

Glasgow City Council Climate Change Strategy & Action Plan



A brighter future for our city





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FOREWORD

In 1765, James Watt, while walking in Glasgow Green, conceived of the idea of the separate condenser for the steam engine. This innovation massively improved the machine's efficiency and led to more effective engines in mines, mills and factories. It was patented in 1769 and this invention and this year are seen by many historians as the start of the Industrial Revolution.

In the years from 1769 to 1800, Britain's annual coal production doubled and by 2006, world annual coal production had increased 800-fold and is still growing today. By burning coal many billions of tons of carbon dioxide (CO₂) have been released into the atmosphere. This has been further supplemented by the CO₂ from the use of oil and gas.

This CO₂ (and other greenhouse gases) are now acknowledged by scientists as adversely impacting on our climate and this "Climate Change", as we have often heard, is now the biggest challenge of our era.

This challenge, however, is one that we can overcome. The 2008 United Nations Development Programme Report noted

"We are issuing a call to action, not providing a counsel of despair. Working together with resolve, we can win the battle against Climate Change. Allowing the window of opportunity to close would represent a moral and political failure without precedent in human history."

In the face of such a challenge, Glasgow City Council has made a commitment to play its part. We recognise that we have a leadership role in Glasgow and must support and encourage the City to become more climate conscious and respond urgently and effectively to the consequences of a changing climate. We will also show that we are serious about ensuring Scotland will meet its national emission targets.

We also understand that, perhaps, Glasgow has a special responsibility to show how a modern city can develop whilst adapting to and mitigating against Climate Change. This responsibility may date back to that day in Glasgow Green almost 250 years ago. James Watt's invention has brought untold benefits to many people and societies around the world but industrialisation has also resulted in environmental problems such as water and air pollution. It may be that, Glasgow can be inspired by another Scottish inventor with links to the City - the electrical engineer James Blyth who first used wind power to create electricity.

Climate Change is a global problem but Glasgow can provide a local solution and this Climate Change Strategy outlines how we have acted, how we are acting and how we will act in the future to make our fair contribution in response to that problem. The Strategy will tackle the impacts of a changing climate on Glasgow whilst supporting the fulfilment of the City's long term vision of "becoming one of the most environmentally sustainable cities in the world".



Councillor Ruth Simpson
Executive Member for Sustainability and the Environment



INTRODUCTION

This document sets out the strategic measures and actions planned by Glasgow City Council to address the serious challenges the organisation faces as a result of global warming both now, and in the future. Although the main initial focus of this document relates to the services and activities of the organisation, it is clear that the Council must also adopt a leadership role in helping the City to deal with what the Scottish Government considers is one of the most serious threats facing the world.

At a time when over 50% of the world's population now live in cities, it is appropriate that Glasgow, as Scotland's largest local authority and city, should play its part in tackling Climate Change. For this reason, many of the proposed actions are intended not only to change the way that the Council operates but also to assist residents, communities, businesses and others to make the changes that are required if we are to protect the fragile environment on which we all depend and preserve an equitable share of the earth's resources for future generations.

While minimising future negative impacts by reducing greenhouse gases (GHGs), we must also make preparations to deal with future changes to our climate that are now unavoidable due to past emissions. These changes are said to be already 'locked in' and will include more frequent flooding, storms, heatwaves and other extreme weather events.

The Intergovernmental Panel on Climate Change (IPCC) is the body set up to independently assess all scientific and technical aspects of Climate Change. Its Climate Change 2007: the Physical Science Basis states: - "most of the observed increase in global average temperatures since the mid-20th century is very likely due to the observed increase in anthropogenic greenhouse gas concentrations". The report represents a powerful body of opinion that humans are almost certainly influencing the climate and it highlights the need for urgent action to avoid dangerous Climate Change.

Whether there is agreement as to the causes of Climate Change or not, we would all accept that the quality of life and wellbeing of our populations is a priority for all individuals and governments both central and local. Given that these are intrinsically linked to the balance of our planet and its ecosystems, all the action taken

to restore and maintain Earth's natural equilibrium will have a positive impact in both natural and social systems. With this in mind, Glasgow City Council is developing this strategy and action plan.

It is recognised that to become climate responsive Glasgow City Council has to consider three overarching areas in this Climate Change Strategy and Action Plan:

1. The mitigation agenda, which addresses the causes of Climate Change and is concerned with actions to reduce the emissions of greenhouse gases into the atmosphere.
2. The adaptation agenda, which addresses the effects of Climate Change and is concerned with promoting actions to ameliorate the unavoidable impacts of extreme weather events caused by this changing climate.
3. Awareness raising of Climate Change issues and actions that we all can take to help.

It is accepted that, in order to develop a Climate Change strategy and embed Climate Change mitigation and adaptation into its policies and activities, the City Council needs to fully understand how the climate has affected Glasgow in the past.

Recognising the importance of the latter agenda, the Council has started its Local Climate Impacts Profile (LCLIP), taking part in the second round of LCLIP projects in Scotland. This will allow Local Authorities to ultimately understand their exposure and response to severe weather events, as well as the effects of changes in weather patterns for their locality.

In summary, Climate Change will have enormous and complex social, political, economic and ecological impacts. (Stockholm Environmental Institute, 1992) To respond to that complexity, this strategy and action plan has considered eight key themes. These are Education & Awareness, Energy, Resource Management, Transport, Sustainable Procurement, Cultural & Natural Heritage, Water and Planning & Built Environment, with Health & Well-being as a crosscutting issue.

This strategy and action plan will be reviewed and revised annually to take account of the significant UK, Scottish and local initiatives expected in the continuing years. This document makes reference to some of the initial actions proposed by the Council, while a more detailed list can be found in the action plan at the end of the strategy.



Background to Climate Change

Sustainable Development and Climate Change

All countries across the globe are facing up to the global threat of unsustainable development leading to a world where future generations no longer have the resources to meet their needs.

Unsustainable development is changing habitats and climates, overexploiting resources and creating pollution. If current patterns continue, damage to the natural world will accelerate, not diminish.

These changes are more than solely an environmental problem. The dramatic human consequences of changes in the global environment are already evident across the globe, mainly in developing countries.

Extreme weather caused by Climate Change is connected to increased cycles of drought across Africa, deepening food shortages and aggravating hunger. Extreme weather events like the flooding across central Europe in 2002 and the heat wave in 2003, as well as the recent floods in Pakistan, are only a few of the impacts of Climate Change and may be a result of our unsustainable living. Scotland too is starting to experience more extreme weather events with storms and flooding estimated to become more frequent in future decades.

As stated by Scotland's Sustainable Development Strategy and acknowledged by the Scottish Climate Change Act:

'Facing up to Climate Change means changing the way that we live and develop: as individuals, as a nation and as part of a global society. In an increasingly global economy, we rely on imports of food, raw materials and manufactured goods from and exports to many nations. That challenges us to consider the impact of the resources that we are consuming.'

Glasgow City Council will take action on the Climate Change priorities set for Scotland and the UK. This Strategy's ultimate aim will be to reduce Glasgow and Scotland's share of the global carbon and ecological footprint through actions across the eight key sectors already identified in the document.

The priorities for action/ change as set in both the Scottish and the UK Sustainable Development Strategy are:

- Sustainable consumption and production: achieving more with less. This includes reducing the inefficient use of resources, looking at the impact of products and materials across their whole lifecycle and encouraging people to think about the social and environmental consequences of their purchasing choices
- Energy: securing a profound change in the way we generate and use energy, and reducing greenhouse gas emissions
- Natural resource protection, and environmental enhancement: protecting our natural resources, building a better understanding of environmental limits, and improving the quality of the environment
- Sustainable communities: creating communities that embody the principles of sustainable development locally

In order to achieve these objectives in Glasgow, the Council will develop new approaches to the way it operates and in the way it communicates with those living and working in the City.

'Sustainable development presents us with a framework for thinking about the future: the kind of world we want to live in and the legacy we want to leave behind for future generations. The actions we are taking are driven by a vision of the future we want to build.' (Choosing our Future, 2005)

What is Climate Change?

Climate refers to the average weather experienced in a region over a long period, typically at least 30 years. This includes temperature, wind and rainfall patterns. The climate of the Earth is not static, and has changed many times in the past in response to a variety of natural causes.

Recent observed changes in global climate are likely to be due to a combination of both natural and human causes. The Earth's climate varies naturally as a result of interactions between the ocean and the atmosphere, changes in the Earth's orbit, fluctuations in energy received from the sun and volcanic eruptions. The main human influence on global climate is likely to be emissions of greenhouse gases such as carbon dioxide (CO₂) and methane. At present, about 6.5 billion tonnes of CO₂ is emitted globally each year, mostly through burning coal, oil and gas for energy.

The United Nations define the term Climate Change as referring only to changes in climate which can be attributed to human activity.

The Earth is kept warm by the greenhouse effect. Certain gases in the atmosphere absorb energy that is radiated from the Earth's surface, and so warm the atmosphere. The greenhouse effect is a natural phenomenon without which life on Earth as we know it would not be possible, as the Earth would be 30°C cooler. However, our modern lifestyles have resulted in us releasing large amounts of greenhouse gases into the atmosphere, enhancing the greenhouse effect and so pushing up temperatures globally.

What is the difference between Global Warming and Climate Change

Global warming refers to the increase in the average temperature of the Earth's atmosphere. Climate Change refers to the changes in climate that might accompany the warming of the atmosphere, such as changes in the frequency and intensity of extreme weather and sea level rise. Many people use these expressions interchangeably. However, the word warming may be misleading, as it doesn't embrace the full range of changes that could result.

The Greenhouse Gases

Almost the Earth's entire atmosphere (99%) is made up of nitrogen (about 78%) and oxygen (about 21%). While both of these gases play important roles in the vast number of processes that support life on Earth, they play almost no direct role in regulating the climate. This is carried out by some of the trace gases in the remaining 1% of the atmosphere which occur in relatively small amounts:

Carbon dioxide

Methane

Nitrous oxide

Ozone

Water vapour

Halocarbons

Although the proportion of the trace gases in the atmosphere appears relatively small, they can still have a big impact on Climate Change - and they are mainly caused by human activities.

Impacts on Scotland

While there are significant threats faced by the world as a whole, it may be easier to think about the effects of Climate Change at a more local level. In the West of Scotland our climate will change considerably over the next 80 years. In fact, over the last century alone the average temperature has risen by 0.5°C and summer rainfall has decreased. (Rising to the Challenge, UKCIP 02)

Wetter winters and drier summers are anticipated across Scotland in general. There will be a decrease in the annual average rainfall of 0-10% with greater seasonal variation in climate as well as changes in the pattern and frequency of extreme weather events.

In the winter, the West of Scotland is predicted to experience an increase in rainfall in the next 20 to 50 years while in the summer Scotland could experience a dramatic decrease in rainfall by 2080. This could have a serious effect on agriculture and farmers may need to adapt the types of crops they grow and to allow for more droughts during the main growing season.

Within 70 years sea level may be between 1 cm (Low Emissions scenarios - IPCC) and 61cm (High Emissions scenario - IPCC) above the current level. For some UK coast locations, extreme sea levels could occur between 10 and 20 times more often by the 2080s than they do now, under the IPCC Medium-High Emissions scenarios. This would lead to threats to human life and widespread damage to property.

In addition, heavy winter rain events that are currently experienced around once every two years, may become between 15% and 20% heavier. This could be one of the biggest effects we will experience, with widespread flooding increasing during winter and storm periods. This could cause serious economic and social problems for anyone located in risk areas. As time passes, these risk areas are likely to spread out further to more parts of the country. (Patterns of Climate Change across Scotland; 2006)

When addressing Climate Change, whether building resilience to its impacts or reducing carbon emissions, there are two distinct areas of intervention: mitigation and adaptation.

Whilst these are different, they are also interrelated. Action to mitigate against the effects of Climate Change, i.e. reducing carbon emissions, has to take into account the importance of sustainable adaptation measures to address potential Climate Change from already existing GHG's. Adaptation measures, on the other hand, should ensure resilience to the impacts of Climate Change is achieved without increasing carbon emissions and contributing to further Climate Change. In order to plan for successful mitigation measures and effective adaptation, different tools and techniques have been created and made available to local authorities, community groups, as well as businesses.

Glasgow's Ecological Footprint, Carbon Emissions: Adaptation and Mitigation

Ecological footprint

This measures human demand on the Earth's ecosystem. It does so by comparing human demand with the Earth's ecological ability to regenerate. An ecological footprint is represented in hectares, i.e. the amount of biologically productive land and sea area needed to regenerate the resources a human population consumes and to absorb and render harmless the corresponding waste. Through this procedure, projections can be made in relation to how much of the Earth (or how many planet Earths) would be required to support humanity if each person had a given lifestyle.

For 2005, humanity's total ecological footprint was estimated at 1.3 planet Earths. This suggests that the humanity uses ecological services 1.3 times as fast as Earth can renew them. (UN, 2005)

Glasgow's ecological footprint is 5.12 hectares (ha) per capita. This is the equivalent to around 3.6 planets, which means that we are using natural resources 3.6 times as fast as the Earth can renew them. In summary, if everyone was living like the average Glaswegian, the world population would need around 3 planets to live.

Carbon footprint

"This is the total set of CO₂ (carbon dioxide) and CO₂e emissions caused directly and indirectly by an individual, organisation, event or product" (UK Carbon Trust 2008).

Carbon footprint is measured by undertaking a CO₂ emissions assessment; this can be done for an individual, a group, an organisation, a region or a nation. Once the size of a carbon footprint is known, a strategy can be devised to reduce it. The carbon footprint is a part of the overall ecological footprint.

Glasgow's carbon footprint is 11.57 tonnes of CO₂ per capita. While this is below the Scottish average, it is still higher than would be ideal for a low carbon society.

Glasgow City Council's Climate Change strategy aims to reduce its emissions using these figures as a baseline and by determining more updated and comprehensive data, using new tools like the REAP (Resources and Energy Analysis Programme) software.

This document also aims to achieve effective and sustainable adaptation to the inevitable effects of Climate Change. For this purpose, the already mentioned LCLIP project (phase 1 - 4) has now been completed and a report will be published. This is designed to identify the areas in which Climate Change has affected council services and activities in the past and how it is likely to affect those in the future. The initial phase of the project was carried out with the support of UK Climate Impacts Partnership (UKCIP) and Scottish Climate Change Impacts Partnership (SCCIP). This support will be extended to the design of an adaptation framework and Climate Change communication strategy. Ultimately, the objective of the LCLIP is to use the Council's experience of past climate-related events and incidents to identify how local services and activities will be affected by the predictable future changes in climate. It will then help build the Council's climate adaptive capacity.

