the ground in our parks and then fed into a district heating network is seen as a strategic opportunity for city. This action will assist in addressing barriers around grid capacity by increased generation capacity.	Greenspace Scotland, Scottish Government, Sustainable Glasgow, DNOs
Energy Systems	Develop a Carbon Neutral Innovation District. This will act as a catalyst and exemplar for rolling out district heating across the city.	Glasgow has established ambitions to deploy district heating in the city centre, supplied via water source heat pumps located on the River Clyde. The University of Strathclyde is a key stakeholder in the project and a proposed early connection to support the economic legitimacy of the project.	University of Strathclyde, Sustainable Glasgow, DNOs
	Review the need for an energy services company (ESCO) for the city as appropriate in relation to local energy generation	Options for delivery of renewable power and heat are being explored, with efforts being made to drastically increase the amount of renewable energy in the city, primarily through power from	Scottish Government

	and distribution projects.	solar and heat from heat-pumps and geothermal. The development of these projects may present the opportunity to develop Special Purpose Vehicles or Joint Ventures, and at some point may benefit from the creation of an Energy Partnership to oversee their ongoing management post delivery. This action will assist in addressing barriers around grid capacity by increased generation capacity.	
	Continued engagement with DNO (SPEN) to support expansion of energy storage infrastructure	Glasgow City Council will work closely with Scottish Power Energy Networks (SPEN) to ensure that plans to increase storage capacity across Scotland are aligned with plans and timescales for the city.	Scottish Power Energy Networks (SPEN)
Energy Systems, Just Transition	Establish a framework of engagement with local energy cooperatives, enabling them to be set up and providing support.	The Council is currently developing a Community Renewable Energy Framework that will facilitate the installation of renewables on vacant land by community groups. This action will assist in addressing barriers around grid capacity by increased generation capacity.	Scottish Government, Sustainable Glasgow, community energy organisations
Waste and Circular Economy	Enable and encourage all households in Glasgow to minimise waste arisings and to repair, reuse and recycle	In this context, a Twin Stream recycling service is being introduced for kerbside properties to support a more effective segregation of waste from households. This will allow for recycling rates in the city to improve.	Zero Waste Scotland, Scottish Government
	The city will support Glasgow's local food economy by exploring ways for procurement to support local businesses, ethically sourced, sustainable and healthy food.	Work is underway to establish how the Council's Sustainable Procurement policy can impact local food procurement and how this links with Community Wealth Building Principles.	NHS Greater Glasgow and Clyde, Health and Social Care Partnership, Visit Scotland, national Farmers Union, Sustainable Glasgow
	To understand meat consumption in the	GCC is engaging with communities and organisations	Sustainable Glasgow, Health and

	city and better support promotion of healthy, tasty, low carbon and ethically sourced food, city and partners will establish a baseline meat consumption in the city.	across the City around increasing access to healthy and ethically sourced food.	Social Care Partnership, Glasgow Food Policy Partnership
	The city and partners to support the adoption of circular practices across the city through capacity building programmes, in line with the new Circular economy route map for the city.	A Circular Construction Forum is currently under development in the city that will bring together key figures in government and industry to discuss the reuse and repurposing of buildings and materials.	Glasgow Chamber of Commerce, Zero Waste Scotland
	Introduce appropriate resourcing dedicated to monitoring and enforcement of kerbside waste recycling in the city in line with the new Resource and Recycling Strategy and Scottish Government Circular Economy Bill.	The Council has implemented a Bin Hub pilot in Pollokshields along with a communication and engagement campaign with residents to improve monitoring and collection of different waste streams. This has been a success and will be rolled out in a second area of the city.	Scottish Government
	Support the delivery of the plastic reduction strategy to achieve its goal of no unnecessary plastic by 2030.	Progress to date includes the development of a procurement tracker and a feasibility study looking at the possibility of a river boom on the Clyde to catch plastic waste.	Zero Waste Scotland, Scottish Government, Glasgow Chamber of Commerce
	Work with partners in the city to accelerate the transition of Glasgow's economy from linear to circular, making it more inclusive and sustainable	Glasgow has published a Circular Economy Routemap. The Council is currently undertaking a review of the Circular Economy Routemap with the Ellen MacArthur Foundation and intends to establish a working group to explore the recommendations of the review.	Scottish Government, Zero Waste Scotland, Sustainable Glasgow Partnership
Communications	Develop a dynamic Climate Change Communications strategy for the city. This will be developed with Sustainable Glasgow	The Council's Sustainability section is currently mapping out climate events in the city and a working group was set up in early 2023 to engage with internal and external stakeholders. Work	Sustainable Glasgow Partnership, communities of interest

	and aligned with COP 26.	commenced on an Engagement and Communications Strategy in September 2023	
	Glasgow Community Planning Partnership, Glasgow Life and Glasgow City council engage in a series of climate conversations across the city, in collaboration with community institutions. Fostering community confidence, empowerment and participation using the Place Standard tool and participatory budgeting.	The Planning Team in Glasgow City Council are using the Place Standard Tool to engage with communities in various Sustainable Place Making project across the City. This action is due to be developed further over 2024.	Creative Carbon Scotland, SNIFFER, Glasgow Centre for Population Health, Greenspace Scotland, Sustainable Glasgow
	Create a declaration for city institutions to pledge to become Net Zero Carbon by 2030 or sooner.	The Sustainable Glasgow Partnership Board is currently developing Awards to recognise businesses and organisations that successfully reduce their carbon footprint.	Sustainable Glasgow
	The city commits itself to become a Climate Literate organisation through the roll out of Carbon Literacy and Ecological Emergency training. The city also commits to advocating the roll out of climate literacy training in other organisations across the city.	Glasgow City Council has provided Climate Literacy Training to Elected Members and Council staff since 2020 in partnership with Keep Scotland Beautiful and has also rolled out “Train the Trainer” courses to allow Council departments to train their own teams – for example around 80 staff from the Economic Development section. Training was also provided in the summer in Gaelic to the students, parents and staff at Glasgow Gaelic School. Further rollout, utilising the Council’s online learning platform is planned for 2024.	Glasgow Community Planning Partnership, Keep Scotland Beautiful, Sustainable Glasgow
	Sign the Edinburgh Declaration on post 2020 global biodiversity framework as part membership of ICLEI cities for nature.	Glasgow City Council signed the Edinburgh Declaration in 2021.	ICLEI, Scottish Government
	The city and partners will develop a communications and	Glasgow City Council staff are actively working with Glasgow Community Food Network to	Sustainable Glasgow, Health and Social Care

	education campaign highlighting the health and environmental benefits of sustainable lower carbon and plant-based options generally.	develop governance around this issue.	Partnership, Glasgow Food Policy Partnership
Just Transition	Set Up Glasgow's Just Transition Commission to ensure the burden of climate impacts is shared equitably and that all in Glasgow have equitable opportunities of access and success in our low carbon economy.	Engage with Sustainable Glasgow Partners to establish a local Just Transition Commission. Develop an understanding of the recommendations made by the Just Transition Commission and how they relate to the city. Develop a Just transition implementation plan for Glasgow in collaboration with Unions, employers, academic institutions and communities of place, identity and interest in the city.	Community Planning Partnership, Scottish Government
	The city and partners will continue to invest in programmes to enable young Glaswegians to access and succeed in new green job opportunities.	The Climate Heroes project continues to work with teachers and students to influence the school curriculum and support young people t develop skills required for a sustainable economy. NRS Parks is currently recruiting 20 Modern Apprentices to work on biodiversity and climate adaptation projects in the citys parks. The Council's Parks section is in the process of recruiting 20 school leavers to complete a 3-year Climate Ready Modern Apprenticeship that will focus on biodiversity protection and improvement and climate adaptation in the city's parks.	Skills Development Scotland, local universities and colleges
	Develop opportunities, as part of the Curriculum for Excellence, for all education establishments to access outdoor learning, including	Glasgow City Council Education Department is currently engaged in a variety of projects: including Eco Schools Programme, Edible Playground and Trees for Cities. An engagement exercise is currently underway to	NatureScot, Sustainable Glasgow, Active Schools, STEM, Scottish Government, Eco-schools

	outreach biodiversity work.	encourage schools to better utilise the City's parks for outdoor learning.	
Green Infrastructure and Nature Based Solutions	Develop a Peat Free Procurement Strategy for the city council	The council will engage with procurement units to understand what products are currently used and procured. The council will engage with suppliers to establish that 100% peat free products will be required and what the best alternative products available might be for specific projects such as nursery and bedding plants. The Council will develop a peat free procurement strategy.	Scottish Government, NatureScot, local landowners, neighbouring local authorities
Green Infrastructure and Nature Based Solutions	Develop an Urban Woodland Strategy for the city.	GCC Planning is currently developing an Urban Woodland Strategy for the City which will go to Committee in 2024. The Strategy aims to look at how tress deliver for a number of actions including carbon capture, development, leisure, heat reduction, water management, food, biodiversity, construction etc. An environmental digital model is being developed alongside this.	Glasgow and Clyde Valley Green Network, Greenspace Scotland, NatureScot
	Accelerate Implementation of the Glasgow and Clyde Valley Blueprint for a Green Network to create green & biodiversity corridors in the city by improving open space provision and increasing tree cover, while also providing opportunities for active travel corridors.	The Green and Blue infrastructure that comprises the City's current Green Network will be presented as part of the Evidence Report for City Development Plan 2 and this will be a key consideration going forward.	Glasgow and Clyde Valley Green Network, Greenspace Scotland, NatureScot
	Support new and further extensions to Local Nature Reserves (LNRs) in the city, protecting and enhancing	The Council will engage with other stakeholders in the city to increase investment and secure support from landowners and communities for protection of existing LNRs as well as	Glasgow and Clyde Valley Green Network, Greenspace Scotland, NatureScot

	biodiversity and habitat connectivity	extending and creating new ones. The city will take forward 30+ Aspirational LNRs.	
	Increase investment in peatland restoration in the city region to enhance biodiversity and increase capacity for carbon sequestration.	Council and partners recognise importance of peatlands for carbon sequestration and biodiversity. The City will develop engagement with all local and regional stakeholders, including land owners to ensure that Glasgow's peatlands are restored and protected. Annual funding has been secured to support peatland restoration and enhancement at Seven Lochs Wetland Park.	Scottish Government, NatureScot, local landowners, neighbouring local authorities
Green Infrastructure and Nature Based Solutions, Just Transition, Communications	The City to incorporate the principle of biodiversity net gain into the Community Planning Partnership decision making.	The National Planning Framework 4 (NPF 4) was adopted in February 2023, forming part of the Development Plan, and includes a policy that requires biodiversity enhancement in new developments. Nature Scot is working with the Scottish Government to provide additional guidance regarding implementing this policy and Development Management decisions can now reflect NPF4.	Community Planning Partnership, NatureScot
Strategy, Just Transition	Implement the Fairer Scotland Duty in decisions and actions made in response to the Climate Emergency, ensuring that strategic decision-making helps to tackle socio-economic inequality by following Fairer Scotland Duty's guidance for public bodies	Engage with the Scottish Government's Fairer Scotland Duty consultation Engage With internal stakeholders and communities of place, identity and interest to develop implementation plan delivering on Fairer Scotland Duty.	Community Planning Partnership, Sustainable Glasgow Partnership
Strategy and Policy	Develop a first of its kind Net Zero Plan for the city to achieve	Explore a method for benchmarking the city's yearly climate, resources, environmental impact and	Sustainable Glasgow, Connected Places Catapult, Energy Systems