CO₂e or Carbon dioxide equivalent

Equivalent CO₂ (CO₂e) is the concentration of CO₂ that would cause the same level of radiative forcing as a given type and concentration of greenhouse gas. Examples of such greenhouse gases are methane, perfluorocarbons and nitrous oxide. (Carbon Trust)

One tonne of carbon dioxide equivalent means one metric tonne of carbon dioxide or an amount of any other greenhouse gas with an equivalent Global Warming potential (see glossary), calculated consistently with international carbon reporting practice.

For the purposes of the Climate Change (Scotland) Act, greenhouse gas emissions, reductions of such emissions and removals of greenhouse gas from the atmosphere, shall be measured or calculated in tonnes of carbon dioxide equivalent. (Scottish Government, 2009)

UK and Scottish Climate Change Acts

In 2008, the UK became the first country to introduce a Climate Change Act which put into statute targets to reduce CO₂ emissions by at least 80% by 2050.

The aim of the Climate Change (Scotland) Act is to create a statutory framework to reduce Scotland's greenhouse gases (GHG) by 50% by 2030 and by 80% by 2050; including an ambitious interim target of 42% GHG reductions by 2020. It requires ministers to set annual targets to ensure delivery from 2010 onwards. The reduction targets include emissions from international aviation and shipping, as well as emissions of all six greenhouse gases and not just carbon dioxide (CO₂).

The Act contains the essential primary legislation required to give Scottish Ministers the powers to achieve key long term targets. This legislation is supplemented by secondary legislation covering individual delivery mechanisms; e.g. the Climate Change Delivery Plan, published June 2009 whereby the initial framework and overarching targets are further supplemented by a programme of annual targets and reporting duties.

This will have direct implications for Scottish Local Authorities. For instance, it suggests that having a Climate Change Mitigation and Adaptation plan in place will assist with meeting local targets and contributing towards a more carbon neutral and climate resilient Scotland.

In 2009, a new public sector duty was established with the Climate Change (Scotland) Act. The Act also contains powers to enable the Scottish Ministers to impose further duties on public bodies in relation to Climate Change. Guidance on the new duty will be published in 2010.

The statutory duties contained in the Local Government (Scotland) Act (2003), the Climate Change (Scotland) Act and signing Scotland's Climate Change Declaration, all encourage and coordinate local government action on Climate Change.

With the public sector duty in the Climate Change (Scotland) Act, and other policy drivers such as the Carbon Reduction Commitment (CRC) commencing; it may become easier to identify the financial implications of Climate Change within local authority budgets.

The Scottish Government has published the Climate Change Delivery Plan to map the achievement of the mandatory targets in the Climate Change (Scotland) Act. This plan, and delivering on the statutory emissions reduction targets, will again have implications and provide an opportunity for Glasgow to join up and accelerate its work on sustainable development and Climate Change.

The Scottish Government's transformational objectives and the level of change it aspires to will impact on many services and functions, such as:

- Planning and enabling infrastructure for new energy systems, encouraging modal transport shifts in travel patterns and implementing permitted development rights for micro generation
- Housing: Leading by example with highest standards of energy efficiency in council housing stock
- Finance: Implementing a council tax rebate for householders installing energy efficiency measures and the costs of implementing the CRC
- Energy Efficiency Schemes
- Leisure: Improving and maintaining biodiversity of green space, improving the carbon emissions of leisure facilities and providing opportunities for active, low-carbon travel
- Waste Monitoring, and utilising landfill gas and working to reduce waste arising in households

The Council can therefore play a leadership role through both its actions and its policies. Glasgow City Council is currently working on reducing operational emissions as part of the Carbon Trust Carbon Management Programme. The Council is also preparing for the CRC Energy Efficiency Scheme. Both of these initiatives are useful steps in the effort to decarbonise our city.

The Delivery Plan highlights the significance of public attitudes and behaviours in achieving the emission reduction targets. Glasgow will take this opportunity to lead by example and work with local communities to ensure that infrastructure changes, relevant policy development and behaviour change are in place to meet these targets.

This Strategy aims to support the Scottish Government's emissions' reduction targets and in so doing achieve a Low Carbon City, by addressing different key sectors identified by both the Climate Change (Scotland) Act and the Delivery Plan.



GLASGOW'S STRATEGIC APPROACH

Single Outcome Agreement

Glasgow City Council continues to establish and implement policies which ensure our approach to the Single Outcome Agreement (SOA) with the Scottish Government helps deliver improved services which provide benefits and opportunities for the city and its citizens.

In terms of Climate Change, National Outcome 14 "We reduce the local and global environmental impact of our consumption and production" sets out Scotland's response to facing environmental pressures by promoting measures which will result in a sustainable way of life.

In a Glasgow context the SOA identifies the following Local Outcomes which will help meet these objectives:

- Local Outcome 11: Improve the attractiveness of Glasgow as a place to live, work and visit
- Local Outcome 15: Reduce the difference in life expectancy between the most affluent and most disadvantaged residents
- Local Outcome 24: Improve Glasgow's physical environment

It is our aim to introduce Climate Change Adaptation and Mitigation in the next SOA; adding to the existing Local Outcomes others such as Reducing Glasgow's Carbon and Ecological Footprint as well as building Glasgow's resilience to Climate Change.

The SOA provides a brief commentary on the progress made throughout 2008/09 and lists information on indicators associated with waste, air quality, energy consumption, transport and Eco Schools.

Glasgow's Single Outcome Agreement can be viewed at:

http://www.glasgow.gov.uk/en/YourCouncil/PolicyPlanning_Strategy/Corporate/SOU/

Community Plan

There is a strong history of partnership working in the City and the Glasgow Community Planning Partnership is committed to working together to meet the significant challenges and barriers ahead through its Community Plan. This joint approach is also evident in how the various parties agreed to work together as the Glasgow Climate Change Partnership with the aim of achieving significant carbon reductions across the city.

Council Plan

Together with the SOA and the Community Plan, the Council Plan forms the planning framework which is designed to help everyone understand the links between the activities we carry out and the effect these will have on delivering our priorities and objectives. Under the heading of Sustainability, the framework provides the integrated approach to deliver on Climate Change issues such as energy efficiency, waste, air quality and transportation.

Glasgow City Council's Climate Change Strategy and Action Plan

In a further step towards meeting our commitments to the Scottish Climate Change Declaration, Glasgow City Council undertook an extensive consultation on Climate Change issues between December 2008 and February 2010 which resulted in over 1000 questionnaires being completed and over 100 local and national stakeholders taking part in discussion sessions. These identified eight key themes for consideration. The remainder of this Strategy sets out these themes and summarises the various policies, strategies, initiatives, projects and associated actions relating to Climate Change, thus identifying where the Council can take direct action or influence others on Climate Change mitigation and adaptation.

As well as other widely known environmental causes of ill health, Climate Change brings about serious risks to health and wellbeing, having a disproportionate effect on those groups already somehow disadvantaged.

According to the Sustainable Development Commission, environmental causes of health inequalities are still fairly under-appreciated. (Sustainable Development: the Key to tackle health inequalities, 2010) Bearing these issues in mind, this document will take all sectors into account, adopting a holistic approach whereby a better environment and healthier communities can be created at the same time.

In brief, without careful consideration, some responses to Climate Change may increase negative effects on disadvantaged groups, equally business as usual approaches to addressing inequalities can result in high carbon emissions.

If Glasgow City Council and its Partners are to address Climate Change effectively, we need to adopt a holistic approach, one that is built around the principles of sustainable development, where everyone has equal opportunities to thrive within the limits of finite ecological resources and an increasingly growing world population. This view is reflected here, by the different key themes in the strategy and the way they are interlinked, combining Social, Economic and Environmental policies, so that together they promote a supportive ecosystem, social justice and reduce health inequalities.

For all the reasons stated above, Health & Wellbeing appears as the first chapter, one that sets the scene for this holistic and coordinated approach to Climate Change and ultimately achieving a more sustainable society.

'Prevention and shared responsibility are key, the Sustainable Development Commission calls upon policy makers and practitioners in central and local government to start thinking about how their work can reduce health inequalities and promote sustainable development.' (Sustainable Development Commission, 2010)

In summary the Strategy:

- Takes account of current EU, UK and Scottish legislation on Climate Change
- Builds on the Council's existing plans and policies and will encourage a carbon neutral approach to its future services and activities
- Sets out options to reduce CO₂ emissions and take additional measures to enable Glasgow's business community and citizens to adapt to Climate Change
- Aims to reduce Glasgow's Carbon emissions by 20% by 2012
- Is a live document which will continue to evolve as further guidance and policies are issued by the Scottish Government and others



HEALTH AND WELLBEING SETTING THE SCENE

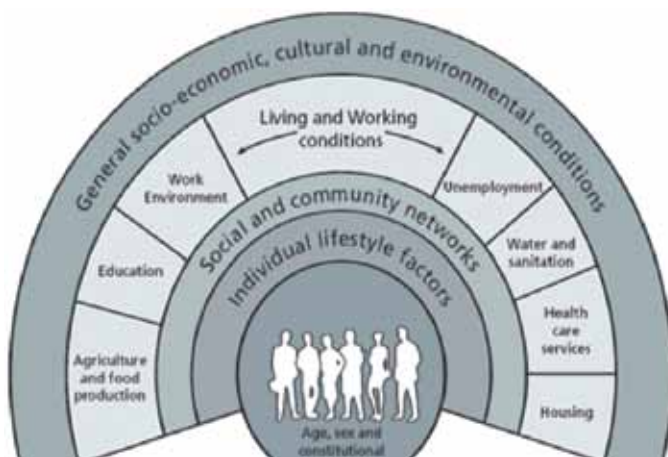
Objective

To improve health and well-being and to contribute to reducing health inequalities by mitigating against the disproportionate negative health impacts of Climate Change, in particular for groups such as the very young, the elderly and those living in poverty.

Why is Climate Change important for health?

How we behave, our relationships, our gender and ethnic group, our education and work, the conditions and communities in which we live, and how we feel about ourselves all influence our health and impact on how long we live. Figure 1 below shows how our health as individuals is dependent on physical, social, environmental, economic and cultural influences as well as individual behaviours like what we eat, and how much we drink, smoke or exercise. Climate change is likely to have far-reaching physical, social and economic effects. However, direct impacts on health are likely to be among the earliest effects of climate change not only due to heat-waves or extreme heat events but also as a result of flooding, storms and periods of extreme cold as well. These effects of climate change on health will be diverse and mediated by a range of different mechanisms, including the direct physiological effects of heat leading to heat related illnesses, new vector-borne disease (such as malaria), poorer air quality and increases in allergens. Vulnerable populations such as the very young, the elderly and those living in poverty are likely to suffer disproportionately negative health impacts as a result of Climate Change in the same way as they already have less access to the resources that can improve health, such as well-paid, secure employment or safe and comfortable living environments.

Figure 1: The Determinants of Health (Dahlgren and Whitehead, 1991)



What can we do about Climate Change that will be good for our health?

This section examines how Climate Change might affect our health and the actions we can take to prevent or reduce related negative health impacts. By making explicit policy changes and by changing our behaviour now, we can generate health benefits and reduce health inequalities in the short term as well as protect the health of future generations in the context of Climate Change. Some of these actions already have substantial evidence bases and simply require

leadership and political action. Others have less evidence, but make good sense and should still be implemented on the basis that they are the most likely interventions to be effective – of course it is important that these actions are evaluated in order that we can learn from them. For example, we know that using active modes of travel such as walking and cycling rather than car use, in our daily journeys, not only contributes to our physical and mental health and well-being as individuals, but also reduces carbon emissions and helps to make our streets safer. Furthermore, most of the strategies and interventions designed to address climate change will reduce rates of atmospheric emissions and have an independent effect on public health. For example, measures taken in the transport sector to reduce emissions, if successful, will have the effect of reducing incidence of respiratory and circulatory disease that are related to increasing levels of particulate matter and nitrogen oxide.

In thinking about change, we need to be able to feel empowered to make changes in our own lives and in our communities and get a sense of what impact these changes will have for ourselves and our environment. We are often led to believe that Climate Change isn't happening or that it is happening, but there is nothing we can do about it. Sometimes, we are only prepared to make changes to protect the climate if we see others around us making similar changes. When any change occurs in our society, it is our most affluent and able groups who often have the resources at their disposal to adapt most quickly. It is also the case that our poorest communities are the most likely to be adversely affected by the impacts of Climate Change. As actions are undertaken to prevent Climate Change and mitigate its effects, it is important that we are all supported to participate so that sustainable behaviour in Glasgow and beyond becomes the norm rather than the exception.

The following sub-sections briefly discuss how health links to Climate Change and what actions are relevant from a public health perspective on each of the themes presented in this action plan.

Education

A sustained programme of providing good information and opportunities to participate in learning and developmental activities about the potential impact of Climate Change on Glasgow, and potential responses to it, is important for all adults and children. Schools are already involved in many activities and initiatives, such as Eco-Schools and travel planning. Ensuring an appropriate level of participation in such initiatives for all schools should be a high priority. For example, in the area of active travel, much more could be done to encourage children and their parents to walk or cycle to and from school through structural measures to increase safety such as the introduction of mandatory 20mph zones; through workplace initiatives to encourage parents as employees to adopt more active modes of travel and through clear integration with the curriculum and good links with parent councils, after school care organisations and other relevant groups. An example of the importance of good information and communication is education and awareness-raising regarding the potential health impacts of extreme heat waves which are expected to become more common in the UK. The UK Met Office provides regular health forecasts to the NHS and to at-risk groups in England whenever there is a prolonged heat wave to allow health services and vulnerable individuals to take appropriate action.

Energy

The use of electricity and gas to heat our homes is a substantial contributor to greenhouse gas emissions. Good housing is essential to health and a great deal of work continues to be done to improve housing for the future. Energy costs, particularly during periods of recession, are an extra burden on households already struggling with job losses and lower incomes. One of the most cost-effective measures that can be implemented that reduces fuel poverty, reduces carbon emissions and generates health benefits is the installation of insulation and fuel efficient heating systems.