	its net zero carbon emissions target.	carbon offset data (a city or community environmental impact assessment) to target net zero criteria. Publish Net Zero report and implement recommendations	Catapult, City stakeholders
	Undertake a Carbon Impact Assessment for every key action taken by the city, by making it a requirement of all committee papers - similar to the Equality Impact Assessment (EQIA) process.	Explore a method of assessing the impact of new development on city's resources and infrastructure aimed at reducing carbon impact at planning stage to target net zero development.	Internal
	Undertake a Voluntary Local Review (VLR) to confirm Glasgow's commitment to the UN SDGs.	Glasgow City Council intends to (i) engage with internal and external stakeholders to understand the UN SDG's and 2030 agenda, (ii) assess current progress against UN SDG's and (iii) prioritise action in collaboration with city organisations and communities. The output will be the publication of a VLR report alongside commitments to SDG's.	Knowledge exchange with other cities undertaking similar exercise.
Finance, Green Infrastructure and Nature Based Solutions	The Council works with partner organisations, adjacent local authorities, the city's academic institutions to fund accelerated implementation of the Glasgow Local Biodiversity Action Plan (LBAP), Open Space Strategy Delivery Plan and Pollinator Plan.	The Council's Parks section presented the LBAP to the Net Zero and Climate Progress Monitoring City Policy Committee in February 2023 and workshops were held with LBAP partners in May 2023 to agree new actions. A Green Connectors and Wildflowers 5 year Action Plan is being delivered in tandem with the Tree Action Plan.	Sustainable Glasgow, NatureScot, Glasgow and Clyde Valley Green Network, Royal Society for the Protection of Birds, Butterfly Conservation, neighbouring local authorities.
Finance	The city will work with Strathclyde Pension Fund (SPFO) and other pension fund investors in the city to develop and adopt climate change strategies, with a view to ensuring that those funds can, in	SPFO will specifically develop a Climate change strategy to support transition to net zero carbon economy, investing in local green infrastructure and renewable energy projects SPFO continues to support the	SPFO pension fund investment managers

	meeting their objectives, align with the objectives of the Paris agreement and subsequent national and international agreements.	TCFD[15] framework and disclosure.	
	Develop a Green New Deal for Glasgow, including a portfolio of investable projects and exploring new green financing models.	The Council has continued to develop its thinking on climate finance and its engagement with the investor community. In 2023 it benefited from the insights of a Global Risk and Resilience Fellow, a senior seconded officer from the insurance sector, who worked across the organisation to support its thinking on the climate finance agenda. A report on developing a proposed climate finance framework was presented to Council committee in May 2023 and can be viewed here, with an update on this work to be taken to committee in early 2024. Subsequently, the Council has enhanced its capacity to engage in this agenda through establishing a new climate finance manager post and a corresponding internal Climate Investment Board, chaired by the Leader of the Council.	Scottish Government
Adaptation	Develop a Climate Risk assessment for the City, highlighting risks and opportunities of climate impacts on the city and its people.	Develop a city-wide climate adaptation strategy embedded in city planning policy.	Sustainable Glasgow, Climate Ready Clyde
	Develop and adopt an early warning system to prepare for extreme weather events such as heatwaves and flooding.	Climate Ready Clyde and SEPA will lead the wider Glasgow City Region in developing a system to prepare for extreme weather events and GCC will use existing mechanisms to continue to	Climate Ready Clyde

[15] Taskforce on Climate-Related Financial Disclosures

		proactively engaging on the issue.	
Adaptation, Green Infrastructure and Nature Based Solutions	To continue to invest in the school estate, for both carbon reduction, biodiversity gain, reduce flood risk and climate education as core principles.	Glasgow City Council will develop an investment and improvement plan for the education estate. This plan seeks to embed carbon reduction, biodiversity enhancement measures and surface water management into business cases.	Sustainable Glasgow, City building
Energy Systems, Adaptation	Identify and utilise Vacant and Derelict Land for greening and rewilding in combination with renewable energy generation measures and reducing flood risk.	Undertake a survey of vacant and derelict land relating to opportunities for these sites to contribute to renewable energy generation, Open Space Strategy and the Local Biodiversity Action Plan. This will consider potential to retain, where present, the priority habitat. Open Space Delivery Plan help manage competing demands on land use. This action will assist in addressing barriers around grid capacity by increased generation capacity. This action will also assist in addressing land constraint barriers by identifying additional sites for renewable energy generation.	Glasgow and Clyde Valley Green Network, Greenspace Scotland, NatureScot

Please note - Table B-2.1 above provides an overview of the actions within the existing Climate Plan, clustered into priority fields of action. Glasgow City Council is currently finalising our Net Zero Routemap (appended) alongside a corresponding review of the Climate Plan. The outputs of this will provide more detailed action portfolios, following the structure in table B-2.1 below. Two examples have been included below for this submission as it is the intention that the Net Zero Cities Action Plan will provide a framework to support the development of both the Net Zero Routemap and the Climate Plan review. Both examples provided below have been developed as part of Glasgow's Green Deal programme. This is discussed in detail throughout the Investment Plan section of this submission, with our Greenprint for Investment a direct output of action outlined in the Climate Plan.

B-2.2: Individual action outlines		
Glasgow Metro		
Action outline	Action name	Glasgow Metro

	Action type	Transport infrastructure
	Action description	Glasgow Metro is an umbrella term to describe new transport provision that will improve connectivity within Glasgow and the wider City Region made up of 8 local authority areas with a population of 1.8 million. The project will entail the deployment of new public transport routes that will involve a mix of heavy and light metro systems that interlink with existing bus, rail and subway networks across the Glasgow City Region.
Reference to impact pathway	Field of action	Mobility and Transport
	Systemic lever	Infrastructure
	Outcome (according to module B-1.1)	Improved sustainable transport access Better access to education and work Reduced air pollution Reduced car journeys Increase rail capacity
Implementation	Responsible bodies/person for implementation	Glasgow City Council
	Action scale & addressed entities	Metropolitan Glasgow Area. Map can be accessed here. Project will address rail network and bus network.
	Involved stakeholders	Glasgow City Council, Transport Scotland, SPT, Network Rail, Glasgow Subway, ScotRail, Glasgow Airport.
	Comments on implementation – consider mentioning resources, timelines, milestones	Funding has been secured for development of a Case for Investment (CFI) which is ongoing currently. In December 2023, Glasgow City Region approved funding of £12.155m to develop the CFI. There is strong policy alignment of the Metro strategically across Transport Scotland and Glasgow City Council. CFI is expected to be complete by March 2026. Estimations have placed the cost of the Metro Project in the region of £5-17bn though it should be noted that this cost may increase were Metro to run underground at sections. It is however anticipated that when up and running, the Metro could potentially generate self-sustaining revenue streams.
Impact & cost	Generated renewable energy (if applicable)	NA
	Removed/substituted energy, volume, or fuel type	Improvement of public transportation and the corresponding increase in patronage will lead to a reduction in fuel consumption associated with private vehicle use.
	GHG emissions reduction estimate (total) per emission source sector	The Net Zero Routemap provides indications of the quantity of emissions reductions projects such as the Metro could generate for Glasgow.

	GHG emissions compensated (natural or technological sinks)	The Net Zero Routemap provides indications of the quantity of emissions reductions projects such as the Metro could generate for Glasgow. It is unlikely that sequestration of emissions will be a notable output from the Metro project.
	Total costs and costs by CO_2e unit	The Net Zero Routemapprovides indications of the quantity of emissions reductions projects such as the Metro could generate for Glasgow.
Glasgow District Heating - GRREC		
Action outline	Action name	Glasgow District Heating - GRREC
	Action type	District heating infrastructure
	Action description	A project seeking to deploy district heating in the Polmadie area of Glasgow, with heat supplied from an active Energy from Waste plant (the GRREC : Glasgow Recycling and Renewable Energy Centre).
Reference to impact pathway	Field of action	Energy Systems
	Systemic lever	Infrastructure
	Outcome (according to module B-1.1)	Energy security Affordable heating Improved efficiency of GRREC plant Improved waste management performance
Implementation	Responsible bodies/person for implementation	Glasgow City Council / Viridor
	Action scale & addressed entities	Polmadie area of Glasgow – c. 1.96km2. Addressed entities : Gas network, operation of the GRREC, Public owned buildings in project scope, domestic properties in scope, non-domestic properties in scope.
	Involved stakeholders	Glasgow City Council, Viridor, Scottish Government, Scottish Futures Trust, Zero Waste Scotland, NHS, Glasgow Clyde College, Hampden Football Stadium
	Comments on implementation – consider mentioning resources, timelines, milestones	Funding was secured from the Heat Network Support Unit (consortium between Scottish Government, Zero Waste Scotland and Scottish Futures Trust) for Glasgow City Council to complete a techno-economic feasibility study for harnessing heat from the GRREC for use in a proximate heat network. Findings from the study indicate that a heat network supplied via heat from the GRREC would provide an adequate ROI to attract investment. CAPEX estimated between £24.15-38.21M. Timescales for delivery of this project will be dependent on the development of the delivery vehicle for heat networks which is currently underway. If and once a delivery vehicle is

		established, the GRREC project will likely be one of the first to be taken forward by the vehicle.
Impact & cost	Generated renewable energy (if applicable)	Low carbon heat generated as a by-product of electricity generation at the GRREC facility. It is modelled that 12.88MW of heat can be harnessed from the GRREC.
	Removed/substituted energy, volume, or fuel type	Removal of natural gas consumption for heating. Two scenarios completed during the feasibility study indicate customers may total between 24-35GWh of heat demand. The majority of this demand will currently be using gas but some may be on direct electric heating.
	GHG emissions reduction estimate (total) per emission source sector	Emissions from gas. Outputs indicate that once operational, the heat network could reduce emissions by between 4,035 - 5,398 tCO_2 per annum
	GHG emissions compensated (natural or technological sinks)	NA
	Total costs and costs by CO_2e unit	Feasibility modelled over 40yrs. CAPEX £24.15-38.21M. Emissions saved over 40yrs estimated between 161,414 – 215,925. Therefore, over 40 yr lifespan: between £149 - £176 per tCO_2

B-2.3: Summary strategy for residual emissions

Glasgow does not yet have clarity on what sources or sectors may see the highest proportions of residual emissions. It is important to remember that residual emissions will likely be highly dependent on context. Glasgow will likely have emissions that are problematic to mitigate that other local authorities do not have. The picture will be different for Glasgow than it is at national level.

Based on a typical understanding of residual emissions at city level, it is anticipated that transport and scope 3 emissions will both likely be more challenging to mitigate for Glasgow. Additionally, addressing some sectors or sources of emissions may sit more appropriately at national level and as such, it may be challenging for Glasgow to affect the change it requires to reach Net Zero.

The Net Zero Routemap assists in clarifying what emissions Glasgow could realistically mitigate by 2030 and in tandem, what proportion of residual emissions the city will have to provide sequestration capacity for.[16] To date, Glasgow has not placed a target on sequestration, noting that effort should be placed firmly on absolute mitigation and that sequestration be treated as a co-benefit of other place-making initiatives.

Some ongoing activity that will provide sequestration benefits which link directly into our Climate Plan (though not quantified) include:

- The best opportunities for greening and rewilding, including tree planting and the effective use of Vacant and Derelict Land sites, as recommended by the Ecological Emergency Plan,

[16] An assessment of sequestration requirements is located within Section 6.3 of the Net Zero Routemap

will be implemented via the Open Space Strategy (OSS) Delivery Plan (discussed in section A-2.2). The OSS Delivery plan will also map out opportunities to enhance Glasgow's active travel routes, through improved green network linkages.

- To create a more climate resilient city, we will use the local biodiversity action plan, and open space strategy delivery plan and City Development Plan, as the means to investigate opportunities to increase and protect biodiversity. This will include the creation of new Local Nature Reserves which will complement the enhanced network of open spaces across the city in helping to mitigate urban heat island effect.
- Partners will plan how to deliver a Clyde Climate Forest, while also developing an Urban Woodland Strategy for the city and aligned with Clydeplan's regional forest and woodland strategy
- A budget of £250,00 from the LEZ fund has been allocated for Street Trees. The funding will allow for more tree planting and greening projects and initiatives to be developed across the city. These projects and initiatives will help in improving air quality, local biodiversity and also contribute towards Glasgow's aspirations of achieving the globally recognised status as a 'Tree City of the World'

These actions and initiatives translate across to the Strategic Priority in the Climate Neutrality Commitments to ensure a **Green Recovery.**

Noting that the Council has yet to develop a robust approach to residual emissions (and that this will be highly sensitive to the outputs from the Net Zero Routemap), the next steps in relation to developing a strategic approach to residual emissions will have to consider the following:

- Identifying novel pathways for emissions mitigation in sectors/scopes that are considered 'hard to reduce'. Action in this respect will likely be predicated on developments at national level alongside the ongoing developmental process Glasgow will go through as we continue to progress towards net zero. Progress in this respect will enable the city to maintain alignment with its current policy position of mitigating emissions as much as possible and considering sequestration as a co-benefit of initiatives to improve citizen health and wellbeing whilst addressing the ecological emergency.
- Exploring how the city can drastically increase sequestration capacity through our ongoing work in relation to nature-based solutions alongside increased green and blue infrastructure.
- Consideration of whether the city should invest in technological carbon sinks such as CCS[17] solutions.