Resource Management

Effective resource management is becoming increasingly urgent in the UK and Europe. Improvements in technology and recycling schemes are proving inadequate to counter growing waste production accompanied by outdated existing resource management facilities and shortage of space for the construction of new facilities. Resource management can play a role in reducing health inequalities in the sense that we should all enjoy the same degree of protection from environmental and health hazards and have equal access to decision-making processes that create and maintain healthy environments in which to live, learn, and work.

Leadership is required to ensure that good information is available and accessible to clarify best practice and improve understanding of the reality of the impact of waste on health, inequalities in health and living conditions. Action by Glasgow City Council is required to provide better, easier and more equitable access to recycling facilities and services in Glasgow.

Transport

Transport is an important determinant of health and although it has many positive aspects, there is growing concern regarding its adverse impacts at individual, community and societal level. There is wide agreement that motorised vehicular transport is contributing to Climate Change and that increasing car use contributes to reduced levels of physical activity in the population. The promotion of active and sustainable modes of travel is an increasing priority for policy makers. A sustainable transport system is one which uses vehicular transport only when necessary and prioritises walking, cycling and the use of public transport over other vehicular transport. Public health leaders have called for greater and more visible investment in infrastructure that makes cycling and walking the travel modes of choice and that every transport and land use decision should be checked to ensure that it meets public health criteria.

Food

The food and agriculture sector is responsible for 10-12% of all greenhouse gas emissions. Western societies are consuming ever increasing amounts of food from animal sources. Reducing our consumption of such foods as meat and dairy products would be good for our nutritional and cardiovascular health as well as helping to reduce greenhouse gas emissions. Sourcing food from regional sources can also have positive impacts in relation to Climate Change, e.g. reduced food miles, less packaging and less GHG emissions, whilst also providing health and wellbeing benefits in terms of jobs (i.e. supporting local suppliers and the local multiplier effect), and the provision of better quality ingredients by sourcing fresher, seasonal and unprocessed produce.



Sustainable Procurement

In order to maximise specific localised benefits, sustainable procurement policies should embrace the principles described above in relation to food, i.e. sourcing of fresh, unprocessed, local, seasonal produce. By setting an example and purchasing local produce, GCC may help to establish new supply chains, thereby securing local jobs.

Cultural and Natural Heritage

There is strong evidence that access to and use of good quality open space and natural environments is good for health and wellbeing. Interventions that improve the quantity, quality, accessibility and use of natural environments open spaces across Glasgow's communities can contribute to improved community health, as well as providing carbon sinks and reducing the urban heat island effect.

The availability of growing spaces for citizens to engage in gardening and in growing their own food has also been found to benefit physical and mental health as well as promote good social networks. There are areas of the City in which demand for allotment space is greater than the availability, whilst in the City's poorer areas the reverse is true. Increasing and supporting access to good quality, well-maintained open space, growing space and natural environments across Glasgow is likely to have positive health benefits and can build community well-being, whilst also helping to mitigate Climate Change impacts on species and habitats.

Water

In 1859, clean water was piped to Glasgow from Loch Katrine. This water supply has protected the City from numerous public health threats in the last 150 years, diseases that still threaten populations in the poorest countries in the world. The use of bottled water and soft drinks increases the carbon emissions of the City and is unnecessary in a City with such a well established and safe water supply. There are also direct health benefits to be obtained by promoting tap water in preference to sugared or fizzy drinks, as these contribute to poor dental health and obesity. One potential impact of Climate Change is increased risk of flooding. Sustainable Urban Drainage Systems (SUDS), designed to mitigate flood risk, can also provide recreational and functional greenspace which contributes to health and well-being in the ways described above.

Planning & Built Environment

The way our built environment and streetscape is designed and managed has clear impacts on health and well-being ranging from direct and indirect physical effects to mental health issues associated with quality of life. For example, people living in poverty are unlikely to be able to afford full maintenance of their houses and this will become a bigger problem as Climate Change resulting in heavier rainfall will threaten housing already weakened through lack of attention. The environment can also encourage or discourage healthy behaviours such as walking and cycling. In a well-designed street, housing is secure and will stand up against all weathers, social networks are fostered, children can play safely, walking and cycling are the norm and carbon emissions are low. Many European cities contain neighbourhoods known as 'home zones' where pedestrians, cyclists and vehicles share the space on equal terms, with cars travelling at little more than walking pace.

Council policies should engender a built environment that fosters health and encourages active lifestyles.

EDUCATION AND

AWARENESS





EDUCATION AND AWARENESS

Objective

To raise awareness of Climate Change in a way that enables all of Glasgow's citizens to take local action acknowledging global consequences.

Education and Climate Change

'Confronting Climate Change is our shared challenge. Dealing with it could be our shared opportunity. Tackling it must be our shared achievement.' (Douglas Alexander, Former Secretary of State for International Development).

The council acknowledges that the consequences of Climate Change will be devastating; especially in poor countries. Global challenges like poverty and Climate Change can be seen as great dividers – exposing the degrees of separation between people who can afford to cope and people who cannot. On the other hand, they can bring distant communities together, united against a common threat. Although it is the world's poorest countries that face the greatest challenge, we live in an increasingly globalised world; we're all in this together.

The scale of the Climate Change challenge is such that it will only be overcome if individuals and communities have the necessary knowledge, awareness, understanding and skills to address this.

Tackling Climate Change is a priority for us all and the council will raise awareness of local action and its global impacts, now and in the future.

'Educating about Climate Change can help improve our awareness and develop the skills and attitudes needed to question the way we think, the values we hold and the decisions we make in the context of sustainable development. Improving awareness about environmental concerns such as the control of greenhouse gases, land and energy use, pollution and transport all have direct connections to educating for sustainable development.' (Learning and Teaching Scotland, 2002)

With pro-environmental views being so common amongst the UK and Scotland population, we might have expected significant behavioural and attitude change. To date this hasn't happened. Recent studies have identified some of the reasons for this lack of behavioural shift. All individuals have different environmental behaviours and attitudes. Individual action is driven by multiple and complex factors, it is therefore important to understand these in order to develop effective education and communication campaigns and policies.

The Council will take into consideration recommendations from national (Scottish Government) and local research (Sustainable Glasgow Initiative) when designing sustainable development and Climate Change education policies and campaigns.

Following the main aims for learning set by Choosing Our Future (Scottish Sustainable Development Strategy) this plan aims to:

- Put learning for Sustainable Development and Climate Change at the core of the formal education system
- Create and sustain lifelong opportunities to learn and understand sustainability and what Climate Change represents
- Ensure that the Climate Change message is clear and easily understood

Our Current Position

In Glasgow there are many examples of significant work being carried out both by public, private and voluntary sector to raise awareness on Climate Change and encourage individuals and organisations to work towards a low carbon and climate resilient city.

Some of the actions currently being undertaken by the council and partner organisations are identified below:

- A Glasgow Climate Change Partnership has been established to help Community Planning Partners to achieve significant carbon reductions across the city
- The Eco Schools Programme has been fully embraced by the pupils and teachers in Glasgow's schools, to date 69 schools have achieved "green flag" award (green flag award is the most prestigious award, this symbolises excellence in the field of environmental activity). This equates to approximately 20% of Glasgow's Schools. This number will increase in the next school year, as a significant number of educational establishments will receive this award
- In partnership with the Energy Savings Trust, several initiatives have been undertaken to promote energy efficiency measures within council services and the homes of Glasgow's citizens
- All small to medium sized businesses are offered free energy audits from the WISE group during the processing of grant and training funding

Glasgow City Council will continue to support work already underway and develop new projects to explore new ways of promoting behaviour and attitude changes.

Our Plans for the Future

Initial consultation in Glasgow, suggests that, although current levels of awareness of global warming issues are fairly high, misconceptions are still common.

One of the key actions of this strategy is, therefore, to develop and deliver a wide-ranging education campaign to exemplify best practice and enable both individuals and organisations to reduce their contribution to Climate Change and prepare to adapt to the effects of it.

This will be carried out at a strategic level by incorporating Climate Change issues within the Single Outcome Agreement, the Glasgow Community Plan and individual Service Plans. These changes will ensure that local public service organisations and their partners work towards common objectives that will tackle the Climate Change challenges and capitalise on funding and joint working opportunities.

The Council will do this by:

- 1. Continuing to put learning for Sustainable Development and Climate Change at the core of the formal education system.**
 - Promoting educational initiatives in both schools and local communities will encourage local action to mitigate factors that contribute to Climate Change and raise awareness of adaptation measures that can be taken to prepare for the changing climate
 - The Council will offer development opportunities to teachers and school staff
 - The Council will offer individual support to all early years, primary, secondary and ASL establishments in Glasgow

- GCC will continue to work with existing initiatives such as the Eco-Schools programme
 - The Council will, in conjunction with Schools and local stakeholders, establish a young people's Climate Change Forum, ensuring that the younger Glaswegians take part in the decision making process and their views are considered
- 2. Creating and sustaining lifelong opportunities to learn and understand sustainability and what Climate Change represents.**
- The Council and partners will develop training programmes linked to green job opportunities in the city e.g. Through the Sustainable Glasgow Initiative
 - The Council and partners will look to organise training events for community groups in their local area: www.energysavingtrust.org.uk/cafe/Green-Communities/Guidance-and-useful-tools/Trainingand-Events
 - The Council will involve the citizens of Glasgow at individual and community level in order to achieve effective Climate Change Adaptation and Mitigation. Particular emphasis will be placed on increasing the number of community based campaigns and doing this in conjunction with other organisations such as the Council's Arms Length External Organisations, the Environment Trusts, Black and Minority Ethnic Groups, not for profit organisations and the business community
 - Schools and community groups will be offered training and support to help them take part in Carbon/ Ecological footprinting projects
 - The Energy Savings Trust Green Communities website is for communities interested in reducing their carbon emissions. The Council will encourage communities to sign up to the network, which promotes sharing of ideas, and experience between groups, as well as access to specialist support: www.energysavingtrust.org.uk/greencommunities. Local support – Glasgow's local Energy Saving Scotland Advice Centre (The Wisegroup) can work with local communities to develop Carbon Reduction Action Plans
 - Energy Advice centres work alongside community groups to identify funding opportunities, and can signpost community members vulnerable to fuel poverty to the Scottish Government's Energy Assistance Package. The advice centres also use an interpretation service; householders can call 0800 512 012 and ask to speak to the advisor in their own language. This interpretation service will enable minority or less engaged groups in the community to access relevant advice
 - The Council in conjunction with local groups will organise an annual Climate Change Summit open to all sectors of the community
- 3. Delivering a Climate Change message which is clear and easily understood.**
- The Council will communicate information effectively to all those living and working in Glasgow to actively promote understanding of Climate Change. This process will be supported by the production of carbon footprints for several areas of the City
 - By making everyone more aware of the issues involved and encouraging people to do their fair share to tackle our changing climate, the Council aims to enable residents to become environmental ambassadors within the local community and to help them to demonstrate why it is important to change to more sustainable ways of living

ENERGY





Objective

To raise awareness of energy issues and promote energy efficiency to reduce the consumption of fossil fuel-based power, integrating the use and development of renewable energy into all activities within the Council, its partner organisations and throughout the City.

Energy and Climate Change

The issue of sustainable energy has become increasingly important. Since the Industrial Revolution, national wealth has been immediately linked with access to fossil fuels.

Energy efficiency is the main building block of any policies to reduce the threat of Climate Change. Energy production and consumption increases the levels of Greenhouse gases in the atmosphere enhancing the natural greenhouse effect.

In order to prevent man-made global warming, action is required to improve energy efficiency and reduce energy consumption, whilst exploring and developing cleaner sources of energy.

In addressing issues related to energy production and consumption, we will be dealing with global warming and Climate Change, and by proxy reducing its negative impacts on agriculture, water, the built environment, transport, health and wellbeing as well as economic development.

Our Current Position

Through its Carbon Management Plan, Glasgow City Council has set a target to reduce its overall energy consumption by 20% by 2012 from the existing baseline (2005/06) of 196,600 tonnes of CO₂ per annum covering energy use, street lighting, fleet travel and internal waste. This is equivalent to 39,300 tonnes over the 5 years.

Current actions to support meeting this target include the ongoing programme to replace high emission boilers with more efficient technologies such as condensing boilers or Combined Heat and Power (CHP) units which also generate electricity in addition to heat. Greater use of “smart meters” will provide baseline information which can be used to support our energy efficiency plans. Biomass and Biogas are also being considered as low carbon fuel options.

It's not just Glasgow City Council that must respond to help Scotland meet its emissions reductions targets. Our citizens and our businesses must also be supported in minimising their energy use. Scotland's Renewable Heat Strategy notes that space heating accounts for 57% of the nation's total energy consumption so cutting the amount of energy used to heat buildings is of local and national importance.

This is especially challenging in Glasgow due to our high levels of fuel poverty i.e. where more than 10% of a household's income is spent on fuel provision, as this is often as a result of poor, energy inefficient housing conditions. As a result of recent fuel price hikes, Glasgow's fuel poverty rate rose to 35% in 2009. To improve our existing buildings, the addition of insulation is key to reducing the amount of heat lost to the atmosphere through the roof and walls.

To meet Scottish Government's targets, the Council is committed to eliminate fuel poverty, as far as is reasonably practicable, by 2016 and there are several initiatives and partnerships ongoing to assist Glasgow householders i.e. working with:

- The Energy Savings Scotland Advice Centre and Scottish Gas to promote the Save & Reward Scheme which offers subsidised cavity wall and loft insulation
- Housing Associations and utilities to ensure Carbon Emissions Reduction Target (CERT) funding is made available to the most vulnerable members of society and the wider population of Glasgow
- GCC Fuel Poverty Advice Team (GHeat), in partnership with the Wise Group, provides advice to residents of the city
- Utility companies on two major insulation schemes, the Community Energy Savings Programme (CESP) and the Scottish Government Home Insulation Scheme (HIS)

Our Plans for the Future

For new construction, Policy DES2 of the Council's City Plan 2 looks to encourage developers to allow for more passive means of consumption reduction, such as orienting houses in a way to maximise solar gains. There are also requirements to achieve higher building standards. All social housing providers seeking a Housing Association Grant from the Council will be required to achieve the Ecohomes Very Good Standard.

As part of the Sustainable Glasgow project, the Council will be encouraging district heating schemes, wherever possible, but with a particular focus on the high priority regeneration areas. These District or Community Heating projects can result in significant CO2 savings and lower bills for the residents and businesses involved. In addition to security of supply, this provides a competitive edge to our businesses and helps to meet the Council's commitment to addressing fuel poverty.