[17] Carbon Capture and Storage

3.3 Module B-3 Indicators for Monitoring, Evaluation and Learning

Please note - Glasgow has not yet established sector-specific targets nor has it established interim targets on the route to Net Zero. The Net Zero Routemap (appended) will support the establishment of such targets and this Net Zero Cities submission will provide a foundation from which to base the Routemap development upon.

The Net Zero Routemap (appended) complements existing strategies by (i) establishing interim, science-based targets required to reach net zero, Section 4.1 of the Routemap (ii) developing an approach for the city that allows priority emissions areas (such as transport and heating) to be addressed, Sections H, I and J of the Routemap (iii) developing an impact assessment tool, Section 5 of the report, (iv) adopting a whole-systems approach across the city, Section 6 of the Routemap, and (v) creating a novel delivery plan with costed scenario pathways, Sections 7 and 11 of the Routemap.

The Net Zero Routemap report is currently being finalised. Glasgow City Council will then go through a process of reviewing and internalising the outputs of this report, undertaking work to present a clear Routemap for approval through our Elected Member Committee reporting process in November 2024, at our Net Zero and Climate Progress Monitoring City Policy Committee. At this point the outcomes from the Routemap will be in the public domain and we will have an agreed set of next steps for the integration of the findings across all relevant GCC policy and delivery. The report to Committee will also provide next steps on city wide engagement to ensure that all relevant stakeholders understand and are aware of the role they play in supporting Glasgow to achieve its 2030 Net Zero target. The Net Zero Routemap is appended to this submission and acts as a key element in our overall submission.

As such, the Target Values section in table B-3.1 below have been marked with "TBC" until such point that the Council can confirm indicator specific targets.

The Net Zero Routemap, which utilises the ClimateView tool, has provided Glasgow City Council with a long list of 'transition levers' from which the city can determine those most relevant to local circumstance. Below is a screenshot of the Routemap 'transition levers' (section 5.2). The next steps for Glasgow will be to develop indicators specific to the transition levers selected for the Routemap. It is likely based on the work done to date that these indicators will closely align to the provisional indicators provided in B-3.1 below. The established indicators will be citywide and will require corresponding engagement and consultation with city stakeholders. This work will manifest itself in the revision of our Climate Plan, based on the outputs of the Net Zero Routemap alongside Glasgow's Net Zero Cities submission.

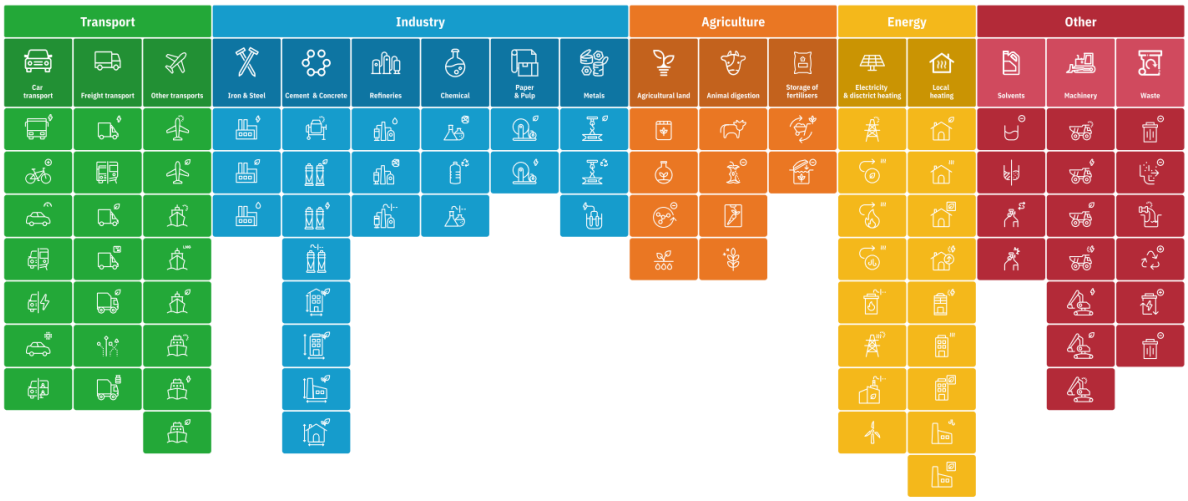

Figure 6 - Transition Levers

B-3.1 : Indicators					
Goal	Indicator name	Description	Target values		
			2025	2027	2030
Net Zero Carbon by 2030	Total emissions	Total emissions is the primary indicator on progress to net zero	TBC	TBC	TBC
	Emissions per capita	Required to compare progress against other cities	TBC	TBC	TBC
	Proportion of electricity generated by renewable sources	Key indicator for how Glasgow is reducing emissions from electricity	TBC	TBC	TBC
	Proportion of heat demand supplied by renewable sources	Key indicator for how Glasgow is reducing emissions from gas	TBC	TBC	TBC
	Proportion of heat demand supplied with district heating	Key indicator for how Glasgow is reducing emissions from gas	TBC	TBC	TBC
	Public transport patronage	Key indicator for how Glasgow is progressing in reducing transport related emissions	TBC	TBC	TBC
	Number of public EV chargers	Key indicator for how Glasgow is progressing in reducing transport related emissions	TBC	TBC	TBC
	Private vehicle kilometres	Key indicator for how Glasgow is progressing in	TBC	TBC	

		reducing transport related emissions			TBC
	Kilometres of cycle lanes	Key indicator for how Glasgow is progressing in reducing transport related emissions	TBC	TBC	TBC
	Percentage of total waste recycled	Key indicator for how Glasgow is progressing in reducing waste related emissions	TBC	TBC	TBC
	Percentage of total waste disposed of in landfill	Key indicator for how Glasgow is progressing in reducing waste related emissions	TBC	TBC	TBC
	Waste per capita (kg)	Key indicator for how Glasgow is progressing in reducing waste related emissions	TBC	TBC	TBC
	Number of domestic properties meeting energy efficiency target (EPC C)	This indicator will be used to track progress in reducing gas demand as a mechanism of lowering associated emissions	TBC	TBC	TBC
	PM2.5/10 concentration (µg/m3)	Monitoring air quality will indicate progress on reducing transport related emissions	TBC	TBC	TBC
	NO_x concentration (µg/m3)	Monitoring air quality will indicate progress on reducing transport related emissions	TBC	TBC	TBC
	EV ownership as percentage of total private vehicle ownership	Key indicator for how Glasgow is progressing in reducing transport related emissions	TBC	TBC	TBC
	Percentage of green space	Key indicator in quantifying Glasgow sequestration capacity	TBC	TBC	TBC
	Number of trees	Key indicator in quantifying Glasgow sequestration capacity	TBC	TBC	TBC
	Volume of meat consumed (kg)	Indication of progress in reducing Scope 3 emissions	TBC	TBC	TBC
	Percentage of vacant and derelict land used for climate related activity	Key indicator to track how the city's planning policies are supporting our transition to net zero carbon	TBC	TBC	TBC

	Area of Local Nature Reserves (LNR) per capita (hectares)	Key indicator in quantifying Glasgow sequestration capacity	TBC	TBC	TBC
	Number of energy cooperatives	This will support how the city is enabling a Just Transition towards net zero that is equitable for citizens.	TBC	TBC	TBC
	Number of cyclists on cycle paths	Key indicator for how Glasgow is progressing in reducing transport related emissions	TBC	TBC	TBC

B-3.2: Indicator Metadata

Please note - below is an example indicator to display how the Net Zero Routemap (appended) outputs may *suggest* to track and monitor progress. The Net Zero Routemap supports a more detailed assessment of indicators that will be relevant to tracking progress towards Net Zero Carbon by 2030. Indicators are included within the ClimateView platform, upon which the Routemap is predicated upon, and a discussion around 'Transition Indicators' can be found in Section 5.2.1 of the Net Zero Routemap.

Indicator Name	Total emissions
Indicator Unit	$ktCO_2e$
Definition	Total territorial emissions for the Glasgow City Council local authority, as taken from data provided to Glasgow from the UK Government's Department of Energy Security and Net Zero (DESNZ)
Calculation	For information on UK Government methodology for calculating local authority emissions, please see here.
Indicator Context	
Does the indicator measure direct impacts (reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it measure?	All sectors. Scope 3 not included at present.
Does the indicator measure indirect impacts (i.e., co- benefits)?	No
If yes, which co-benefit does it measure?	NA
Is the indicator useful for monitoring the output/impact of action(s)?	Yes
If yes, which action and impact pathway is it relevant for?	All impact pathways relevant.
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	

Expected data source	For data source, please see here.
Is the data source local or regional/national?	National
Expected availability	Updated annual data provided per annum.
Suggested collection interval	Annually.
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	

4 Part C – Enabling Climate Neutrality by 2030

Part C "Enabling Climate Neutrality by 2030" aims to outline any enabling interventions, i.e., regarding organizational setting or collaborative governance models or related to social innovations – designed to support the climate action portfolios (Module B-2) as well as aiming to achieve co-benefits outlined in the impact pathway (Module B-1). These interventions also address the identified opportunities, gaps and barriers identified Module A-2 and A-3.

4.1 Module C-1 Governance Innovation Interventions

This module details the city´s governance innovations for achieving city climate neutrality by 2030, describing innovations in institutional design, in leadership, and in collaborative and outreach processes, whether they are inter-organisational or internal to the key organisations responsible for the city´s climate neutrality target.

C-1.1: Description of organisation and governance interventions

Sustainable Glasgow

The Sustainable Glasgow Partnership, freshly relaunched in March 2020 and enhanced in 2024 to be revenue generating following its creation in 2010, further refocuses the momentum on citywide climate action. The Partnership's diverse board includes members from housing, communities, business, universities, enterprise and education working together to create a sustainable and low carbon city. This partnership consolidates city partners in a combined effort for the benefit of all in the city.

The Sustainable Glasgow Partnership is the primary platform to ensure effective collaboration between GCC and private sector partners to deliver the City's net zero target by 2030. The Sustainable Glasgow Board is led by public-sector member organisations and private sector input is channelled through four thematic hubs:

- Housing and Heating
- Green Infrastructure and Transport
- Greening the City
- Green Economy and Private Sector

The Sustainable Glasgow Partnership already provides substantial support in addressing the issues that the city faces in relation to decarbonisation of electricity and heat supply in Glasgow and is anticipated to take on a greater role in the development and operation of the Climate Investment and Delivery vehicles.

More detailed information about the Sustainable Glasgow Partnership can be found here.

Climate and Sustainability Programme – Internal

Overview

Glasgow City Council has a robust climate and sustainability governance and implementation structure (See Figures 5 and 6).

A dedicated Sustainability section sits within the Neighbourhoods, Regeneration and Sustainability service and focuses on Policy, key collaborations with external climate and sustainability focussed groups, feasibility studies for new initiatives and support of ongoing sustainability activities across the Council and partners.