Finally, aiding greater energy efficiency tackles only one side of the equation. It is also vital that Scotland increases the energy generated from renewable sources. In line with European legislation, by 2020, 20% of all energy should be generated from renewable sources and Scotland has been particularly successful with 30% of our electricity currently coming from renewable means, primarily through wind and hydro power.

It is accepted that there are fewer possibilities in Glasgow for electrical generation as wind power is affected by turbulence in urban areas and photovoltaic systems (PV) are still relatively expensive. Glasgow will, therefore, look to encourage technologies that pertain to the provision of heat. The technologies utilised will include biomass (CHP), solar water heating and ground/air/water source heat pumps, all of which will lower the overall carbon content of Glasgow's energy use. Planning guidance on these technologies will be produced as part of the Sustainable Glasgow project.

In August 2009, Glasgow City Council joined the Covenant of Mayors, which committed signatory towns and cities to curb their CO2 emissions by at least 20% by 2020, through enhanced energy efficiency and cleaner energy production. To achieve this target the Council will work with the Energy Savings Trust (EST) to establish a Baseline Emissions Inventory (BEI) and implement a Sustainable Energy Action Plan (SEAP).

RESOURCE

MANAGEMENT



Objective

To increase waste minimisation, increase waste recycling in line with Single Outcome Agreement targets and significantly reduce current reliance on landfill through innovative management techniques and increase staff and public awareness of the impact resource management practices have on Climate Change.

Resource versus Waste Management

Waste management is defined as the collection, transportation, processing, recycling, and disposal of all waste materials, especially in relation to their environmental, aesthetic and health effects.

Resource management is defined as the effective and efficient deployment of resources, and is linked to a number of specific waste management strategies. The drive towards sustainability is leading to an integration of resource and waste management strategies as waste materials are now regarded more as a resource rather than just waste.

When resources are managed effectively, waste can be kept to a minimum and even cut out entirely in some situations. Referring to resources management in this section rather than waste management reflects the council's commitment to addressing this issue in a more positive and sustainable manner.

Resource Management and Climate Change

Global consumption of resources is rapidly increasing. This is having economic and environmental impacts, such as damage to biodiversity, depletion of natural resources, contribution to Climate Change and increase in prices of many resources. It is, therefore, urgent that we act to both reduce our climate impacts and improve resource efficiency.

What is the Role of Resource Management in Climate Change?

In Scotland, waste accounted for approximately 5% of the national greenhouse gas emissions in 2006, this equates to approximately 2.6 MtCO₂.

In Glasgow City Council, the overall carbon impact of waste management is 142,680 t CO₂ eq/yr, "this is largely due to the Council's heavy dependence on landfill, with landfill emissions of over 174,000t CO₂eq overshadowing the 33,980t CO₂eq savings made through diversion of materials in through the recycling streams" (Recycling Performance Study, 2010).

Waste policies can maximise resource efficiency and the waste hierarchy is a good example of that:

- Waste prevention – best environmental option
- Reuse – reduces the need for resources
- Recycling – reduces the need for extraction and processing of new resources, while composting returns nutrients to the soil
- Recovery - e.g. anaerobic digestion, autoclave and other treatment process which can produce products that can be used as a renewable energy source

- Disposal - i.e. residual waste needs to be managed sustainably and minimised as far as possible if resource efficiency is to be achieved and Climate Change effectively addressed. It is recognised that there will always be a need to dispose of wastes and associated disposal processes need to be managed to the highest standards

In order to achieve this, long term policies are required to stop the waste of resources and reduce our impact on Climate Change. The Climate Change Delivery Plan (2009) includes programmes to reduce emissions from waste at a national level by 1.0 MtCO₂eq in 2020 against 2006 levels.

The Council aims to help achieve this target by reducing waste sent to landfill and increasing recycling rates, while also minimising waste generation.

Our Current Position

Land and Environmental Services currently delivers a comprehensive range of waste management services, including kerbside recycling collection systems, provision of recycling centres and recycling bring sites and the running of a Materials Reclamation Facility, four transfer stations and one landfill site. In 2008/09, within Glasgow, the total amount of Municipal Waste managed by Glasgow City Council was: 347,262 tonnes, of which:

- 278,230 tonnes was landfilled
- 69,032 tonnes was recycled/composted

This resulted in a recycling and composting rate of 19.9% which has risen from a rate of 2% in 2002. A summary of the current infrastructure is highlighted in the table below.

Service	Description	Tonnage Recycled 2008/09	Future Actions
Blue Bins Single Households (i.e own front door properties)	Separate collection of mixed papers, food and drink cans, and plastics bottles. Approximately 110,740 households serviced at November 2009	10,098	Distribution of blue bins to new households
Blue Bin Flats/ Tenemental	Separate collection of mixed papers, food and drink cans and plastics bottles. Approximately 140,000 households serviced at November 2009	7,136	Distribution of blue bins to new or existing households
Brown Bins	Separate collections of organic garden waste. Approximately 102,800 households serviced at November 2009	8,692	Distribution of bins to new households. Possible introduction to flats that have their own garden
Public Recycling Points	Network of 400 public recycling points for separate collection of glass, mixed papers, food and drink cans, plastic bottles and textiles	5,903	Further locations will be identified for siting additional public collection points
Recycling Centres	4 Recycling Centres - Dawsholm, Easter Queenslie, Polmadie and Shieldhall. The sites accept bulky household waste and recyclables	11,430	Upgrade of Polmadie and Shieldhall Recycling Centres in 2010.
Other Activities - Commercial	Commercial glass recycling, office paper collection, Hot Rot composting, collection of organic waste from parks and textiles collection	24,158	Potential introduction of a comprehensive commercial waste recycling service.
Other Activities - Community	Work with community partners to separate recyclables: Glasgow Furniture Initiative, Spruce Carpets and Starter Packs	1,615	Ongoing support of community activities.
Total		69,032	

Current developments also include:

- The Caledonian Environment Centre undertook a Recycling Optimisation Study in 2009 to examine, assess and develop new opportunities to increase the recycling rate within the City. The study involved a review of the existing kerbside dry recyclate collection service and identified areas for potential improvement. This report is being appraised with a view to implementing the recommendations such as adding additional waste streams to the current blue bin recycling scheme e.g. cardboard
- In 2009/10 an additional 40,000 brown bins were distributed to households for the collection of organic garden waste
- Distribution of 25,000 purple 140 litre bins for the collection of glass from the kerbside in February 2010
- Shieldhall Recycling Centre is being upgraded
- New contract initiated to transport waste collected as 'bulky uplifts' to a private sector waste treatment facility to extract as much recyclable materials as possible
- Contract awarded to a community partnership to collect household goods from recycling centres and direct from households for re-use. Items to be collected would include furniture, carpets and electrical goods
- New split compartment bins (litter/recycling) for general waste and recycling being introduced into city centre to enable 'on the go' recycling. Twenty bins introduced in George Square which complements the 'Glasgow Recycles' bins already located within the city centre
- New public collection point bins called Nodes (a mini recycling centre comprising four 800 litre containers, two for glass and two for co-mingled designed in a 360 degree configuration) were distributed across the city. These new collection points have been introduced in areas where a kerbside collection scheme is more difficult to undertake e.g. high rise blocks
- Dumbarton Road Environment Corridor Trust at the Kingsway flats took part in Scottish Government trial on the collection of food waste from high rise accommodation
- The Council has developed a Business Award Scheme part of which is to encourage businesses to become more environmentally aware of the waste they produce and to promote waste minimisation, re-use and recycling
- Additional recycling bins are being distributed within Council buildings to improve internal recycling rate and an increase in collection frequency has been provided to a number of schools with a view to being extended to all schools
- The Council has developed a Waste Strategy which is available on the website at the following address: www.glasgow.gov.uk/en/Business/Environment/Residual_Waste_Strategy/

Future Plans

- The recyclable materials collected via the kerbside collection system, public collection points and recycling centres are taken to the Council's own Materials Reclamation Facility (MRF) at Polmadie for separation prior to onward transportation to re-processors. Consultants have undertaken studies on the plant and the facility will be upgraded during 2010/11 to improve throughput and efficiency
- Introduction of additional materials to the co-mingled collection systems such as cardboard are planned but this will require upgrades to the MRF as noted above

- Glasgow City Council (GCC) is seeking to develop a resource management system that will control waste generation, reduce environmental impacts of waste production, improve resource efficiency, stimulate investment and maximise economic opportunities arising from waste. To achieve this a residual waste treatment facility will be constructed and GCC's objectives for the project are:
 - to reduce GCC's cost of waste disposal and its exposure to landfill tax
 - to support delivery of GCC's recycling targets as defined in its Single Outcome Agreement
 - to support delivery of GCC's landfill diversion targets as set in the Landfill Allowance Scheme; and
 - to mitigate the risk of any future landfill allowance penalties
 - to recover intrinsic energy from the treated waste
- Communication Campaign will be undertaken to promote the recycling infrastructure available to the public to provide motivational and instructional information
- Extension of the glass kerbside collection system to all single households – approx additional 75,000 bins
- Options are being considered to expand the existing commercial waste recycling service. Currently paper is collected from a limited number of city centre premises and glass is collected from pubs and clubs
- Increasing the collection frequency of blue bins from households
- Polmadie Recycling Centre will be upgraded in 2010 to accept more materials to recycle and to make the site more user friendly
- Form partnership with local community group to collect paint from the recycling centres for re-use
- Update recycling pages on Council website
- Trials on composting food waste generated within the Cordia premises that provide school dinners to schools
- A further waste audit will be undertaken, as highlighted in the Waste Strategy, to establish the current internal performance in relation to waste generation and management
- Glasgow City Council signing up to the Waste Resources Action Programme (WRAP) "Halving Construction Waste to Landfill" initiative

"To reduce, reuse and recycle our waste is central to address Climate Change."

TRANSPORT



Objective

To increase the use of more sustainable modes of travel thereby reducing the use of fossil fuels and the negative effects of exhaust pollution on Climate Change.

Transportation and Climate Change

An effective transport system is vital for economic well-being and good quality of life. However, continuous growth of motorised transport is damaging the environment. Motorised transport is responsible for emissions of harmful pollutants; these can adversely affect human health and accelerate global Climate Change amongst other issues.

Transport is a key sector in any strategy to address Climate Change. Emissions from the Transport sector in Scotland (excluding aviation) were 14.5 MtCO₂ in 2006; these emission levels need to be reduced by 3.3 MtCO₂ in 2020 (34% Scottish Target) or 4.6 MtCO₂ (42% Scottish Target).

The Climate Change (Scotland) Act sets a greenhouse gas reduction target of 42% by 2020 from 1990 levels. The Scottish Government has published a Climate Change Delivery Plan setting out how the statutory emissions reduction target will be met in the short, medium and long term across a number of key sectors. These include working towards a largely decarbonised heat sector and electricity generation sector, and almost complete decarbonisation of road and rail transport by 2050, with significant progress made in all of these areas by 2030.

In order to achieve this, it will be necessary to pursue policies which reduce the need for travel, maximise active travel (e.g. walking and cycling), amend travel modes to lower emission forms of transport (e.g. air to rail), improve travel efficiency (i.e. lower emissions/ person/ km of travel) and provide a charging infrastructure for electric/hybrid vehicles. Additionally, action in the traded sector will be needed to offset any growth in emissions from aviation which will be included in the EU Emissions Trading scheme in 2012.

Our Current Position

Transportation Policy

'Glasgow's transport vision is to provide a world class transport system which is safe, reliable, integrated and accessible to all citizens and visitors and also supports the physical, social, economic, cultural, environmental and economic regeneration of the city' (Local Transport Strategy, 2007).

Planning Policy

Scottish Planning Policy (SPP) states 'The planning system should support a pattern of development which reduces the need to travel, facilitates travel by public transport and freight movement by rail or water, and provides safe and convenient opportunities for walking and cycling. Reductions in emissions will also be achieved through changes in vehicle technology. The planning system should support the installation of infrastructure to support new technologies, such as charging points for electric vehicles'.

Following from this, City Plan 2 includes an objective to 'develop the city's transport infrastructure and land use pattern to reduce the need to travel, particularly by car, and to meet the needs of residents, visitors, commerce and industry'.

Development Management

All, bar minor, development proposals are assessed for accessibility by sustainable travel means (walking and cycling) and by public transport. Residential developments are assessed not only for the journey to work but also accessibility to local services, shops, safe routes to schools etc. Major developments (i.e. over 100 houses or 1,000 m² retail or 2,500 m² offices) and any other developments in areas particularly sensitive to the impact of additional traffic are required to submit a formal Transportation Assessment; this concerns person trips, not car trips. It is a comprehensive assessment that should enable all the potential transport impacts of a proposed development to be fully understood. The objective is to encourage sustainable travel in relation to the transport mode hierarchy. This hierarchy is defined by the Government to be walking, cycling, public transport and shared car use. The assessment must be presented in clear language so that lay people can understand the implications. The assessment must include measures to overcome any shortfall in sustainable transport provision and, for non residential developments incorporate a Green Travel Plan for the development's final users.

Green Travel Plans

Green Travel Plans offer benefits to organisations and communities around them. They identify a target mode share and establish a regular monitoring regime to monitor success. They consist of a number of initiatives aimed at reducing the negative impacts of travel for the organisation in question. Green Travel Plan measures can include incentives (financial or other) to use sustainable or public transport modes of travel such as salary sacrifice schemes for cycle purchase, season ticket purchase or subsidising such purchases. They can also include encouragement of car sharing by enabling contact between car sharers or denying parking space for single occupancy cars not essential for operational reasons. On average, an effective Travel Plan can reduce car use by as much as 15% by promoting and facilitating more sustainable alternatives. Such plans must include a regular monitoring regime to ensure its mode share targets are being met, to take action if the targets are not being met and to improve targets when appropriate. An annual monitoring report should be forwarded to Glasgow City Council to ensure the planning conditions continue to be fulfilled.

School Travel Plans

School Travel Plans are a more specific form of green travel plan tailored to meet the needs of children travelling to and from schools. Transport assessments have been undertaken for the most recent phase of the council's schools programme, these have identified preferred routes to the schools and measures to make them as safe as reasonably possible. The City Council is implementing a programme of 'Safe Routes to School' for the remainder of the school estate. The Council Community Action Teams (CAT) work with teachers, parents and children across the City to develop School Travel Plans, to raise awareness of travel issues on the school journey and to provide a picture of children's travelling habits within Glasgow through an annual "Hands up for Glasgow" travel tally.

Personalised Travel Planning

Over the past few years the governments of both UK and Scotland have been subsidising demonstration projects of Personalised Travel Planning (PTP) which have indicated that a sizeable proportion of the population does not know enough about their local geography to make logical decisions on whether there is a viable mode of transport for some of their journeys. In the project areas, there has been a significant shift in modal split as a result of PTP's, with reports of 10 - 15% reductions in car usage.

Walking

Walking is the most sustainable mode of transport. Virtually every road in Glasgow incorporates at least one footway and there are footpaths through all the major public parks; thus it is possible to walk to any destination within the City. In many cases, however, the perception of the walking environment is not conducive to encouraging this mode of transport and in many more there is a lack of awareness of the available options. Furthermore, traffic density, pedestrian density, congestion and air/noise pollution in the City centre as well as several other local centres are a further disincentive to walking in these areas. In Glasgow Walkit.com is a website to promote walking by calculating individual routes to the users' specifications. Investment from GCC has provided topological mapping for more accurate assessment of route and assessment of calorific requirements for health benefit estimates.

www.connect.glasgow.gov.uk/WorkingTogether/a2b/Travel_Resources/
www.walkit.com

Cycling

Glasgow has one of the lowest uptakes of cycling in the UK despite having around 230km of cycle routes ranging from signed on road routes to traffic free routes. These routes are not all specifically suited to those who might want to change to commuting by cycle. An effective cycling network would help segregate cyclists from traffic and help them negotiate difficult junctions whilst providing direct routes from residential areas to key locations such as schools, the city centre, other employment centres and to local services. Such cycle routes must be free of potholes, parked cars and other obstructions.

The Council acknowledges that road safety concerns are a barrier for many cyclists both in terms of traffic speed on major routes with no or narrow cycle lanes and traffic density in congested areas such as the City Centre with high levels of turning and weaving.

The City Council is further developing and improving the cycling network whilst supporting events and initiatives to promote cycling and help link it to public transport. To help individuals learn and remember the cycle code, the Council is distributing reflective "slap bands" featuring the code to cyclists through Glasgow's bike shops, at promotional events and through the cycling campaign groups 'Go Bike!' and 'Spokes'. More information can be found at:
www.politecycling.info/glasgow.html

Public Transport

Rail

Greater Glasgow and its surrounding settlements have the most extensive suburban rail system outside London; however, neither the City Council nor the Strathclyde Partnership for Transport has any control over the rail network which is now the responsibility of Transport Scotland. Nevertheless the City Council is in discussion with Transport Scotland over the provision of new stations, the Edinburgh – Glasgow Improvement Programme (EGIP), interventions proposed in the recent Strategic Transport Projects Review (STPR) and other projects such as Glasgow Crossrail omitted from the STPR. The City Council recognises the importance of an efficient commuter rail network and is endeavouring to secure the necessary improvements both to accessibility and service provision to develop such a network. The Council is also jointly promoting, with the City of Edinburgh Council, the early provision of a high speed rail link to London with short enough journeys to attract passengers to mode shift from air travel.

Bus

Glasgow also has an extensive bus network with several bus companies operating commercial services throughout the City; however there are pockets where commercial services are not viable and SPT is required to subsidise services. The density of bus services causes problems closer to and within the city centre as well as at certain other locations where routes converge, mixing with other traffic.

Glasgow City Council, the Strathclyde Partnership for Transport and First Glasgow assisted by Scottish Government

Funding, have implemented and will continue to implement several Quality Bus Corridor schemes improving the scheduled journey times by up to 10%. Traffic and bus on bus congestion within the City Centre is still a significant problem which may require more radical traffic management.

Journey Planning

The Traveline Scotland website contains information on bus and train timetables. It is designed to simplify the use of public transport by allowing travellers to plan their journeys more accurately. It can be viewed on www.travelinescotland.com

Freight Transport

Glasgow contains a diverse scatter of retail, wholesale, industrial, other commercial premises and construction sites resulting in a significant volume of freight traffic throughout the city. The City Council is a member of the Strathclyde Freight Quality Partnership (FQP) in conjunction with SPT and representatives of the freight transport industry. The FQP is investigating the possibility of introducing one or more freight consolidation centres to reduce the number or size of lorries delivering to individual premises throughout the city.

Private Cars

Green travel plans and PTP's are designed to reduce the need to use private cars but there will be occasions where their use is considered essential. In such circumstances membership of a Car Club may be a suitable alternative to owning a car. The City Council is currently engaged in enabling the formation of Car Clubs in the City. In cases where there is no suitable alternative to owning and using private cars, then the use of low carbon vehicles, eco-driving and car-sharing should be encouraged.

SPT JourneyShare is an online journey matching facility for car sharing, walking and cycling. Launched in June 2009, this will continue to be promoted via parking and infrastructure improvements and awareness campaigns. www.sptjourneyshare.co.uk



City Centre

The density of traffic within the city centre is highlighted in several of the above paragraphs as a disincentive to sustainable travel. Although much of this traffic has a destination within the area, there is still a significant proportion of traffic passing through the core of the city centre either to reach a destination at the opposite side of it from its entry point or passing across the city as a through route. There is a further traffic movement caused by motorists ‘cruising’ in search of a parking place. Much of this traffic movement and the bus on bus congestion could be eliminated by a strategic review of the city centre’s role.

Our Future Plans

The City Council will address transport related Climate Change issues through various actions including:

- Implementing the initiatives identified in the Local Transport Strategy
- Producing Green Travel Plans for all council premises
- Work with the Glasgow Community Planning Partnership on the Ultra Low Carbon Vehicle Demonstration Programme (ULCVDP). The City Council and its partners will trial 40 electric vehicles to help improve opportunities for low carbon vehicle suppliers and understand the problems associated with such technologies to improve their performance in the future
- Progress work on the Joined-Cities project. This is a longer term project aimed at building on the ULCVDP by introducing infrastructure to Glasgow to encourage people to buy electric vehicles confident that there will be sufficient charging points available
- Implement more Safe Routes for Schools and School Travel Plans to encourage more sustainable travel to school. Four primary schools are currently taking part in a Walking Bus project, others have showed interest. The Council has supported these schools and parent volunteers by providing road safety training and equipment. Following an assessment of this pilot all schools in the City will be invited to take part
- Produce a new strategy traffic management for the City Centre
- Encourage the provision of improved public transport services, rail electrification, Crossrail, a new High Speed Rail link to London and extend the cycle network
- Introduce a monitoring system to ensure Green Travel Plans are implemented and continued where they form part of a planning consent
- The City Council’s draft Staff Travel Plan notes: ‘Glasgow City Council has many diverse centres of operation. In order to promote cycling or walking to work, requirements need to be assessed to allow the changes that are feasible at each venue. To maximise use, the methods and materials utilised to provide active travel information should be useful to both walkers and cyclists. In regard to cycling, it is vital that there is training available to those less experienced and that this be completed to a satisfactory level

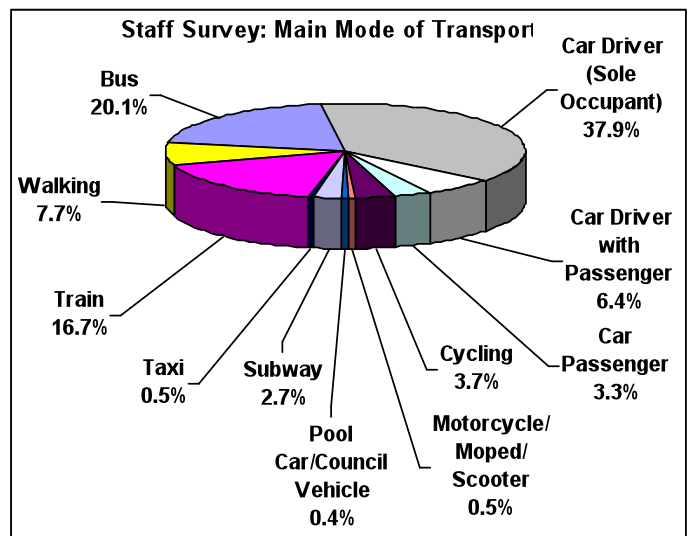


Figure 3.2: Modal Share of Staff Travel to Work (Staff Travel Survey 2008)

- Cycle to Work Scheme. With 14% percent interest (Staff Travel Survey, 2008) this has the potential to significantly impact of Glasgow City Council's CO2 emissions
- Journey Matching Facilities. Twenty three percent of SOV drivers expressed a wish to participate in such a scheme. This was successfully launched in June 2009 and continues to grow
- Travel Information. Information and maps pertaining to site access from public and active travel sources are being developed for download and display. This will grow to include information on dedicated car sharing, parking available and car club vehicles within walking distance of the site.' The Forthcoming plan aims to address these issues through targets measures such as:
 - Home-working and Smarter Working. These issues require consideration in detail and development of measures by a working group led by Corporate Human Resources (CHR), involving ACCESS and supported by LES Projects
 - Business Travel. This is an area which is key to a reduction in the Council's overall carbon footprint. This will take into account improvements in infrastructure and the use of sustainable technologies. It is recommended that actions in this area are developed in detail through the Travel Plan itself, requiring close liaison with Finance and CHR through the creation of a working group led by LES Projects. Currently under study
 - Fleet Review. Introduction of eco-driving training improves overall efficiency, saves on resources, and is transferable to vehicles utilising other energy sources. Extensive fleet review to ascertain the appropriate introduction of low carbon or zero carbon transport. Electric vehicles are zero sources of CO2 and hydrocarbon pollution at their point of use, providing a cleaner environment. They are also considerably quieter, which is a reduction in noise pollution and make a contribution toward the achievement of city air quality zones. Currently under study
 - Parking Permit Review and Car Sharing. Current provision of parking across all GCC services has been collated. To progress work in this area a working group is required between Finance, CHR, City Parking LLP and CE Communications led by LES Projects. Currently under study



SUSTAINABLE

PROCUREMENT



COFFEE BEANS

ORGANIC SINGLE ESTATES & CO-OPS:

- Aceh Tengah - Sumatra
 - Nossa Senhora de...
 - El Cuabo - Peru
 - San Juan La L...
- ECO-FRIENDLY, WATER...
- El Cuabo deca...
 - Aceh Tengah...
- ESPRESSO BLENDS
- Tapa organic...
 - Brazil...

Organic Spelt
£2.75

Organic
Erd & ...

Organic Batard
£2.75

Organic
Mulligata

food can trust you food can trust

Garth



SUSTAINABLE PROCUREMENT

Objective

To develop a Sustainable Procurement Policy to promote and raise awareness, in our staff, citizens and suppliers, of the Climate Change implications of our Services purchasing decisions and to encourage more sustainable options thus delivering best value for the citizens of Glasgow.

Procurement and Climate Change

The Scottish Government in its “Sustainable Procurement Action Plan for Scotland” recognises that “the actions of the public sector have a huge impact on society, the economy and the environment and in no area is this more obvious than how we spend public funds”. They also state that they “produced their Action Plan to assist the public sector to build sustainable procurement into their corporate culture, take proper account of sustainability in procurement activity and to be able to demonstrate how this is being achieved” and that “improved sustainability will also make a significant contribution to Climate Change targets”.

Procurement can help mitigate the impacts of Climate Change by ensuring that what we purchase has the lowest practical carbon content and leads to emissions reductions at both a global and local scale. This could entail ensuring that we:

- aim to purchase “green energy” when it is available
- support and encourage the purchase and use of renewable energy systems
- support and purchase energy efficient materials and use procurement to encourage energy efficiency
- encourage procurement of goods and services with low carbon footprints
- procure homes, buildings and infrastructure that are built sustainably and are energy efficient
- support and encourage low carbon transport such as electric vehicles along with bikes and walking

Current Position

As part of its core objectives, the Glasgow City Council Corporate Procurement Unit (CPU) is required to develop and roll out a Sustainable Procurement Policy in line with the Council Plan and key objectives, the UK Government Sustainable Development Strategy and the aforementioned Scottish Government Sustainable Procurement Action Plan for Scotland. This development process is currently ongoing and will, over time, refine the way sustainability, the environment and Climate Change are considered in how we procure our goods and services.

In addition, the CPU is building the requirement to consider sustainable procurement in its procurement toolkit. This will allow the commodity teams to determine and agree, how and if, Climate Change and sustainability implications could affect different goods and services. Effectively this will be measured via procurement Key Performance Indicators (KPI's).

In 2008, the Office of Government Commerce (OGC) launched its “Buy Sustainable Quick Wins”. Updated in 2010 and now known as the Government Buying Standards these are a set of sustainable specifications for a range of commonly purchased products e.g. IT equipment, white goods, paper (including tissues) etc, which included an evaluation of the associated carbon emissions. The CPU has used these “standards” to benchmark all corporately managed contracts to establish if GCC are procuring the minimum standards and the best practice specifications. This exercise is ongoing, however, the CPU are reliant on Procurement Scotland and Scotland Excel adopting the sustainable specifications as an option within the tendering process.

In conjunction with this exercise, the CPU is assessing Glasgow’s current procurement processes against the UK Sustainable Procurement Task Force’s Flexible Framework. By this process of self-assessment, Glasgow will measure its performance on sustainable procurement, prioritise areas for improvement and build these areas into corporate aims and objectives.

Glasgow City Council is also a member of the Sustainable Procurement Steering Group led by the Sustainable Scotland Network. This group has been formed to take forward the sustainable procurement agenda in Scotland and to provide feedback to the Scottish Government on the practicalities or difficulties faced by local authorities in adapting to the Climate Change or sustainability pressures.