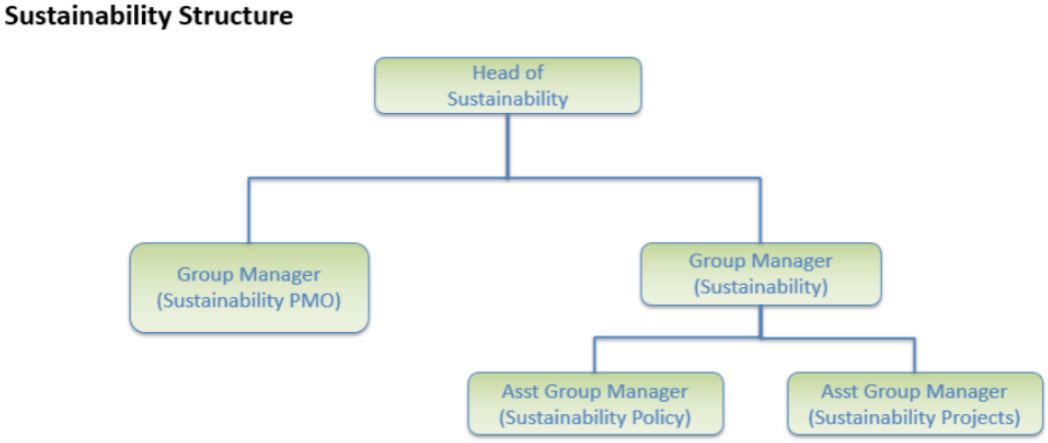

Figure 5. Glasgow City Council's Sustainability Structure

A Climate and Sustainability Programme is in place and its governance structure is below:

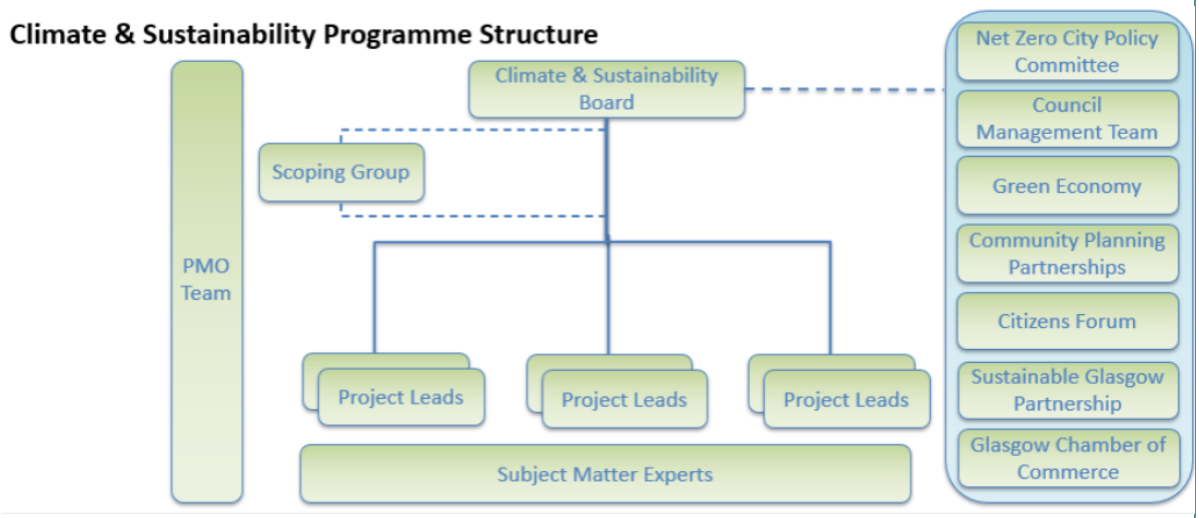

Figure 6. Glasgow City Council's Climate and Sustainability Programme Structure

Drivers Behind the Development of a Climate and Sustainability Governance Structure

One of the key drivers behind Glasgow City Council's climate and sustainability governance structure was its declaration of a climate and ecological emergency in March 2019. This emerged following a 2018 IPCC report, which warned of the dangers of climate change. This led the council to set up the Climate Emergency Working Group (CEWG) and the Ecological Emergency Working Group (EEWG). The CEWG produced a report outlining 61 recommendations with a target of being a net zero city by 2030, while the EEWG developed a report proposing 25 recommendations with the ambition to halt

and reverse biodiversity and habitat decline in the city. All of these recommendations were translated into Glasgow's Climate Plan, which was published in 2021 and is reported on to the Council Committee on an annual basis. It sets out a timeline for their progress towards the 2030 target. It is in this report that the importance of developing a new climate and sustainability programme and governance body were outlined.

Other factors which drove the new governance structure's development included the rising priority of sustainability following COP26, as well as backing from senior management such as the Executive Director of Neighbourhoods, Regeneration and Sustainability.

Designing the Climate and Sustainability Governance Structure

Glasgow City Council initially utilised a consultancy firm to design its new governance structure, however, following a hiatus due to the Covid-19 pandemic, the structure was revised internally by council officers. Existing frameworks, templates and plans such as the Climate Plan were utilised as a foundation to inform the design of a new governance structure. This enabled the council to draw on work previously conducted and avoid the duplication of work.

Designing the new structure involved considerable stakeholder engagement within the council. The Council adopted the motto 'Sustainability is everyone's job, everyday' to highlight the importance of meaningfully integrated climate and sustainability across all teams within the council. This is seen as the Head of Sustainability sets the agenda for quarterly Climate Board meetings while the Sustainability Project Management Office (k) coordinates the programme, engages with project owners, supports the governance as well as drafting minutes for the Board and Scoping Group.

The consultancy firm leveraged standard governance and change management concepts to ensure that standardised methods and procedures that were used to enable beneficial changes also ensured efficient and prompt handling of all changes. To achieve this smooth transition, key players in senior management were identified to support this new structure and key themes were prioritised e.g., transport, biodiversity, finance, procurement and legal. Glasgow City Council also strove to embed this new structure into wider existing governance structures such as the Sustainable Glasgow Partnership, the Net Zero City Policy Committee and the Citizens Forum. This initial work was built upon by the Sustainability PMO to develop the governance in place now.

Implementing the New Climate and Sustainability Governance Structure

To implement its new governance structure, the PMO engages with Project owners and receives information on projects via a standard template. Potential Projects for onboarding are recorded by the PMO in a Tracker. Projects undergo an initial assessment by The PMO :

- Does it support the council's strategic objectives?
- Does it support the Glasgow Climate Plan?
- What are the risks, benefits of the project and impacts on other services?
- What are the resource implications (financial and otherwise)?

The project is then assessed for Onboarding governance to determine if it can be onboarded:

- directly by the Head of Sustainability,
- requires review by the Scoping Group,
- requires review by both Scoping Group and Board.

The Scoping Group is comprised of senior managers of sustainability, procurement, legal, corporate finance, economic development, property, planning and service departments. Projects requiring

review by the Scoping Group are assessed and the Scoping Group can either accept the project, request more information, redirect the project, recommend the project for onboarding to the Board or reject the project.

The Board then undertakes a similar assessment for those higher value / risk projects.
Once a project is accepted it is onboarded to the Programme and the PMO advise the Project Owner and update the Tracker.

Monitoring and Evaluation of the New Climate and Sustainability Governance Structure

Groups within the sustainability and climate governance structure meet and report at different times depending on their work. For instance:

- Project Leads and Project Managers submit progress on project onboarding and regular project updates, respectively, to the PMO
- The Sustainability team conducts an annual review of the Glasgow Climate Plan and reports to the Net Zero City Policy Committee.
- The PMO regularly monitors and coordinates progress reports and the Climate Programme Dashboard for the Climate and Sustainability Board
- The Climate and Sustainability Board meet quarterly to oversee all project activity, review the Climate Dashboard, set the direction and priorities and update elected members.

Glasgow City Council ensures that climate and sustainability governance is inextricably linked with financial governance. Every proposed budget option has a carbon impact review undertaken on it. The Council are also looking to roll out the implementation of a climate change impact assessment and in the future potentially integrate this with the existing equalities impact assessment. In addition, every policy proposal submitted to Committee must include a reference to Climate impact and contributions to the Climate Plan.

Climate and sustainability are deeply intertwined throughout council teams e.g., the procurement team has sustainability policies. Council teams identify potential risks, lessons learned and consistent challenges and promote knowledge-sharing between teams.

The Climate Programme's measures of success include reviews by the Board of committee reports on carbon consumption, air quality and positive initiatives, progress on partnership working, reviews of the Climate Programme Dashboard and analysis of benefits of onboarded projects. So far, the Climate Board believe the new governance system has stimulated meaningful discussions, increased the visibility of previously overlooked issues and generated connection between teams.

Additional Governance Enabling Interventions

In addition to the Climate & Sustainability Programme, the Net Zero and Climate Progress Monitoring City Policy Committee is a dedicated Committee established to examine the Council's various policies, strategies and plans as they relate to net zero and climate progress, services and activities. This committee ensures effective political scrutiny and oversight of GCC's net zero activities.

A proposed Investment Vehicle and Delivery Vehicle are key to mobilising the significant capital and resource required to achieve the 2030 Net Zero Carbon target. The Delivery Vehicle is intended to establish a partnership between Glasgow City Council and a private sector partner to enable utilisation of private sector agility and capital to deliver significant infrastructure projects at the scale and pace required to support progress towards the 2030 Net Zero Carbon target and the Investment Vehicle is intended unlock access to private sector capital to close the funding gap for projects in the City that support the Net Zero Carbon target but are not within the control of Glasgow City Council.

The governance structure for the Investment and Delivery vehicles will supplement the existing Climate & Sustainability Programme governance structure. The Investment and Delivery Vehicle governance structure is shown in the Figure 7 below.

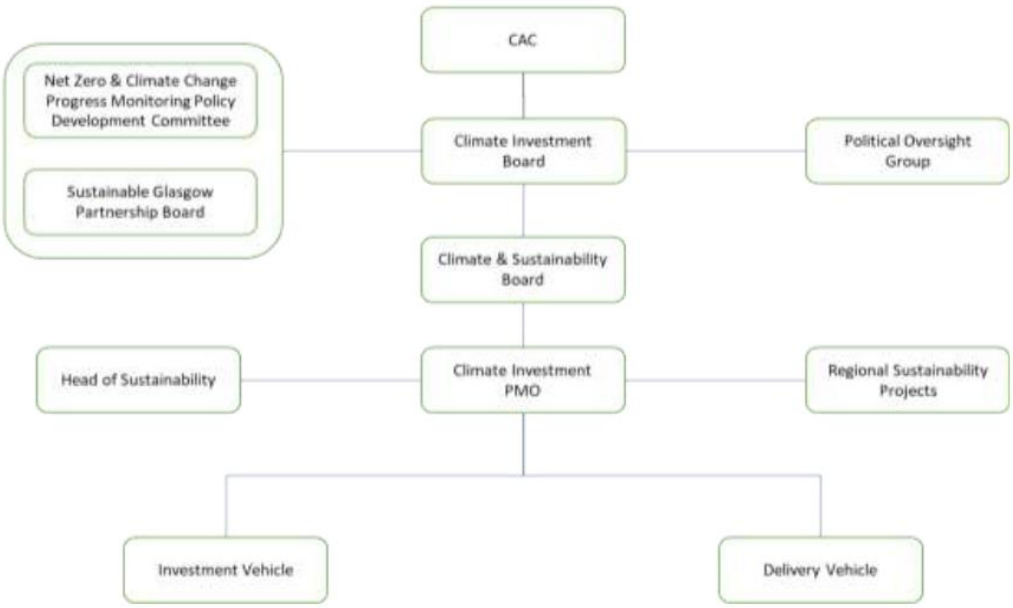

Figure 7 - Investment and Delivery Vehicle Governance Structure

Multi-Level Governance Interventions

Table C-1.2 provides a list of all enabling organisational and governance interventions affecting the city's trajectory towards Net Zero Carbon by 2030. A few key ones are highlighted and discussed below.

- **Cities Commission for Climate Investment (3Ci).** 3Ci is a partnership between Connected Places Catapult, Core Cities UK, London Councils, Key Cities, Scottish Alliance, and other local authorities across the UK aimed at supporting local authorities secure the necessary long-term finance for achieving net zero.

  3Ci – Cities Climate Investment Commission intends to facilitate an unprecedented public-private financing partnership to achieve net zero targets. 3Ci focuses on the challenge of creating robust business cases and investment models that address issues of scale, longevity and confidence – highlighting this, not the availability of finance, as the key barrier to investment.

  This is a collaborative organisation within which Glasgow City Council is a key member.

- **Glasgow Clyde Valley (GCV) Green Network Partnership.** A longstanding partnership to improve the environmental quality of the Glasgow City Region, including Glasgow City Council among seven other local authorities. The Partnership is focused on the following

programmes of work (more information on these can be found here.) (i) Clyde Grasslands (ii) Clyde Greenways (iii) Clyde Peatlands (iv) Clyde Wetlands and (v) Clyde Climate Forest.

- **Sustainable Scotland Network.** The Sustainable Scotland Network (SSN) is Scotland's public sector network on sustainability and climate change. They support over 600 members across public bodies in Scotland on their journey to net zero, including Glasgow City Council. The network supports the public sector to drive action on climate change, scaling up impact through leadership, policy and research.