Future Plans

Glasgow’s proposed Sustainable Procurement Policy will outline the actions and processes that the Council will take to further contribute to improving the CO2 and carbon footprints of our procurement. This will include:

- Further training to procurement officers and other GCC staff on the sustainability and Climate Change impacts on their procurement decisions
- Further development of existing whole life costing models
- Refinement of the evaluation of sustainability within the procurement process
- Ongoing discussion with suppliers on our changing requirements and how they can be met
- Producing a sustainable procurement action plan based on the flexible framework to provide structure and timetable on these actions and to allow measurement of progress
- To use carbon footprint software to measure the impacts of our purchasing decisions on the City’s overall footprint
- To implement sustainable procurement actions required by the Climate Change (Scotland) Act and the forthcoming Sustainable Procurement Strategy for Scotland
- Improve on the Climate Change impacts of food procurement by increasing the amount of vegetarian meals provided or reducing the amount of meat used and sourcing fish approved by the Marine Stewardship Council

In addition, the Carbon Reduction Commitment will be introduced in April 2010. This is the UK’s first mandatory carbon trading scheme and will cover both public and private sector organisations, including local authorities. This scheme will allow the Government to regulate the amount of emissions produced nationally by setting the overall cap for the scheme but gives organisations the flexibility of determining where the emissions reductions will be achieved. An organisation that reduces its emissions to a level below its target has the potential to sell these savings to other organisations that are unable to meet their targets.

Put simply, if a local authority's procurement processes can contribute to lowering its carbon emissions then it may be possible for these carbon efficiencies to be sold on the carbon market and provide an additional income. Success in following low carbon budgets will also minimise the risk of "fines" being imposed when targets are exceeded. There is also a longer term potential for more sustainable procurement to be converted to a monetary value in contract evaluation.

Whilst many sustainability and Climate Change procurement objectives will be addressed by Glasgow's Sustainable Procurement Policy and Action Plan there are other issues linked to sustainable procurement in the wider City that will it not cover. These indirect procurement considerations could include:

- Supporting farmers markets and encouraging more local food purchasing
- Supporting healthy eating initiatives which can, in some cases, lead to more "climate friendly" eating - this would link to issues around vegetarianism or eating less-meat
- Allotments Policy will provide opportunities for Glaswegians to grow more of their own food and curb Glasgow's own carbon footprint
- Similarly supporting schools in growing fruit and vegetables could have citywide carbon footprint impacts
- Supporting low carbon transport by taking forward the Staff Travel Plan objectives of introducing the Bike to Work Scheme and discounted travel passes



CULTURAL AND

NATURAL HERITAGE





CULTURAL AND NATURAL HERITAGE

Objective

To provide and sustain a robust and functional environment that celebrates the City's unique identity and helps communities (whether human or wildlife) to adapt to Climate Change. To manage the environment in a way that minimises carbon output and engages local people and visitors in the stewardship of the City's cultural and natural resources.

Climate Change and Cultural & Natural Heritage

'We have shaped Scotland's landscapes, flora and fauna, and they in turn have shaped, fed, and inspired us. We depend on these natural services to power, feed, fuel and build our economy and lifestyles. Conversely our nature and landscapes, as we know them, depend on the way we run our economy and live our lives to maintain the spaces and climatic conditions that allow them to thrive.' (Scottish Natural Heritage)

Nature and landscapes are an integral part of our history and culture, as part of this complex natural system; we have the single greatest influence over it. We must wield this influence responsibly.

There is evidence that many of Scotland's native plants, animals and ecosystems are unable to adapt to the unprecedented pace of Climate Change. Moreover, since people depend and are intrinsically linked to nature, Climate Change is a threat not only to individual species and landscapes, but also to people, their lifestyles, the economy and culture.

The majority of the scientific community is unanimous in that joined up action is needed now. This is a great challenge, but if we get it right, so are the opportunities and rewards. Urgent and synchronized action is required from all sectors of our society if we are to respond effectively to Climate Change.

Our Current Position

In the City Plan 2 the objective for Cultural and Natural Environment can be summarised as:

- promote social renewal by enriching the environment of the City and creating attractive living and working environments, improving quality of life
- promote sustainability by protecting and enhancing the built and natural environment and ensuring that new development is sustainably designed and constructed and that the potential to incorporate sustainable drainage systems within open spaces is recognised
- enhance and maintain residents' health by providing attractive living and working environments which help to foster mental wellbeing & active lifestyles

The contribution that maintaining & enhancing existing natural environments or developing high quality and well designed spaces can make to the creation of sustainable communities, the promotion of healthier lifestyles, the enhancement of biodiversity and the creation of opportunities for employment, training and volunteering as well as mitigation against the effects of Climate Change, are increasingly recognised and reflected in policy and guidance.

A number of actions undertaken by Glasgow City Council and its partners to improve the cultural and natural heritage are intrinsically linked to the Climate Change agenda. They are:

Central Scotland Green Network - National planning framework 2 priority

Glasgow & Clyde Valley Green Network

Glasgow Open Space Audit and Strategy

Local Biodiversity Action Plan

Sustainable Backcourts

City Woodland Initiative and Strategy

Canal environmental framework

Conservation Area appraisals

Glasgow Strategic Greenspace Partnership

Core Paths Plan and Outdoor Access Strategy

Environment Chapters and Policies within City Plan

Parks and Open Spaces Best Value Review

Cultural Strategy

Historic Glasgow Strategy & Action Plan

Allotments Strategy



Our Future Plans

In meeting the City's Cultural and Natural Heritage obligations, the City Council will continue to review, amend, prioritise and implement its ongoing and future policies to ensure its objectives on Climate Change are adequately addressed. This will include:

- Finalise and implement the Open Space Strategy and quality audit map to cover all open spaces within Glasgow, whether public or private, hard, soft or water landscapes. This is an overarching strategy that looks at different themes and types of open spaces including spaces for recreation, health & well being, public realm, growing spaces, ecosystems and green infrastructure. It encompasses spaces that are important in a local, regional, national and international context

- Establish the Glasgow Strategic Greenspace Partnership to engage with external partner organisations on the implementation of the Open Space Strategy recommendations
- Prepare a City-wide whole eco – system Plan to foster a diverse range of geodiversity & biodiversity in the City and help to mitigate the immediate effects of Climate Change
- Be an active partner in the delivery of the Central Scotland Green Network – a National Planning Framework 2 priority
- Through Historic Glasgow, use cultural heritage to engage communities in the future development of their own environments

It should be noted that the above actions, particularly those relating to open space, are intrinsically linked to other actions within this strategy i.e.:

- Water – SUDS, green infrastructure
- Transport – green network, connected city
- Health – environments that provide a sense of well being
- Built environment - sense of place, setting and cultural identity
- Woodland – carbon sequestration



Water





Objective

To reduce water consumption in Glasgow City Council's premises and in the wider community, while improving water quality.

To improve flood prevention infrastructures, while encouraging people to be prepared for this risk.

To comply with the Flood Risk Management (Scotland) Act 2009.

Water and Climate Change

Water shortage is expected to become a growing problem in the future, for different reasons.

First, the distribution of precipitation in space and time is very uneven, leading to temporal variability in water resources worldwide (Oki et al, 2006). If all the freshwater on the planet were divided equally among the global population, there would be 5,000 to 6,000 m³ of water available for everyone, every year (Vorosmarty 2000).

Second, the rate of evaporation varies significantly, depending on temperature and relative humidity; this impacts the amount of water available to replenish groundwater supplies. The combination of shorter duration but more intense rainfall with increased evapotranspiration and increased irrigation is expected to lead to groundwater depletion (Konikow and Kendy 2005).

Our Current Position

Water is a fundamental part of this Strategy as its quality and availability are likely to be affected by Climate Change through regular wetter winters and longer drier summers.

The Council is focusing on two different areas likely to be affected by changing climate patterns:

- Water efficiency and infrastructure
- Reducing the overall flood risk within the City

Water Efficiency and Infrastructure

Even though no water shortages have yet been identified in Scotland, at a global level water is becoming a scarce resource in certain places, making its preservation everywhere all the more critical.

Water issues are also closely linked to other areas in this strategy. For instance, the provision and removal of water requires a significant amount of energy, it represents on average 2% of the overall energy consumption in the UK.

In City Plan 2, water supply infrastructure is now addressed separately from flood alleviation and sewerage. In terms of water infrastructure, the City Council aims to promote comprehensive coverage of all areas of Glasgow by a network, sufficient to meet the current and planned requirements of the City.

Reduction of Water consumption by the City Council, businesses and residents will help reduce the city's energy consumption and therefore its carbon footprint. Based on data from the Energy Efficiency Unit (EEU), in 2008/09, Glasgow City Council's services total water consumption equates to approximately 3.014 million litres per day.

Glasgow City Council acknowledges the need to minimise water use and increase water efficiency internally. To date, a series of actions have been undertaken and identified, they include:

- Meter rightsizing – meters are being downsized to realise financial savings
- Audits are underway in all sites and have identified opportunities for urinal controls, tap restrictors, etc
- Maintenance to be carried out on existing water controls
- Benchmarking to be carried out by Glasgow City's Water Supplier on site performance
- Investigating the opportunities for water harvesting and reuse

Flood Alleviation

Glasgow City Council is working with key partners to reduce the impact of flooding. The responsibilities regarding flooding are varied, and at present a number of agencies have responsibility for dealing with its aspects in Glasgow. The Council is responsible for the drainage of public highways, reduction in overall flood risk, maintenance of watercourses, maintenance of flood prevention schemes and dealing with flooding caused by extreme rainfall, tidal and river flooding.

The complexity of flooding events within an urban environment requires a partnership approach. The development of Surface Water Management Plans for urban areas to reduce the impact of flooding is underway in Glasgow and is being carried out through the **Metropolitan Glasgow Strategic Drainage Plan**.

Glasgow City Council, Scottish Water, Scottish Government, SEPA and South Lanarkshire Council have been working together to tackle the issues of drainage and sewerage in the metropolitan Glasgow area since 2002, when the East End of the City suffered major flooding.

The work undertaken by the MGSDP has already led to informed and innovative decisions which ensure that the MGSDP plays its part in the success of the Clyde Gateway and the Commonwealth Games in Glasgow in 2014. This includes improved surface water management to prevent the waste water system from being overwhelmed by diverting into 'green corridors', flood plains or storage areas until a storm passes.

Sustainable Urban Drainage Systems

The objectives of the Metropolitan Glasgow Strategic Drainage Plan (MGSDP) are: flood risk reduction, river water quality improvement, enabling economic growth, habitat improvements and integrated investment planning. Sustainable solutions for the management of surface water form an integral component of the MGSDP strategy and, as such, GCC has prepared Surface Water Management Plans (SWMPs) for a number of key development areas within the City, the first stage being the development of an Integrated Water Plan (IWP) in the Clyde Gateway Initiative area in the East End.

The development of IWPs, which include Sustainable Urban Drainage Systems (SUDS) techniques, allows development to proceed in areas where the combined sewerage and watercourse system is already at capacity serving as a drainage 'blueprint'. This ultimately promotes sustainable economic growth in the City.

In addition to providing a drainage solution for an area, by linking to other environmental strategies, the SWMPs will also present an opportunity for well designed schemes to provide additional environmental benefits for that area, these include:

- Wildlife and ecological benefits (e.g. through opportunities to reopen covered watercourses)
- Protection and enhancement of existing environmental designations
- Landscape improvement
- Improved public access (i.e. cycling, walking)
- Provision of greenspace and waterspace for local amenity benefit

Our Future Plans

The City Council will progress actions across a number of fronts to achieve the objectives of this key theme, including:

- Carry out audits on water consumption in Council properties and implement recommendations to reduce consumption
- Develop further Integrated Water Plans across the City
- Promote the linkage between drainage solutions and habitat improvements
- Complete the White Cart Water Flood Prevention Scheme
- Continue to work with our partners on the River Clyde Flood Strategy Commission to identify and develop an acceptable solution which will provide protection from inundation by the River Clyde in Glasgow
- Develop (preliminary) flood risk assessments for the City
- Develop flood risk and hazard maps for the city

PLANNING AND

BUILT ENVIRONMENT





PLANNING AND BUILT ENVIRONMENT

Objective

To ensure that the development and regeneration of the City is undertaken in a manner that embraces the principles of sustainable design and construction, thereby ensuring the City also functions in a manner that addresses the likely impacts of Climate Change.

Planning, the Built Environment and Climate Change

In terms of Climate Change, urban planning will have a huge role to play, both in mitigation and in demonstrating adaptation techniques.

The built environment needs to deliver long-term, significant and cost-effective greenhouse gas emissions reductions to mitigate against the worst case climate impact scenarios. Given the relatively long lifespan of buildings, mitigation actions taken now will continue to affect their greenhouse gas emissions over the medium-term.

A life cycle assessment approach to buildings reveals that over 80% of greenhouse gas emissions take place during the operational phase, when energy is used for heating, cooling, ventilation, lighting, appliances, and other applications. A smaller percentage, normally 10 to 20%, of the energy consumed is for materials manufacturing and transportation, construction, maintenance renovation and demolition.

In responding to the local climatic changes that the LCLIP suggests we may see in Glasgow, the design of new buildings, the refurbishment of existing buildings and the layouts of our communities in which we live and work could be very different in the future. Changes in weather patterns, such as heavier rainfall, severe wind and a greater frequency of storms will affect the way our homes and offices are designed and constructed. For example, the current model for buildings to shed water quickly in a heavy rainfall event needs to be rethought to avoid exacerbating flooding and therefore it may be best in the future if buildings are designed to retain water for longer periods before discharging back into the natural system.

National and local planning policy is continually being strengthened to support the move towards sustainable communities within Scotland where the right to environmental justice is inherent. Equally, 2010 updates to national building control legislation will see new buildings being required to be far more energy efficient and energy innovative than ever before. Fundamental to this will be the ability of building occupants to understand the features that they have within their properties and to know how to use them correctly.

The promotion of sustainable design best practice will help improve economic development and regeneration through reducing the need to travel by relating land use more directly to transport, for example to housing densities and access to workplaces, education establishments and health facilities. As such, the contribution this element of sustainable design makes to Climate Change is more appropriately addressed in Key Theme 4: Transport.

Our Current Position

City Plan 2

City Plan 2, adopted in December 2009, sets out the Council's planning policies reflecting the need to deliver sustainable development which is a guiding principle of the plan. These policies contain some of the key components which will address both the sources, and the impacts of Climate Change and consequently, reduce the City's ecological and carbon footprint.