C-1.2: Enabling organisational and governance interventions					
Intervention name	Description	Systemic barriers / opportunities addressed	Leadership and stakeholders involved	Enabling impact	Co-benefits
Net Zero & Climate Progress Monitoring City Policy Committee	A dedicated policy committee to support policy development as it relates to net zero and climate progress.	GCC	Membership of the committee includes 13 Glasgow Councillors (6 SNP, 5 Labour, 2 Green)	Ensures direct political oversight and accountability for delivering net zero in Glasgow.	Provides strong citizen mandate to climate action
Climate and Sustainability Programme	GCC governance structure designed to ensure effective delivery of Glasgow's Climate Plan and the 2030 target.	GCC (Climate Board)	GCC Sustainability Team, Head of Sustainability, other senior managers across GCC.	Effective oversight of the sustainability agenda and supports an integrated approach to delivering net zero across the Council.	Efficient use of Council resource
Climate Investment Vehicle	An investment vehicle for the city/city region to unlock access to private sector capital and long-term patient capital.	Investment Vehicle is currently in development and responsible entity to be confirmed.	GCC, external private stakeholders	Mobilise private capital to address funding gap to achieve net zero and provide city partners with the opportunity to progress projects that otherwise may not be delivered.	Co-benefits will be specific to the projects developed through the Investment Vehicle

Climate Delivery Vehicle	Vehicle created to build a partnership between the City Council and a private sector company to deliver infrastructure projects that are within the Council's control, business case ready and investable.	GCC (Delivery Vehicle Project Team.)	GCC, Sustainable Glasgow Partnership	Creates conditions that enable the private sector to work with the Council to deliver key infrastructure to reduce carbon emissions.	Co-benefits will be specific to the projects developed through the Delivery Vehicle
Sustainable Glasgow Partnership	A partnership of public and private organisations to drive delivery of sustainability action in Glasgow.	Sustainable Glasgow Board - membership includes GCC and other public-sector bodies.	Clyde Gateway, Glasgow Caledonian University, Glasgow Chamber of Commerce, GCC, Glasgow Convention Bureau, NHS Greater Glasgow and Clyde, Scottish Enterprise, Scottish Government, Skills Development Scotland, SP Energy Networks, Strathclyde Partnership for Transport Scotland, University of Glasgow, University of Strathclyde, The Wheatley Group	Essential to delivering decarbonisation of energy and heat supply in Glasgow. The partnership also supported retrofit of domestic properties and has contributed significantly to the development the Glasgow Green Deal.	Efficient use of resource across Members of the Partnership. Linkage across policy ambition.

Sustainable Glasgow Charter	A commitment by leading businesses and employers in Glasgow to take action within their own organisations and sectors to contribute to a green recovery and radically reduce the City's carbon emissions.	GCC-led.	34 City Climate Champions, including 24 Large Enterprise Champions and 10 SME Champions.	Developed innovative collaborative methods to accelerate climate action.	Support for decentralised activity across the city.
Climate Ready Clyde	A regional cross-sector initiative funded by 13 member organisations (including GCC) and supported by the Scottish Government to create a shared vision for climate adaptation in the Glasgow City Region.	Action Group that includes members appointed by funding organisations.	13 local authorities, Scottish Government, Sniffer	Support the delivery of a strategy and action plan for adapting to climate change in the Glasgow City Region.	Efficient use of resource across the city region (which includes other local authorities)
Glasgow Clyde Valley (GCV) Green Network Partnership	A longstanding partnership to improve the environmental quality of the Glasgow City Region. GCV Green network is funded by contributions from partners agencies and local authorities.	GCV Board, which reports to funding organisations.	8 local authorities, Forestry Commission Scotland, Scottish Environment Protection Agency, Scottish Enterprise, Scottish Natural Heritage, Glasgow Centre for Population Health.	Develop a regional approach to increasing low-carbon travel and increasing carbon sequestration using peatland, wetland, woodland, and grassland.	Biodiversity gains, increasing tree cover in high-deprivation neighbourhoods

Cities Commission for Climate Investment (3Ci)	An innovative collaboration of local government and the private sector. 3Ci sets out to support local authorities to secure the necessary long-term finance to achieve net zero.	Core team office based in London.	Connected Place Catapult, Core Cities UK, various local authorities, Scottish Alliance	Accelerates investment in net zero action in Glasgow.	Co-benefits will be specific to the projects financed through 3Ci outputs.
Sustainable Scotland Network	A network supporting over 600 members across Scotland's public sector to drive action on climate change, scaling up impact through leadership, policy, and research.	Secretariat based in Edinburgh.	Over 600 public bodies.	Supports development of net zero places, reduction of net zero indirect emissions and net zero public sector organisational networks.	Knowledge exchange Efficient use of resource across Sustainability sector

4.2 Module C-2 Social Innovation Interventions

This module lists the actions taken by the city to support and foster social innovation initiatives or non-technological innovation more broadly (e.g., in entrepreneurship, social economy, social awareness & mobilization, social cohesion and solidarity, etc) aimed to address the systemic barriers and leverage the opportunities identified in Module A-3.

C.2.1 Sample Table: Relations between social innovations, systems, and impact pathways					
Intervention name	Description	Responsible Entity/Department	Involved Stakeholder	Enabling impact	Co-benefits

Just Transition Working Group	A short-life, cross-party working group established to develop an approach to transition away from fossil fuels in a way which protects communities and businesses and enhances opportunities.	GCC	Cross-party group of Councillors, city-wide stakeholders.	Supports development of strategic action to ensure a just transition.	Green job creation Economic development
Glasgow as a Living Lab Accelerating Novel Transformation (GALLANT)	A 5-year research programme that aims to deliver the social priorities of the UN SDGs while remaining within the planetary boundaries of a 1.5°C world.	University of Glasgow, GCC	GCC, C40 Cities, Korn Ferry, UNECE, Alan Turing Institute, Bike for Good, NERC British Geological Survey, Cycling Scotland, Deloitte, Environment Agency, NatureScot, Ramboll UK, SEPA, Sustrans, Zero Waste Scotland, Seven Lochs Wetland Park, Clyde Mission, Glasgow Life, etc.	Develops innovative initiatives to support the transition to net zero while delivering the social priorities of the SDGs.	Global alignment toward net zero Knowledge exchange

Citizens Assembly	Assembly to hear from people living across the city and understand how the city can work together to become a net zero city in a way that is inclusive, fair, and respectful to everyone.	Delivered by market research company, Ipsos Mori	50 Glasgow residents	Recommendations incorporated into climate neutrality action across GCC.	Citizen representation in decision making Increased citizen awareness
Centre for Civic Innovation	A pioneering citizen-centred design team, responsible for establishing a design-led approach to working across the Council and engaging within the city.	GCC	Centre for Civic Innovation, GCC, Glasgow communities.	Applies an innovative approach to engaging communities and aligning city strategies and deliverables with local needs and codesigning solutions.	Embedding citizen design into development of climate solutions towards net zero
Thriving Cities Initiative	An iterative approach to support cities in addressing unsustainable consumption to help achieve the targets of the Paris Agreement and improve equity, quality of life, and economic livelihoods.	GCC	C40 Cities, GCC, GALLANT	Develops an action pathway to reduce consumption based emissions and improve equity and quality of life.	Knowledge exchange
Climate Neutral Cities Alliance (CNCA)	Alliance of leading global cities working collaboratively to achieve carbon neutrality in the next 10-20 years.	CNCA is led by a international Steering Committee that sets the vision and strategic direction for the alliance.	22 cities across the globe.	Embeds GCC in a global learning network of leading cities.	Knowledge exchange

C-2.2: Description of social innovation interventions

Glasgow's vision for net zero by 2030 has empowerment, engagement and justice embedded within it. The listed interventions highlight the range of activities undertaken across Glasgow to ensure broad inclusion and develop a shared vision for Glasgow's sustainability agenda.
Below are some of the key actions that Glasgow is taking to ensure citizens, communities and businesses are at the heart of how the city plots a course to net zero.

Citizens Assembly
The *Glasgow Citizens' Assembly on the Climate Emergency* was convened by the Glasgow City Council at the end of 2023 to explore how the city could address climate change and reach net-zero emissions by 2030. Key topics included the circular economy, green jobs, home energy, and food systems. The assembly involved diverse participants who evaluated evidence, discussed in sessions, and formulated 15 main recommendations, emphasizing urgent action, responsibility, and fairness.

The report highlighted community-driven solutions, such as promoting renewable energy in homes and enhancing job training for green industries. Members stressed that clear communication, financial incentives, and local engagement are crucial for progress. While there was consensus on the need for change, opinions varied on specific implementation details, reflecting the complexity of transitioning to a sustainable model.

Underlying these recommendations were principles of equity and inclusivity, ensuring no one is left behind in the shift toward sustainability. Challenges noted included cost, public awareness, and adapting existing infrastructure. Assembly members also highlighted the importance of education and collaborative efforts between the council, businesses, and residents to achieve tangible outcomes.
More information can be found here.

The outcomes from the Citizens Assembly were used to directly inform the actions within the existing Climate Plan and continue to inform the Council as it develops policy relating to Net Zero.

Youth Climate Action Fund
Glasgow recognises the need to involve young people across the city in climate action to ensure future generations have a say in the decisions that will impact on their lives. In response to this, Glasgow is participating in Bloomberg Philanthropies 'Youth Climate Action Fund' which is providing funding to support 100 cities worldwide to engage young people (aged 15-24) to design, produce, and govern urgent climate solutions in their cities. Glasgow has received around £39,000 to rapidly launch and support youth-led climate projects through the distribution of local microgrants (between £800-£3,900).
On Friday 14th June 2024, a Design Jam was hosted at City Halls for young people and organisations who were interested in the fund to develop projects ideas through different creative activities. These activities were developed around the questions in the application form and designed to support participants with their project proposals.
The microgrants will be used to support projects that align with Glasgow's Climate Plan themes:

- Communication and Community Empowerment (such as designing climate education programmes, delivering climate hackathons, and creating youth climate action plans)
- Just and Inclusive Place (such as focusing on fairness and equality through climate action, carrying out research into local climate issues, and designing climate-friendly spaces)
- Well Connected and Thriving City (such as sustainable transport initiatives, bicycle-sharing and pedestrian-friendly programmes, and supporting mobility)
- Health and Wellbeing (such as air quality research and monitoring, local food growing initiatives, and active travel support)

- Green Recovery (such as improving repair, reuse and recycling within local areas, reducing flooding and heat risk, and enhancing nature and biodiversity)

Project are set for completion in December 2024 with final project reports due January 2025. Through initiatives like this, Glasgow is striving to involve citizens in the development and delivery of policy towards net zero carbon by 2030.

Glasgow Climate Stocktake

The global community committed through COP21 Paris Agreement to undertake a 'stocktake' every five years. Glasgow was invited to host workshops and events to progress this initiative. The Climate Stocktake workshops hosted by Glasgow at the end of 2023 provided an opportunity to assess the progress of Glasgow's Climate Plan **from the perspective of community and third sector groups, equalities organisations and the business community to ensure that citizens and communities are at the heart of our climate journey.** Additionally, the workshops aimed to demystify the language and terminology surrounding the topic of net zero to build a collective narrative about what a positive net zero future could look like for Glasgow and its citizens. A screengrab of some of the workshop outputs is provided below. A similar workshop was held specifically for young people, at Lourdes Academy in the city. Glasgow continues to engage with this initiative to better understand how to empower our citizens and communities to be active participants in our net zero journey.

Thriving Glasgow – Workshops for Business Community

The University of Glasgow, in partnership with Glasgow City Council, are working on a £10.5 million research programme: GALLANT - Glasgow as a Living Lab Accelerating Novel Transformation. Funded by UKRI NERC as part of their Changing the Environment investment, University researchers are helping the city move towards climate resilience whilst tackling health, social and economic inequalities.

Work started on GALLANT in 2022 and continues to positively impact on the city's understanding of the interplay between net zero, citizens and communities.

As part of the initiative, workshops were held with the business community to understand how there can more effective participation from this segment of the city. One workshop, held in November 2023, aimed to support discourse on the idea of the circular economy and doughnut economics across the business community, including the themes of (i) regenerative and distributive ideas and (ii) enterprise

redesign. Glasgow City Council continues its work through the GALLANT initiative to support enhanced citizens and business understanding and participation in the net zero journey.

Centre for Civic Innovation – City Change Makers
The *City Change Makers* initiative by Glasgow's Centre for Civic Innovation engages local residents to develop climate solutions at the neighbourhood level. Partnering with Govanhill Housing Association and Make Do and Grow, the program supports twenty participants through workshops focused on ideation, prototyping, and community-driven testing. This approach aims to cultivate problem-solving skills and build resilience, aligning with Glasgow's goal to achieve net-zero carbon by 2030. The program underscores the importance of grassroots action in creating sustainable, citywide change. More details can be found here.