The main design policies ensure that:

- Materials are selected in accordance with life cycle assessment and are durable and appropriate to the climate
- Developments achieve EcoHomes/BREEAM ratings of “Very Good” as a minimum
- Biodiversity is protected and enhanced
- Pollution to air, water and land is prevented
- Flood risk, both on and off-site is minimised
- The City’s historic and listed buildings are conserved and refurbished appropriately

Existing Buildings

In relation to emitting CO₂ (which contributes to Climate Change) and the need for adaptation to the likely effects of Climate Change, the issue of how to upgrade existing buildings remains. In Glasgow, a significant proportion of existing stock requires improvement to make it more energy efficient and to enable it to be fit for purpose over the coming decades. The responsibility for the majority of this maintenance and improvement work lies with the owners, however, while the City Council does not have a direct mandate to tackle these buildings, it will continue to work with others to assist where it can. The City Council is able to directly influence existing buildings via the following:

- Council tax rebate for installation of energy efficiency measures
- Work with partners to enact the City’s Fuel Poverty Strategy
- Funding of housing association development & refurbishment programmes
- Listed building consents & related building warrants
- Utilising our statutory powers to carry out essential repairs and flood protection works

Where the Council has no direct influence, we will be supportive of other organisations or groups who are trying to improve the built environment in a manner that meets with our planning policies and our overall aims and objectives.

Sustainable Glasgow

On a City-wide scale, the Sustainable Glasgow initiative, alongside the City Plan, has the potential to make the greatest change to how the City physically and behaviourally responds to Climate Change.

Sustainable Glasgow is a partnership between Glasgow City Council and a wide range of public and private partners. It aims to establish the platform to achieve a carbon emission reduction target across the City of 30% between 2006 and 2020, which is equivalent to achieving the Scottish Government’s target of 42% between 1990 and 2020. This will primarily be achieved through the installation of new energy infrastructure, coupled with a programme of education to effect behavioural change and a drive to improve the energy performance of new and existing buildings. In doing this, the partnership will deliver major investment, create long-term jobs, help tackle fuel poverty, support the development of a new clean technology energy sector, create new revenue streams for the public sector and communities, improve air quality and help regenerate communities.

An integrated partnership approach by the City's key stakeholders is the only way to make this happen. The required management structures and resources are now in place to develop the Sustainable Glasgow concept into a reality. These include high level representatives from the Council and the City's Universities and Colleges, Utility companies, Community Planning Partners and global ITC businesses. This enables us to work together to develop synergies to target our existing resources to where they can be used most effectively.

A copy of the Sustainable Glasgow report can be found at www.sustainableglasgow.org.uk



Our Future Plans

To ensure that Glasgow's built environment is constantly adapting to Climate Change and its implications, the Council will continue to develop, promote and introduce actions that support this objective. There are 3 key areas of built environment and planning where the Council will have a direct and leading role:

- City Plan 3
- Sustainable Glasgow - Energy & Carbon Masterplan
- Glasgow 2014 Commonwealth Athletes Village

City Plan 3

Work is already underway on City Plan 3. An Issues Report will be published in Spring 2011 outlining the main areas that will require to be addressed in the next revision of the City Plan 2014-2018. Climate Change and energy will be key drivers.

Sustainable Glasgow- Energy & Carbon Masterplan

Glasgow currently emits around 4 million tonnes of CO₂ per annum linked to its energy use. If we progress Glasgow's ambitious regeneration agenda as outlined in City Plan 2, the long term trend will be for Glasgow's energy consumption and carbon emissions to increase unless action is taken.

Sustainable Glasgow sets out a requirement for the creation of an Energy and Carbon Masterplan which will provide an overarching framework which maps out the City's future energy infrastructure options tied to the real demands of the physical development of Glasgow's built environment. By identifying the current and future energy demands of the city in line with real and projected development proposals, an integrated programme of both public and private works can be tailored to ensure that all energy demands will be met in the most logical and economic, low carbon

fashion. The Energy and Carbon Masterplan will cover electricity, heat and transport and will focus on opportunities that are both technically deliverable and financially viable. It is our intention that energy planning and built environment planning become an integrated consideration within the planning process from the earliest stage possible.

Glasgow 2014 Commonwealth Games Athletes Village

Glasgow's successful bid for the 2014 Commonwealth Games was built around the delivery of a sustainable, low carbon Games Village, which will contribute to the longer term regeneration of the east end of the City. This will leave a new neighbourhood legacy comprising of 1400 low carbon homes.

The Athlete's Village will achieve the following:

- EcoHomes "Excellent" rating for all social and private residential properties
- BREEAM "Excellent" rating for the 120 bed Care Home
- 60% target reduction in CO2 emissions over the 2007 Building Regulations
- Decentralised Combined Heat and Power distribution network
- 10% recycled material content, by value

Other Actions

- In CP3, Glasgow City Council will fulfill the Scottish Government's requirements to include greenhouse gas emissions policies within local development plans
- Will continue to work with the Carbon Trust on the provision of Low Carbon Building Design Advice
- The City Council will use carbon footprint measurement software to establish and monitor the City's ecological footprint
- Will prepare a planning guidance note on the use of Green Roofs





A JOINED UP APPROACH

Climate change is a reality. Some major impacts are not avoidable, even with substantial mitigation. Research is also ongoing and as a result our understanding of climate change is constantly evolving and expanding. These advances will often result in new national or European initiatives or new and improved solutions to existing issues.

To allow Glasgow City Council to respond to such changing circumstances, we will set up internal Officers Fora for each of the eight strategy themes. The role of these groups will be to provide a cross-Service overview of the latest initiatives or research and to ensure the Council responds in an appropriate and prompt manner.

There is the opportunity for some of the key stakeholders, mentioned throughout this strategy, to participate in or contribute to these theme groups. This will ensure that a wider perspective and breadth of knowledge can assist Glasgow City Council to adopt the best and most suitable actions or solutions.

Furthermore, the Council alone cannot address the complexity of Climate Change within Glasgow. This is why we have recognised the importance of working in close liaison with others such as through the Glasgow Climate Change Partnership.

To take advantage of the commitment and experience of others, the Council is keen to engage with all sectors, from national and regional organisations, to local and community groups in order to provide an integrated approach to tackling Climate Change.



CONCLUSION

The actions proposed in this Strategy and the improvements achieved to date intend to benefit Glasgow's environment as well as the people who live and work in the City.

It intends to set the framework for future action to alleviate the effects of Climate Change, to raise awareness with the local population about the challenge we are facing and establish the Council's commitment to work in partnership with the wider community to achieve a more sustainable future for our City.

It is our aim to put the many environmental, social and economical challenges resulting from Climate Change into a strategic context. This Strategy describes the work currently being undertaken and identifies the actions required to address this challenge in an effective and sustainable manner.

Glasgow City Council has a key role to play in the process of creating a more sustainable, low carbon, thriving and climate resilient city; we will then endeavour to accomplish Glasgow's vision to become one of the most environmentally sustainable cities in the UK.

Only by working in partnership with others can the Council fulfil its potential in achieving these urgent changes. By involving employees, environmental and local stakeholders, interested individuals and local communities in this process, there is a better chance that we will achieve a more sustainable City, while contributing to the global wellbeing of people and planet.

Most of the actions in this document can be achieved within the next 5 years; however the strategy's outlook is enduring and long-term. Some targets and objectives can be achieved in the short term, but they require systematic review if the long term objectives are to be achieved. For example, Scotland's emission reduction targets for 2020, 2030 and 2050 seem very remote, however they can only be achieved by a continuous endeavour to reduce them year on year.

Given the pace of change in the field of Climate Change mitigation and adaptation, the amount of existing and forthcoming Scottish Government guidance, there is no optimum time to issue this document. The strategy does, however, provide the framework within which the city can respond to the above to ensure that Glasgow is up to meeting the Climate Change challenge.





CLIMATE CHANGE ACTION PLAN

Key Theme 1: Education and Awareness

No.	Action	Mitigation/Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
1.1	<p>Establish a Climate Change Education Officers Forum to:</p> <ul style="list-style-type: none"> Prepare Climate Change Education Management Plan for GCC Services (i.e. set baseline, internal targets or actions) Support the preparation of information and guidance on Climate Change for politicians, teachers and communications officers (including developing a communications/awareness raising campaign) 	Both	<p>Energy</p> <p>Cultural & Natural Environment</p> <p>Built Environment</p> <p>Transport</p>	Direct	ES	<p>DRS</p> <p>LES</p> <p>Glasgow Life</p>	January 2011
1.2	<p>Work in Partnership with all early years, primary, secondary and ASL establishments to reduce their impact on Climate Change and adopt more sustainable lifestyles:</p> <ul style="list-style-type: none"> Integrate Climate Change Education and Sustainable Development education with Curriculum for excellence: identify appropriate experiences and outcomes Offer staff development opportunities and individual support to establishments on Climate Change Mitigation; Adaptation and Carbon Footprinting Increase the number of schools actively participating in the Eco-Schools programme and achieving the Green Flag Award 	Both	<p>Energy</p> <p>Cultural & Natural Environment</p> <p>Built Environment</p> <p>Transport</p>	Direct	ES	<p>DRS</p> <p>LES</p> <p>Glasgow Life</p>	March 2011
1.3	Develop a Climate Change Education webpage for schools on Glasgow Online	Adaptation		Influence	ES	<p>ES</p> <p>DRS</p>	August 2010
1.4	<p>Develop a Climate Change Webpage to communicate with those living and working in Glasgow</p> <ul style="list-style-type: none"> Exemplifying good practice and Enabling Individual action 	Both		Behaviour Change	DRS	<p>ES</p> <p>Glasgow Life</p> <p>LES</p>	
1.5	Organise an annual eco summit for all sectors of society, including events to increase awareness of Climate Change and promote behaviour change	Both		<p>Behaviour Change</p> <p>Direct</p>	ES	DRS	March 2012
1.6	<p>Extend work with the Glasgow Climate Change Partnership to address:</p> <ul style="list-style-type: none"> Emissions' reduction and monitoring Adaptation Programme: Local Climate Impacts Profile (LCLIP) 	Both	Energy	Direct	Transport	<p>DRS</p> <p>ES</p> <p>Glasgow Life</p>	December 2013
1.7	Establish a partnership with community organisations and the Wisegroup in order to offer support and advice to small and medium businesses, enabling them to become more resilient and responsive to Climate Change	Mitigation	Energy	Direct	DRS	<p>Glasgow Life</p> <p>ES</p>	December 2012
1.8	Set up a young people's climate change forum to ensure that young Glaswegians' views about climate change and sustainability are represented in all actions developed	Both	Influence		DRS	<p>Glasgow Life</p> <p>LES</p>	December 2012

1.9	The Council will work with its Community Planning Partners and in conjunction with Sustainable Glasgow to develop job opportunities for all by setting up a green jobs hub to: <ul style="list-style-type: none"> • Identify new projects and skills • Establish and obtain accreditation for training programme • Provide all trainees with relevant apprenticeships 	Adaptation		Direct	DRS ES		December 2012
1.10	Produce a map showing the estimated carbon footprint of different parts of the city in conjunction with Sustainable Glasgow. And disseminate results to the residents	Mitigation	Energy Transport	Direct	DRS		December 2011
1.11	Organise and promote training events on Climate Change issues and obligations for elected members, council employees and partner organisations, offering a minimum of four training sessions a year	Mitigation		Direct	ES		December 2011

Key Theme 2: Energy

No.	Action	Mitigation/Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
2.1	<p>Establish an Energy and Climate Change Officers Group to:</p> <ul style="list-style-type: none"> • Prepare an Energy and Climate Change Management Plan for GCC Services (i.e. set baseline, internal targets and actions) • Co-ordinate the preparation of information and guidance on energy and Climate Change for GCC staff, politicians, business and general public • Monitor and update progress of the Carbon Management Programme • Monitor and update policy and data on current performance on GCC estate 	Mitigation	Education	Direct	DRS	LES/ES	January 2011
2.2	To work with the Sustainable Glasgow Initiative launched in 2010 to research, develop, introduce and promote innovative solutions to minimise Glasgow's emissions	Mitigation	Transport Waste Built Environment	Direct	DRS	LES	Energy Masterplan 1st Draft April 2011
2.3	<p>Take action to ensure the GCC's estate operates with optimum energy efficiency and minimises financial exposure under the Carbon Reduction Commitment whilst minimising emissions e.g:</p> <p>Energy Efficiency Team to maintain a programme of surveys of GCC Estate to identify Energy Efficiencies</p> <ul style="list-style-type: none"> • heating policy developed, • heat controls set, • lighting survey carried out, • maintenance programs assessed, • Smart meters installed • Maintain Carbon Trust Standard. • FIT, RHI & EEAP to be considered. 	Mitigation	Transport Waste Water Built Environment	Direct	DRS	LES	Ongoing CRC annual report from 2010 Covenant of mayors & BEI + SEAP August 2010
2.4	Introduce a mandatory checklist of renewables for all new-builds and refit work	Mitigation/ Energy Efficiency Measures	Built Environment	Direct	DRS		September 2010
2.5	City Plan 2 (DES 2): Support energy efficient developments through the City Plan by setting minimum Sustainability benchmarking standards e.g. BREEAM and equivalent	Mitigation	Built Environment	Direct	DRS		Ongoing
2.6	<p>Continue to address fuel poverty in all households through a concerted programme of insulation and housing improvements and advice:</p> <ul style="list-style-type: none"> • Work with the Energy Savings Scotland Advice Centre and to promote CERT interventions • Work with Scottish Government and EST to develop the Home Insulation Scheme • Assist HA's to attract funding from the Community Energy Savings Programme • Work with HA's to develop FIT and RHI for social housing • To continue to develop and expand G-HEAT to provide advice and assistance to vulnerable households • To require HA's to achieve Eco-homes very good standard when accessing HAG funding • To require householders to improve the energy efficiency of their homes where appropriate when accessing grant assistance • To assist householders in replacing old inefficient central heating boilers through a system of grants and soft loans 	Mitigation	Health and Wellbeing	Influence	DRS	Housing Associations EST	Ongoing

2.7	Develop a GCC energy reduction awards scheme for both Services and staff	Mitigation	Energy	Direct	DRS ES	CS	December 2011
2.8	Implement Sustainable energy actions and policy, to comply with commitments of GCC participation in the EU Covenant of Mayors, i.e. reduce Carbon Emissions by at least 20% by 2020	Mitigation	Transport Built Environment	Direct	DRS	CS	Ongoing Sustainable Energy Action Plan Monitoring report to be submitted every two years
2.9	Establish a council tax reduction scheme for Glasgow in order to encourage individuals to implement energy efficiency measures, as required by Climate Change (Scotland) Act	Mitigation	Built Environment	Direct	DRS	CS (Legal) EST	March 2011