Community Renewable Energy Framework (CREF)
This initiative aims to support increased generation of energy from renewable sources by identifying a portfolio of sites which are suitable for community led renewable energy development and outlines the process by which communities can work with the Council. This will help the City to decarbonise energy provision, meet our Net Zero Carbon 2030 target, and support and empower communities to take climate action that they can directly benefit from. Work has been undertaken to identify suitable sites that can be marketed to community groups and to address barriers in making sites available for transfer for renewables projects. The Framework was approved by the City Administration Committee in September 2024. Sites have been identified as suitable for inclusion in the Community Renewable Energy Framework and will be taken to Contracts and Property Committee to seek approval for these to be promoted to communities for use according to the CREF. Once approved, an engagement event for communities will be held in late 2024 to launch the sites and framework.

LEZ Community Climate Fund
Glasgow City Council has established a new community funding scheme through residual Low Emissions Zone (LEZ) revenue. The funding for project support represents an opportunity to maximise the environmental, health, social and community benefits of the LEZ and allow for funding to be provided to groups and organisations which can deliver complementary projects across the city.

The 'Low Emission Zone – Community Climate Fund' will support groups that will deliver projects in relation to the objectives of the LEZ. Support is available across three broad themes in line with these objectives. Applications which provide benefits across multiple themes will be assessed more favourably should the Project Support Fund be over-subscribed. Applications are invited for projects which:

- Contribute towards improvements in air quality and reductions in prescribed pollutant levels.
- Contribute towards climate change emissions reduction or adaptation.
- Improve the amenity of Glasgow or defined areas within the city, with an emphasis on the stated Strategic Themes - A Vibrant City, A Healthier City and a Sustainable and Low Carbon City

Through this fund, project support will be available between the value of £20,000 and £50,000 per project. The minimum funding allocation has been set in order to ensure that the application, monitoring and compliance requirements are proportionate for the successful applicants and to provide projects with sufficient beneficial impact. The maximum funding allocation has been set in order to ensure that an appropriate range and scope of projects may be considered for funding within the total fund value.

Consolidating Progress into the Next Steps: Development of a Community Engagement Framework

Glasgow City Council is in the process of developing a Community Engagement Framework. The Framework will enable the development of the GCC role in meaningful citizen participation in climate change decision making and, perhaps most importantly, how we can stimulate further local action to address the climate and ecological emergency. Work has been undertaken to map existing climate engagement events in the City and a working group exists, including key internal and external stakeholders. The initiatives outlined above inform the development of the Engagement Framework, which is expected for publication in 2025.

5 Outlook and next steps

This section draws any necessary conclusions on the CCC Action Plan above and highlights next steps and plans for refining the CCC Action Plan as part of the Climate City Contract.

Outlook and Next Steps

The next steps for Glasgow City Council are to revise our Climate Plan, utilising the **Net Zero Routemap (appended)** to ensure the city is prioritising and targeting the most effective action. Additionally, Glasgow City Council will continue to develop a model for taking forward the capacity and investment required to realise the Council ambitions around heat decarbonisation and Net Zero Carbon.

The Net Zero Routemap (appended) complements existing strategies by (i) establishing interim, science-based targets required to reach net zero, Section 4.1 of the Routemap (ii) developing an approach for the city that allows priority emissions areas (such as transport and heating) to be addressed, Sections H, I and J of the Routemap (iii) developing an impact assessment tool, Section 5 of the report, (iv) adopting a whole-systems approach across the city, Section 6 of the Routemap, and (v) creating a novel delivery plan with costed scenario pathways, Sections 7 and 11 of the Routemap.

The Net Zero Routemap report has been finalised. Glasgow City Council is going through a process of reviewing and internalising the outputs of this report. At this point the outcomes from the Routemap are in the public domain and we have an agreed set of next steps for the integration of the findings across all relevant GCC policy and delivery. The Net Zero Routemap is appended to this submission and acts as a key element in our overall submission.

The proposed model for investment is discussed in more detail in the Glasgow's CCC Investment Plan.

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Commitments

Climate Neutrality Commitments of Glasgow

Glasgow CITY COUNCIL

...ties has received funding from the H2020 Research and Innovation ...der the grant agreement n°101036519.

Table of contents

1 Introduction

This opening section explains the city's motivation to join the EU Mission "100 climate-neutral and smart cities by 2030" and highlights the city's present commitments to climate action.

Introduction

Glasgow is taking a bold and ambitious step towards a sustainable future by setting a target of achieving **Net Zero Carbon Emissions by 2030**. This significant commitment not only addresses the urgent need to combat climate change, but also presents a unique opportunity to create a cleaner, healthier, and more prosperous city for all its residents. By transitioning to a low-carbon economy, Glasgow will not only reduce its contribution to global warming, but also improve air quality, create green jobs, and enhance overall quality of life for its citizens. This transformative journey towards net zero carbon is not just about saving the planet, but about building a better, more resilient community for generations to come.

Glasgow (which roughly translates as *'Dear Green Place'* in Gaelic) has a rich industrial heritage, once defined by heavy manufacturing and coal-powered industries, which now presents a unique opportunity for the city to lead the way in the transition to a low-carbon economy. By leveraging its history of innovation and manufacturing prowess, Glasgow can become a hub for green technologies and renewable energy solutions.

This CCC Commitments therefore serves as a call to action for citizens, communities and businesses across the city to take part in this transition and truly make Glasgow a ***Dear Green Place***

Why?

The existential threat posed by climate change is no longer a debatable theory, it is an ever-present risk to the future of life on our planet, with increasingly observable impacts being witnessed across the world and on our own doorstep. It is an issue that requires unprecedented coordination and endeavour at both global and local scale.

The 2018 IPCC report cemented the need to act at pace to mitigate and adapt to the challenges posed by the climate emergency, outlining that the world had 12 years to significantly ramp down carbon emissions and keep global warming under 1.5°C if catastrophic environmental breakdown is to be avoided. This target, the report highlighted, was feasible but lay at the ambitious end of the target set out in the Paris Climate Agreement (which compelled nations to keep their temperature rises to between 1.5-2°C).

The IPCC report concluded that keeping global temperatures under 1.5°C would require rapid, far-reaching, and unprecedented changes in all aspects of society. The gravity of the situation cannot be overstated, and drastic action is required if the worst impacts of climate degradation are to be mitigated. More recently, in 2021, the United Nations published their 6th Annual Assessment Report (AR6) which provided the starkest warning yet of the dangers posed to our climate and natural systems through continued reckless human activity. The report outlined that we are now experiencing global temperature rise, sea level rise and glacial melting alongside ocean acidification and biodiversity decline. The report sought to underscore the scale of the challenge faced by humanity as it tries to move itself into a Net Zero position.

Whilst we all, as a species, across borders and demographics, have a part to play to help mitigate and adapt to the impacts of climate change, cities have a particularly important role to play in the net zero transition. Seventy-five percent of Europe's population currently live in cities and urban areas and this is expected to rise to 84% by 2050. As cities bear a disproportionate amount of culpability in our rising temperatures, in tandem with increased percentage of population, they hold a greater responsibility to act.

2030 Climate-Neutrality Commitments

Net Zero Cities

The European Union Mission "100 climate-neutral and smart cities by 2030" aims to consolidate the efforts of major cities across the EU to reach net zero under one banner, providing support and guidance for those cities seeking to gain a stronger understanding of how net zero can be unlocked from a finance and governance perspective. Glasgow understands that in joining this cohort of cities, we are supporting stronger alignment of progress and priorities at a supranational level. Such alignment will be critical to municipal success in co-creating solutions to those challenges which share commonalities across borders.

In this respect, on the 5th of September 2024, the Leader of Glasgow City Council signed the Declaration "Climate-Neutral Cities in 2030" to show leadership from Glasgow City Council on the commitments outlined in this Climate City Contract.

Where are we now?

This is not the beginning of coordinated climate action from Glasgow. In 2019, Glasgow City Council declared a state of Climate and Ecological Emergency in response to the findings of the 2018 IPCC report. This was an acknowledgement that as a local authority, the City Council has a key role to play in leading on climate action and enabling the city, its citizens, its institutions, and businesses to address the global climate and ecological emergency. Additionally, the declaration provides a mechanism to accelerate improvements to other aspects of the city also, enabling safer streets, producing cleaner air, creating warmer homes and providing more locally produced nutritious food for everyone.

With the declaration of a climate and ecological emergency, the city also set a target of becoming Net Zero Carbon by 2030 in September of the same year, bringing the original local target date forward by seven years and placing the city 15 years ahead of the national target and 20 years ahead of the UK target.

The declaration of an emergency and the accompanying Net Zero Carbon target reaffirmed Glasgow's aspirations to become a truly sustainable and net zero city which is now further crystallised in the Council's Strategic Plan 2022-2027 which outlines a grand challenge for Glasgow to fight the climate emergency through a just transition.

The Sustainable Glasgow Partnership, freshly relaunched in March 2020, further refocuses the momentum on citywide climate action. The Partnership's diverse board includes members from housing, communities, business, universities, enterprise and education, working together to create a sustainable and low carbon city. This partnership consolidates city partners in a combined effort for the benefit of all in the city. The Partnership has four thematic hubs each with differing scope: Housing and Heating; Green Infrastructure and Transport; Green Economy and Private Sector; and Greening the City.

In 2021, Glasgow City Council published the Glasgow Climate Plan. The Plan set out 59 actions that will lead the city towards achieving its Net Zero Carbon by 2030 target, whilst ensuring that the quality of life for citizens improves and the economy of the city transitions to a green economy. In support of

2030 Climate-Neutrality Commitments

Glasgow's Net Zero Carbon target, the City Council has also published multiple strategies[1] focused on specific areas of the climate agenda:

- **Local Heat and Energy Efficiency Strategy.** Glasgow's LHEES aims to develop coordinated approaches to the planning and delivery of energy efficiency and heat decarbonisation. A key focus of the strategy is the intention to accelerate the deployment of district heating.
- **Circular Economy Routemap.** The Circular Economy Routemap aims to enhance awareness of sustainable practices, promote a message of considered consumption, and provide a challenge to the current wasteful consumerist practices whilst promoting the unique opportunities presented to Glasgow as it shifts from a linear to a circular economy.
- **Glasgow Climate Adaptation Plan.** The Adaptation Plan prepares the city to become climate ready and resilient towards any further and projected climate impacts. Action taken now will enable the city to minimise or prevent significant disruption to the city through negative health, economic and environmental impacts.
- **Glasgow Transport Strategy.** The Glasgow Transport Strategy provides a framework for investment and decision-making on transport issues up to 2030.

Whilst Glasgow has taken bold strides to date in addressing the climate and ecological emergency, much more must be done. In this respect, this Climate City Contract constitutes a consolidation of Glasgow's efforts alongside a reaffirmation of our continued trajectory towards Net Zero Carbon by 2030.

Next Steps

In November 2024, Glasgow finalised our **Net Zero Routemap,** which, using a science-based approach, outlines how the city can reach Net Zero Carbon by 2030, including a pathway to reaching an 80/20 split between mitigation and sequestration. This includes associated emissions reductions and costings for each action – allowing the city to establish science-based interim targets and effectively prioritise resource and capital towards reaching Net Zero in an efficient and fiscally responsible manner. This document and associated Committee papers can be found here.

This Net Zero Cities submission will complement the development of the Routemap by consolidating the broad spectrum of activity the Council is currently undertaking to support our Net Zero goal under one banner and providing a clear pathway for the next steps.

The Net Zero Routemap report was finalised in November 2024. Glasgow City Council is currently going through a process of reviewing and internalising the outputs of this report.At this point the outcomes from the Routemap are in the public domain and we have an agreed set of next steps for the integration of the findings across all relevant GCC policy and delivery. **The Net Zero Routemap is appended to this submission and acts as a key element in our overall submission.**

[1] The range of policies and strategies emanating from Glasgow in effort to address the Climate and Ecological Emergencies are discussed in detail throughout this CCC submission.

Additionally, Glasgow intends to review our CCC submission at least every two years with a view to producing revised iterations if required. The next iteration of the CCC will involve an update of the CCC-Action Plan that takes into account the finalised Routemap outcomes.

Co-Benefits to Net Zero

Achieving Net Zero Carbon emissions comes with multiple co-benefits that extend beyond simply reducing emissions. One major co-benefit is improved air quality, as many of the same pollutants that contribute to climate change are also harmful to people. By transitioning to cleaner energy sources and reducing fossil fuel reliance, we can decrease air pollution levels and reduce respiratory illnesses alongside other health problems associated with poor air quality. This can lead to cost savings in local healthcare across Glasgow and an improved quality of life for our communities.

Another co-benefit to achieving Net Zero Carbon is the creation of new green jobs and economic growth. The transition to Net Zero will require significant investments in renewable energy, energy efficiency and sustainable infrastructure. This can, in turn, create new job opportunities within these sectors. In addition, investing in clean energy technologies can incentivise innovation and economic development – putting Glasgow in a favourable position as a leader in respect to Net Zero.

More co-benefits are outlined in Section 2 of this Commitments document.

2 Goal: Climate neutrality by 2030

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Goal

Glasgow has set an ambitious target of reaching **Net Zero Carbon by 2030.** The city has come a long way in progressing towards this target, achieving a 45.7% CO_2 reduction from a 2006 baseline year in our most recent data year of 2022. It is important to note that, at present, **Glasgow reports progress in relation to only carbon emissions reductions and not full GHG emissions.** There are a couple of critical projects set for completion in 2024 (discussed further in the CCC Action Plan) that may require a revision of the greenhouse gasses included within Glasgow's reporting schedules. However, at present, only carbon dioxide is covered. Currently, there is no statutory requirement for Glasgow City Council to report on the full scope of greenhouse gases although this may change in the future subject to legislative revision.

In 2015, Glasgow City Council published its Energy and Carbon Masterplan (ECMP) which set a target to reduce the city's CO_2 emissions by 30% by 2020 (from our 2006 baseline year). Carbon dioxide emissions totalled 4,199 $ktCO_2$ in 2006 thus, the target figure by 2020 was 2,939 $ktCO_2$ (a reduction a 1,260 $ktCO_2$). The data for 2016 (which is published nationally by the UK Government Department of Energy Security & Net Zero two years in arrears, in 2018) confirmed that the city's total emissions were 2,752 $ktCO_2$, which meant that Glasgow had reached its 30% reduction by 2020 target **four years ahead of schedule.** This is highlighted in Figure 1 below.

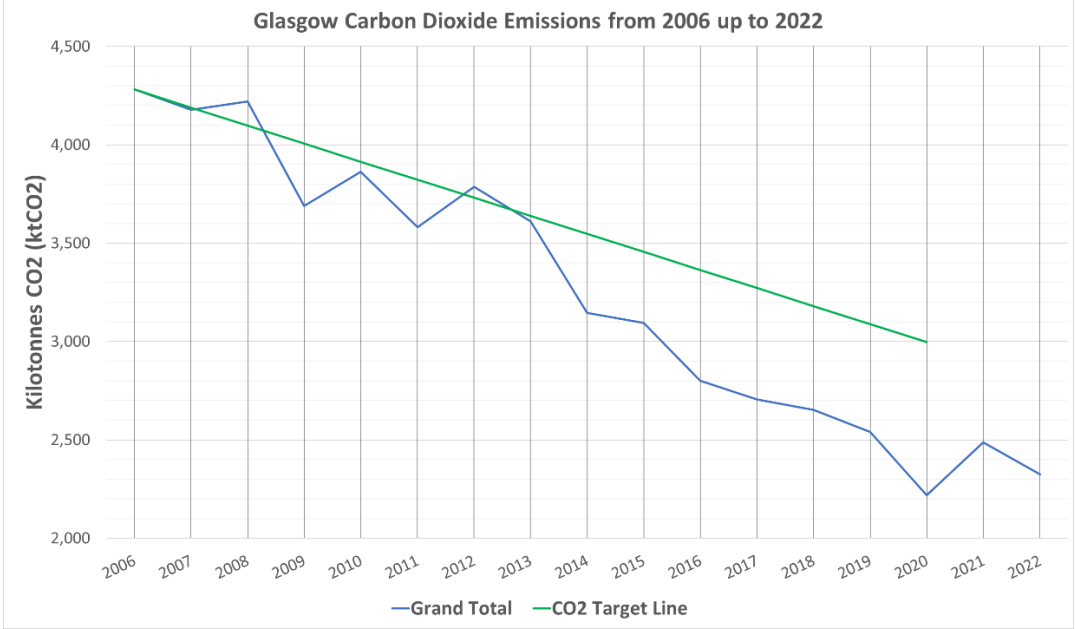

Figure 1 - Glasgow Carbon Dioxide Emissions 2006-22

Glasgow's 2030 Net Zero Carbon target aligns with our current reporting preference in that it only relates to carbon dioxide emissions rather than the full range of greenhouse gas emissions. From a spatial perspective, the target is applicable to the entire jurisdiction of the Glasgow City Council Local Authority, including all districts, neighbourhoods, and zones.

At present, the target only relates to Scope 1 and Scope 2 emissions as there are challenges on reporting Scope 3 emissions with sufficient confidence. This position may be subject to revision upon discussion of the Net Zero Route Map study which providesquantifiable justifications for how the city prioritises action towards Net Zero Carbon (discussed further in the CCC Action Plan). A summary table of the categories included in Glasgow's carbon emissions reporting is included in Table 1 below.[2]

Category	**Sub-Category**
Industry	Electricity
	Gas
	Large Industrial Installations
	'Other'

[2] Glasgow derives it's emissions reporting at present from data provided by the UK Government. More information, including associated methodologies can be found here.

Commercial	Electricity
	Gas
	'Other'
Public Sector	Electricity
	Gas
	'Other'
Domestic	Electricity
	Gas
	'Other'
Transport	Road Transport (A Roads)
	Road Transport (Motorways)
	Road Transport (Minor Roads)
	Diesel Railways
	'Other'
LULUCF	Net Emissions: Forestland
	Net Emissions: Cropland
	Net Emissions: Grasslands
	Net Emissions: Wetlands
	Net Emissions: Settlements
	Net Emissions: Harvested Wood Products
	Net Emissions: Indirect N2O
Agriculture	Electricity
	Gas

	'Other'
	Livestock
	Soils
Waste Management	Landfill
	'Other'

Table 1 - DESNZ Emissions Categories/Sub-categories

There are many recognised co-benefits to Glasgow reaching Net Zero Carbon that can be achieved alongside mitigation and adaptation. This only adds to the rationale for the City in setting its ambitious Net Zero Carbon by 2030 target. These co-benefits are listed below –

- Improved health outcomes for citizens.
- Positive impacts on local biodiversity and ecosystems.
- Increased and enhanced greenspace, bringing wellbeing benefits for residents.
- Reduced pollution and cleaner air.
- Reduced congestion and noise from traffic activity.
- Switch from vehicle-centric to people-centric city design.
- Affordable energy for residents and businesses.
- Energy security through localised generation.
- Improved thermal efficiency and corresponding comfort levels for residents in their homes.
- Access to local, healthy food – additional improved health outcomes.
- Improved road safety due to decreased vehicle numbers.
- Less wastage as economy moves from linear to circular.
- Sustainable skills and knowledge base development within city.
- Job creation.
- Reduced inequalities through a Just Transition

3 A Call to Action

This Climate City Contract serves not only to frame Glasgow's strategic priorities as the city moves to Net Zero Carbon, but as a **call to action** for all residents, communities and organisations across the city. This unprecedented shift to Net Zero Carbon, predicated upon the significant challenges brought forward by the climate and ecological emergency, will require commitment to cooperation and cocreation of action at an unparalleled scale from institutions, businesses, and citizens in Glasgow. As such, the Action Plan as presented in Glasgow's Climate City Contract should be used for stakeholders at all levels in the city to understand how they can contribute into bringing Glasgow's carbon emissions footprint down to net zero.

By promoting active citizen and stakeholder participation, Glasgow hopes to enable a trajectory to Net Zero Carbon that brings meaningful benefits to all aspects of life in the city including health, wellbeing, and reduced inequity and poverty, in a way that fosters inclusion, participation, and ownership in citizens and stakeholders along with the change. An approach to a just transition that is truly **by the people, with the people, for the people.**

By becoming a signatory to this contract (outlined in section 6), you or the organisation you represent are committing to working collaboratively and in good faith with the net zero ambitions set out by Glasgow City Council.

4 Strategic priorities

This section of the Commitments document summarises at least 3 or 4 strategic systemic priorities[3] that need to be implemented in the city to become climate-neutral by 2030.

Strategic priorities
Glasgow understands that for a successful transition to Net Zero Carbon to be achieved by 2030, residents must be at the centre of our approach. We hope that this Climate City Contract creates a holistic narrative that all segments of Glasgow can get behind including residents and businesses. As such, our strategic priorities have a citizen-centred focus and are derived from our Climate Plan. These strategic priorities should be treated as thematic objectives to ensure a just net zero transition. It is anticipated that the Net Zero Routemap will provide updated thinking on how we categorise strategic priorities prior to the next iteration of the CCC-Action Plan but at the point of this submission, **our Climate Plan should be treated as the principal document providing overarching guidance towards enabling Net Zero Carbon by 2030**. The strategic priorities, alongside some commentary on each one, are outlined below: **Strategic Priority 1: Communication and Community Empowerment** The aims of this priority are (i) to engage with communities about the climate challenge (ii) to foster participation and collaboration and (iii) to enable local action. Delivering on this strategic objective will require solutions and approaches to be co-designed alongside not only our Sustainable Glasgow Partners but importantly – local communities in Glasgow. As a city, we must encourage participation and sharing of best practice across all stakeholders including citizens. It is acknowledged under this objective that specific engagement must be focused on the city's young: committing current generations to protect and enhance our city so future generations can inherit a just, resilient, and equitable city. We must do more to map communities of interest, identity and place across Glasgow to better understand their priorities. This will inform how we co-create approaches to participation.

[3] Strategic systemic priorities are meaningful changes that will have a profound impact on reducing GHG emissions in the city, such as decarbonising the heating system in the city or generating 100% energy from renewables.

Stakeholders in Glasgow, including our citizens, need clear and accessible information to build capacity and foster local action.

Analysis undertaken by the Scottish Government has indicated that around 60% of the measures required to reach Net Zero Carbon will require some form of societal change and this underscores the need to place communication and community empowerment at the heart of the city's approach. Residents must have their say on actions to tackle climate change and improve their neighbourhoods. This will utilise innovative engagement methods, while working collaboratively with the arts community, academia, and civil society.

Strategic Priority 2: Just and Inclusive Place

The aims of this priority are to (i) ensure that the transition to a Net Zero Carbon society is a catalyst for building a fairer, healthier, prosperous, resilient and greener city for all (ii) ensure that people are at the centre of the transition to net zero, creating benefits and opportunities for all in the city (iii) equip people with the skills and education they need to benefit from the transition net zero (iv) empower and invigorate our communities, strengthening local economies and (v) share the benefits of climate action widely, ensuring that costs are distributed based on ability to pay.

In our transition to Net Zero Carbon, Glasgow must work to ensure that strategic decision-making helps to tackle inequality and not exacerbate it. The 2030 Agenda for Sustainable Development provides a shared plan for peace and prosperity for both people and planet. As part of this, the UN Sustainable Development Goals (SDGs) are a global call to action. Scotland signed up to the SDGs in 2015. Through Glasgow's Climate Plan, actions were designed to be in accordance with the Sustainable Development Goals as established by the United Nations and works continues in relation to aligning our mitigation and adaptation measures to the wider SDG framework. This process will help ensure that as a city we can monitor and evaluate progress in a holistic way to ensure social inclusion and prioritisation are integrated into planning and budgeting around the net zero transition.

Strategic Priority 3: Well Connected and Thriving City

The aims of this priority are to (i) support the development of low carbon retrofit and buildings that are fit for the future (ii) help to strengthen energy networks and (iii) support the decarbonisation of transport systems by helping to improve infrastructure for walking, cycling and wheeling and reduce the need to travel.

As the metropolitan heart of Scotland, and with a post-industrial legacy, Glasgow has unique opportunities and challenges relating to its built environment and transport systems. Key challenges persist in relation to providing affordable and sustainable housing that can meet the needs and demands of Glasgow's citizens and addressing these challenges form a critical aspect of our transition to Net Zero Carbon. Holistic, whole building approaches to investment and improvement of existing homes are key considerations within this alongside the need to provide a new supply of high quality, low carbon homes.

Stubborn deprivation levels alongside a prevalence of 'hard-to-treat' property types and a high level a complex tenure arrangements in flatted properties in the city underscore not only the challenges but the opportunities for the city in addressing heating-based emissions. Resources and funding are highlighted repeatedly as obstacles to addressing this strategic priority. Identifying new funding streams whilst unlocking the full capacity of existing streams will provide benefits not only in addressing heating-based emissions but in tackling fuel poverty levels in Glasgow which remain too

high. Glasgow City Council, and other key strategic stakeholders in the city, have a significant part to play in ensuring that Glaswegians can live in warm, dry, energy efficient, resilient, low carbon homes which they can afford to heat.

Transport accounts for a third of the carbon emissions produced by the city and if we are to decarbonise the sector, major changes are required to how people travel. Transport is also directly linked to health inequality, deprivation and economic performance. Our approach to transport will be integral to the success not only in achieving the city's Net Zero Carbon targets, but also improving infrastructure for walking, wheeling and cycling, reducing the number of private vehicles on the road, as well as providing access to equitable, affordable, clean and reliable public transport.

Given the sociological and cultural importance placed on private vehicle ownership, for Glasgow to reduce transport emissions through increased sustainable and public transport methods – citizens require to be at the heart of this.

Strategic Priority 4: Health and Wellbeing

The aims of this priority are to (i) protect and enhance local habitat connectivity and biodiversity in the city (ii) support the creation and maintenance of good quality, multifunctional open space to help reconnect communities with nature and (iii) support equitable access to good quality open space and green infrastructure in the city.

Climate change poses significant challenges to both human health and biodiversity. Extreme climate events like heatwaves and flooding directly threaten human well-being and indirectly affect it through ecosystem dysfunction and reduced ecosystem services. There's a growing recognition globally that climate change is a major public health issue, comparable in seriousness to the Covid-19 pandemic in its long-term impacts.

Access to high-quality natural landscapes in urban areas has been known to positively impact physical and mental health, as well as social well-being. Glasgow's parks have been highlighted as crucial for citizen well-being, particularly evident during the Covid-19 pandemic. The city plans to address climate change while closing health inequality gaps through the establishment of our Glasgow Just Transition Commission and implementation of the principles outlined in the Scottish Government's Fairer Scotland Duty[4]. Additionally, Glasgow continues to make progress in addressing the ecological emergency by protecting and enhancing local biodiversity and ecosystem services through initiatives like the Local Biodiversity Action Plan (LBAP) and the Glasgow Pollinator Plan. The Open Space Strategy, another example, aims to rebalance health, infrastructure, and natural environment by safeguarding and expanding local nature reserves and other biodiverse sites, including peatland restoration.

Reducing the city's reliance on the private motor car will also play a key role in creating a healthier city and reducing our carbon emissions. This will be achieved in part by requiring increased space for active travel and through ongoing initiatives like our Low Emissions Zone (LEZ).

Strategic Priority 5: A Green Recovery

[4] https://www.gov.scot/publications/fairer-scotland-duty-guidance-public-bodies/

The aims of this priority are to (i) support a transition towards a circular economy (ii) support tree planting and maintenance, peatland restoration and green infrastructure (iii) support improved infrastructure for walking, cycling and remote working.

Covid-19 has drawn out the importance of greenspace and the natural environment for all of us as a daily walk in the park became one of the few opportunities for people to get out of their homes. There is a common thread running through both the Covid-19 and climate emergencies, showing the perilous disruption and imbalance between our lives and that of other planetary species and eco-systems. We need to look again at these relationships and fundamentally seek to reset our place within them. The city is re-thinking its way of working whilst supporting post-Covid recovery. This will require investing in more collaborative approaches and supporting our natural ecosystems to build future resilience. We have been developing action to create a more balanced relationship between us and other species, ultimately leading to a healthier, more attractive and equitable city, whilst addressing our climate and ecological emergency.

In order to deliver an effective green recovery, the city is developing a portfolio of investable projects that can stimulate job creation whilst also maintaining encouraging emissions and biodiversity trajectories observed as a result of the Covid-19 pandemic. The city will develop this approach as a framework for planning for a green recovery, seeking to bundle together all relevant activities related to a green recovery. Part of this work will be supported by the development of a strong circular economy, as adoption of circular principles will also help support health and wellbeing of people and nature, strengthening the local economy by retaining value within the city economy. Glasgow's Circular Economy Routemap, which contains action to strengthen the local circular economy, provides a view as to how we utilise existing vacant properties and significantly help blossoming circular businesses, whilst boosting business growth numbers and employment.

5 Process and principles

This section aims to briefly describe (i) the systemic process the city will undertake to achieve its 2030 climate neutrality target (ii) the provisions for monitoring and joint learning and (iii) the key principles that will guide the implementation of its Climate City Contract, such as climate justice, co-creation, multi-level governance approaches, stakeholder and citizen engagement.

Process and principles

Investment in Green Infrastructure and Technology

The city will prioritise investments in sustainable infrastructure and technologies to reduce carbon emissions. This includes expanding renewable energy sources like solar and wind power, improving energy efficiency in buildings, accelerating the deployment of district heating, promoting public transportation and active mobility options, enhancing waste management practices, and fostering green spaces and urban biodiversity.

This principle also recognises the need to support innovation as a mechanism to unlocking success at scale in those sectors that have been challenging or complex to decarbonise.

Multi-Level Governance[5]

For Glasgow, which sits in the centre of the largest metropolitan area in Scotland, multi-level governance is essential to foster collaboration between local, regional and national authorities and organisations. Adherence to this principle will allow maximum resource and expertise access for all stakeholders working towards net zero, from community organisations to our national government. Glasgow will work to ensure that policy is in alignment and that jurisdictional barriers do not present obstacles to delivery. Additionally, taking a multi-level governance approach will support the delivery of Net Zero Carbon for Glasgow as the integration of a diverse range of stakeholders into the decision-making process will enhance transparency and accountability. This will be important in ensuring that climate action reflects community priorities more effectively. At present, the Sustainable Glasgow Partnership is the key vehicle to ensure multi-level governance in climate related activity. The Partnership features key city stakeholders and is focused on co-creation and delivery of action towards Net Zero Carbon. Additionally, projects and policies as they relate to climate change are taken through the Council's Net Zero and Climate Progress Monitoring City Policy Committee and then subsequently through our City Administration Committee to ensure activity is publicly governed. Internally, Glasgow City Council's Climate Board ensures oversight and multi-level governance across the various departments within the Council which have a stake in delivering on Net Zero Carbon by 2030. Multi-level governance as it relates to Glasgow is discussed in detail throughout this CCC submission.

Learning and Sharing

Comprehensive learning and sharing of best practice across Glasgow will form an instrumental part in achieving Net Zero Carbon by 2030. Gaining a strong understanding of activity underway across the city alongside capturing where successes have been delivered will ensure that the city can plan for Net Zero Carbon in a comprehensive and efficient manner.

The benefits of sharing learning extend across core priorities on education and awareness, behaviour change, community engagement, and innovation, and will support the delivery of a meaningful green recovery by considering action in its wider context. In addition to this, there is a strong need to understand how individuals, businesses and institutions in the city are developing their own approach to Net Zero Carbon. In this respect, Glasgow published its Sustainable Glasgow Charter in 2022 (appended to this CCC Commitments, and can be found here) which includes pledges around tackling climate change that SMEs and businesses in Glasgow can become signatories to. The development of strategies in isolation will likely lead to inefficiencies in delivering net zero and the Charter is seen as a mechanism to align activity across all sectors in the city.

Stakeholder and Citizen Engagement

The residents and stakeholders of Glasgow are truly at the heart of our climate transition. As such, for our Net Zero Carbon ambitions to be successful, meaningful engagement with citizens and stakeholders such as businesses, community organisations, academic institutions and neighbouring

[5] To caveat, in the Glasgow context, 'multi-level governance' is a generic term that relates to governance across different hierarchies of government (local, devolved, national) but also governance across citizens and stakeholders. This differs slightly from the NZC Consortium and the EC who split this into multi-level and multi-actor governance. Glasgow determined that taking an approach to the use of terminology that is more reflective of our local context would be more beneficial.

authorities is critical. Collaboration enables knowledge exchange, promotes participation and supports innovation.

For residents, some of the changes required to reach Net Zero Carbon will amount to paradigm shifting or fundamental behaviour change. Without this, Glasgow will not reach Net Zero Carbon. As such, the criticality of contributing to and supporting mitigation and adaptation to climate change, alongside the co-benefits of successful delivery, needs to be effectively communicated to residents whilst enabling residents to input into the development of solutions through a co-design approach in a way that develops workable solutions for our communities across the city.

Just Transition

Glasgow's transition to Net Zero Carbon by 2030 must be done in a just manner that ensures all of Glasgow's residents and stakeholders benefit and that no one is left behind. A just transition will ensure that Net Zero Carbon will be equitable and inclusive, avoiding disproportionate impacts being placed onto vulnerable communities. In prioritising social equity and economic inclusion, a just transition will empower communities to be a central component in the delivery of Net Zero Carbon. Without this, there is a risk that our transition will exacerbate existing inequalities, undermining the overall effectiveness of Glasgow's push to Net Zero Carbon.

Monitoring, Reporting and Evaluation

Glasgow has a strong track record on monitoring, reporting and evaluation in its progress towards Net Zero Carbon. The commitment to track our progress fosters accountability and transparency, both of which are critical to mobilising and coordinating city stakeholders towards our carbon targets. The Council has a statutory duty to provide annual reports and analysis on both our organisational and citywide progress towards Net Zero Carbon. As we continue towards our targets however, there is an acknowledgement that more must be done. There remain gaps in our reporting, typically relating to scope 3 emissions and sequestration. These gaps are consistent at national level and whilst Scotland has yet to develop a common pathway to reporting on the full breadth of emissions, Glasgow continues to enhance its approach to monitoring, reporting and evaluation.

6 Signatories

The list of signatories below includes a list of public, private and third sector stakeholders within the city. Annexed to Glasgow's Climate City Contract is also our Sustainable Glasgow Charter which includes key commitments and signatories from large and SME 'champions'. **The Charter pledge outlines 17 commitments across 4 key themes which signatories intend to action within their own organisational jurisdictions.**

Progress towards Net Zero ambitions of some of the key signatories to the Sustainable Glasgow Charter is outlined below:

- **NHS Greater Glasgow and Clyde.** Reduced building energy emissions by 46% from 2015/16-2022/23 through initiatives such as (i) reduced boiler temperatures (ii) the installation of LED lighting and (iii) BMS install on multiple sites. To address transport related emissions, the organisation has improved Business Travel policy, retained hybrid working and encourages the use of MS Teams where possible.
- **Skills Development Scotland.** SDS have reduced emissions by 37% from their 2019/20 baseline year, due largely in part to the shift to hybrid working. SDS have embedded green economy principles into the organisation through initiatives such as launching a Green Jobs Workforce Academy and piloting a Climate Change Foundation Apprenticeship.
- **Wheatley Group.** The largest social housing provider in Glasgow, Wheatley Group continues to reduce emissions from its stock through improvements in energy efficiency via retrofit works alongside connecting residents into low carbon forms of heating such as district heating or heat pumps in those instances where fuel bills would not increase as a result. They have set a target to reduce emissions by 6000tns CO_2 per annum in order to achieve Net Zero Carbon.
- **Glasgow Airport.** Glasgow Airport has maintained net zero for all of its scope 1 and 2 emissions and uses 100% renewable electricity. In 2022, the Airport invested £250,000 in fixed electrical ground power to replace diesel generators which has improved local air quality and reduced emissions.
- **Scottish Water.** Scottish Water has reduced its carbon footprint by 42% since its baseline year of 2006. This has been achieved through commitment to such interventions as (i) increasing the percentage of renewable energy generation from SW assets (ii) investing in energy efficiency measures (iii) partnering with their supply chain to support low carbon construction, innovation and the transformation in skills needed to deliver Net Zero.
- **University of Strathclyde.** The University continues to lead ambitious climate action in line with our strategic KPI of achieving Net Zero by 2040. We remain on track to achieve our 2025 milestone of a 30% reduction in emissions from our 2018/19 baseline. Emissions data from 2022/23 totalled 28,464tCO2e, a 24% decrease from baseline. The University continues to deliver against our strategic vision for sustainability with investment into building refurbishment, PV projects, expansion of our district heat network, and completion of a £57M National Manufacturing Institute Scotland (NMIS) facility. NMIS is the first operational 'energy carbon neutral' building in the University's estate and the first energy carbon neutral building factory in operation in Scotland.