Key Theme 3: Resource Management

No.	Action	Mitigation/ Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
3.1	Establish a Resource Management Officers Group to: <ul style="list-style-type: none"> Prepare a Waste Reduction Management Plan for GCC Services (i.e. set baseline, internal targets and actions); Promote waste segregation facilities in GCC properties; Co-ordinate production and distribution of information on the waste hierarchy and options for reduction, reuse and recycling 	Mitigation	Education	Direct	LES	DRS	January 2011
3.2	Construction and operation of a residual waste treatment facility: <ul style="list-style-type: none"> that at least 20% of all Municipal Solid Waste received is recycled/composted so as to contribute to Glasgow's recycling and composting targets in its Single Outcome Agreement and the emerging requirements of the Zero Waste Plan a capped tonnage of MSW received is allowed to be landfilled post treatment (circa 20% of input or fixed tonnage); and the remainder of all by-products from the treatment process are subject to beneficial reuse in a manner that fits with Glasgow's and the Scottish Government's policy objectives and emerging Zero Waste Plan the facility provides a community benefit e.g. potential provision of jobs and opportunities for local Small Medium sized Enterprise's in the construction phase and provision of education and awareness elements on resource management and sustainability 	Mitigation	Energy	Direct	LES		March 2013
3.3	Introduce a council wide intranet based system for exchanging or re-using unwanted items within the Council. Goods unwanted will then be offered to community sector organisations	Mitigation	Procurement	Direct	LES	Access	December 2011
3.4	Establish "recycling workplace champions" for Glasgow City Council	Mitigation	Education	Direct	LES	DRS	October 2010
3.5	Promote Site Waste Management Plans as a compulsory measure in all construction/ building sites developed by GCC/ GHA <ul style="list-style-type: none"> Council to sign Wrap "Halving Construction Waste to Landfill" commitment 	Mitigation	Planning and Built Environment	Direct	DRS	LES	October 2010
3.6	Provide glass kerbside collection service to all single households – approximately 75,000	Mitigation	Behaviour Change	Direct	LES		Complete in December 2010
3.7	Upgrade Polmadie Recycling Centre to increase the materials available to be deposited for recycling and to make the site easier to use for members of the public	Mitigation	Behaviour Change Energy	Direct	LES		February 2011
3.8	Undertake a communication campaign with the aim of improving the collection tonnages, recycling rate and quality of material collected	Mitigation	Education	Direct	LES		September 2010 and on-going
3.9	Increase types of material collected by kerbside collection systems and public recycling points e.g. cardboard	Mitigation	Energy Behaviour Change	Direct	LES		December 2010
3.10	Trials on composting food waste generated within the Cordia premises that provide school dinners to schools	Mitigation	Food	Direct	LES	Cordia ES	December 2010

Key Theme 4: Transport

No.	Action	Mitigation/Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
4.1	Establish a Climate Change Sustainable Transport Officers Group to: <ul style="list-style-type: none"> support GCC staff in making more sustainable travel choices highlight sustainable transport issues propose objectives for cycling, public transport, walking etc 	Mitigation	Education Health & Wellbeing Energy	Direct	DRS	LES SPT	January 2011
4.2	Produce a strategy for the City Centre designed to reduce traffic movements, reduce delays to Public Transport, improve the environment for cyclists and enable further improvements to the public realm.	Mitigation	Cultural and Natural Environment	Direct	DRS		October 2010
4.3	Establish Green Transport Plan Monitoring and Enforcement Officer	Mitigation	Cultural and Natural Environment	Direct	DRS	LES	December 2010
4.4	Establish a Personalised Travel Planning Service	Mitigation	Energy Cultural and Natural Environment	Direct	LES	SPT	August 2011
4.5	Produce a cycling strategy for Glasgow	Mitigation	Energy Cultural and Natural Environment Health & Wellbeing	Direct	LES	DRS Glasgow Life	June 2011
4.6	Draw up a policy to introduce workplace parking charges for the City Centre	Mitigation	Behaviour Change	Influence	LES	DRS	December 2012
4.7	Extend controlled parking zones to cover all major areas used for commuter parking	Mitigation	Behaviour Change	Direct	LES	DRS	Summer 2013
4.8	Remove illumination from all road signing not currently required by statute and replacing with reflective signing where necessary (including bollards)	Mitigation	Energy	Direct	LES	DRS	Summer 2014
4.9	Introduce policy requiring all road lighting for new developments to be low consumption LED luminaires	Mitigation	Energy	Direct	DRS	LES	December 2011
4.10	Continue to provide Cycle Proficiency training for schools	Mitigation	Education	Direct	LES	ES	Ongoing
4.11	Continue to implement City Plan policy on requirement to produce a green travel plan for appropriate developments	Mitigation	Built Environment	Direct	DRS		Ongoing
4.12	Implement Glasgow City Council Staff Travel Plans	Mitigation	Behaviour Change	Direct	LES	ALL	Ongoing
4.13	Facilitate the establishment of School Travel Plans in all schools	Mitigation	Behaviour Change Education	Direct	LES	AES	Ongoing
4.14	Facilitate walking as a sustainable, low carbon and healthy means of transport by: <ul style="list-style-type: none"> Providing information on walking routes Supporting the introduction of "walking buses" in Glasgow schools 	Mitigation	Energy Education Health & Wellbeing	Direct	DRS	LES	Ongoing
4.15	Facilitate cycling as a sustainable, low carbon and healthy means of transport by: <ul style="list-style-type: none"> Improving and adding to the existing cycle network Introducing the GCC staff Cycle to Work scheme 	Mitigation	Behaviour Change Health & Wellbeing	Direct	DRS	LES	Ongoing

4.16	Promote public transport as a sustainable and low carbon means of local transport by: <ul style="list-style-type: none"> Increasing the number of Quality Bus Corridors Encouraging use of public transport through the travelinescotland.com website 	Mitigation	Energy Behaviour Change	Direct	LES	DRS	Ongoing
4.17	Promote public transport as a sustainable and low carbon means of long distance transport by: <ul style="list-style-type: none"> Promoting a High Speed rail link to London and other major cities Supporting the Edinburgh-Glasgow Improvement Project (Rail Electrification) Supporting other Transport Scotland Rail Electrification Proposals 	Mitigation	Energy Behaviour Change	Influence	DRS	LES	Ongoing
4.18	Promote low carbon private transport by: <ul style="list-style-type: none"> Participating in the Ultra Low Carbon Vehicle Demonstration Programme Supporting the introduction of electric vehicles charging points 	Mitigation	Energy Behaviour Change	Direct	DRS	LES	Ongoing
4.19	Continue to enforce engine idling prohibitions	Mitigation		Direct	LES	DRS	Ongoing

Key Theme 5: Sustainable Procurement

No.	Action	Mitigation/ Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
5.1	Establish a departmental Sustainable Procurement Officers Group to ensure a corporate approach to sustainable procurement: <ul style="list-style-type: none"> Supporting the development of a Glasgow sustainable procurement policy Promoting sustainable procurement within GCC Services Advising on the introduction of an action plan to take these matters forward 	Both	Education	Direct	Corporate Procurement Unit	ALL	January 2011
5.2	Develop a Sustainable Procurement Policy	Mitigation	Education Behaviour Change	Direct	Corporate Procurement Unit	DRS	October 2010
5.3	Develop a Sustainable Procurement Action Plan (to align with the Scottish Government Plan) which will consider: <ul style="list-style-type: none"> Training procurement officers and other GCC staff on the climate change impact of their procurement decisions Whole life costing models Discussions with suppliers on our changing requirements regards climate change Use of Carbon Footprint software to analyse GCC procurement decisions 	Mitigation	Education Behaviour Change	Direct	Corporate Procurement Unit	DRS	October 2010
5.4	Build on existing requirements to further consider sustainable procurement in the GCC Procurement Toolkit	Mitigation		Direct	Corporate Procurement Unit		October 2010 to September 2011
5.5	Introduce Sustainable Procurement Key Performance Indicators	Mitigation		Direct	Corporate Procurement Unit		October 2010 to September 2011
5.6	Complete benchmarking exercise against the Office of Government Commerce "Quick Wins" sustainability specifications	Mitigation		Direct	Corporate Procurement Unit		October 2010 to September 2011
5.7	Assess procurement processes against the UK Sustainable Procurement Task Force Flexible Framework	Mitigation		Direct	Corporate Procurement Unit		October 2010 to September 2011
5.8	Influence Procurement Scotland and Scotland Excel to adopt further sustainable specifications as an option in the tendering process	Mitigation		Influence	Corporate Procurement Unit		Ongoing
5.9	Examine further the climate change impacts of GCC food procurement including fair and ethically traded products	Mitigation	Food Behaviour Change	Direct	Corporate Procurement Unit	Cordia	March 2011
5.10	Participate in Sustainable Scotland Network Sustainable Procurement Steering Group and other relevant procurement groups to ensure Glasgow sustainability requirements are considered	Mitigation		Influence	Corporate Procurement Unit		Ongoing

Key Theme 6: Cultural and Natural Heritage

No.	Action	Mitigation/ Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
6.1	Establish a Climate Change Cultural and Natural Heritage Officers Group to: <ul style="list-style-type: none"> Review GCC Cultural and Natural Heritage Policies in terms of the City's Climate Change objectives Collate and present information on the impacts of climate change on cultural and natural heritage Outline current GCC activities, baselines and targets on these matters & identify future actions 	Both	Education	Direct	DRS	LES	January 2011
6.2	Finalise and implement the Open Space Strategy and quality audit map	Both	Planning and Built Environment Water	Direct	DRS		December 2010
6.3	Continue to develop the Glasgow Strategic Greenspace Partnership	Both		Both	DRS		Ongoing
6.4	Prepare a City-wide Ecosystem Plan to promote a diverse range of geodiversity & biodiversity in the City and help to mitigate the immediate effects of Climate Change	Both	Water	Direct	DRS		March 2011
6.5	Continue the development of Growing Spaces through the Implementation of the Open Space Strategy; the Council's 2009 - 2013 Allotments Strategy and the Green Network. This includes specific action with communities such as schools and local neighbourhoods	Mitigation	Education Food	Direct	DRS		Ongoing
6.6	Be an active partner in the delivery of the Central Scotland Green Network and the Glasgow & Clyde Valley Green Network	Both	Education	Direct	DRS		Ongoing
6.7	Develop guidance and advice on the development of stalled spaces for cultural and natural environmental uses on a temporary basis	Both	Education Food	Direct	DRS		Ongoing

Key Theme 7: Water

No.	Action	Mitigation/Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
7.1	<p>Establish a Climate Change Water Officers Group:</p> <ul style="list-style-type: none"> Co-ordinate design advice on water efficiency, quality and conservation for new developments and retrofits Raise awareness of water efficiency to all relevant GCC staff Produce a management plan to set baselines and targets Highlight water conservation issues 	Both	Education	Both	DRS	LES	January 2011
7.2	<p>Implement Surface Water Management Strategy:</p> <ul style="list-style-type: none"> Development of Surface Water Management Plans for all drainage catchments of Metropolitan Glasgow Reduction of surface water run-off to drainage systems Creation of an effective drainage infrastructure across Glasgow Identify areas vulnerable to flooding during extreme events Identify suitable sites for SUDS 	Adaptation	<p>Cultural and Natural Heritage</p> <p>Planning and Built Environment</p>	Direct	DRS		Ongoing
7.3	Carry out audits on water consumption in GCC properties and implement recommendations to reduce consumption	Mitigation	Energy	Direct	DRS		Ongoing
7.4	Complete the White Cart Water Flood Prevention Scheme	Adaptation	<p>Cultural and Natural Heritage</p> <p>Planning and Built Environment</p>	Direct	DRS		Summer 2011
7.5	Continue to work with our partners on the River Clyde Flood Strategy Commission to identify and develop flood protection measures	Adaptation		Direct	LES	DRS	Ongoing
7.6	Establish a Water Efficiency Award Scheme for GCC Services	Both	<p>Education</p> <p>Behaviour Change</p>	Direct	DRS	LES	March 2011
7.7	Promote grey water recycling and rainwater harvesting	Both	Planning and Built Environment	Both	DRS		Ongoing
7.8	Development of preliminary flood risk assessment of the City	Adaptation	<p>Cultural and Natural Heritage</p> <p>Planning and Built Environment</p>	Both	DRS	LES	December 2011
7.9	Development of flood risk and hazard maps for the City	Adaptation	<p>Cultural and Natural Heritage</p> <p>Planning and Built Environment</p>	Both	DRS	LES	December 2013

Key Theme 8: Planning & Built Environment

No.	Action	Mitigation/ Adaption	Crosscutting	GCC Role	Lead Service	Relevant Service/ Partner	Timescale
8.1	<p>Establish a Climate Change Planning & Built Environment Officers Group</p> <ul style="list-style-type: none"> Produce a management plan to set baselines and targets Include mitigation and adaptation policies in City Plan 3 process Prepare planning guidance 	Both	Education	Both	DRS	LES	January 2011
8.2	Ensure that Environmental Justice continues to form part of the Council's strategic approach to climate change and the City's local climate impact profile and scenario planning	Both	Health and Wellbeing Equalities	Both	DRS	ALL	Ongoing
8.3	Ensure that the Glasgow 2014 sustainability commitments are met for both the Games and legacy	Mitigation	Energy Transport Cultural and Natural Heritage Health and Wellbeing	Direct	DRS	ALL	Ongoing
8.4	Continue to work with the Carbon Trust to promote and implement Low Carbon Building Design Advice	Mitigation	Energy	Direct	DRS	Carbon Trust	Ongoing
8.5	Establish, monitor and reduce the city's ecological footprint	Mitigation	Energy Cultural and Natural Heritage	Direct	DRS	LES	September 2010 Annual Report
8.6	Prepare a supplementary guidance note on the use of green roofs	Mitigation	Cultural and Natural Heritage	Both	DRS		September 2010
8.7	Carry out thermal imaging across the City	Mitigation	Energy	Direct	DRS		April 2011
8.8	Continue to lead and develop Sustainable Glasgow with our partners	Both	Energy Transport Waste Education	Direct	DRS	SGI	Ongoing
8.9	Develop the Energy & Carbon Masterplan	Both	Energy	Direct	DRS	ALL	Ongoing



CLIMATE CHANGE - GLOSSARY OF TERMS

A

Adaptation - Action that helps cope with the effects of Climate Change - for example construction of barriers to protect against rising sea levels, or conversion to crops capable of surviving high temperatures and drought.

Anthropogenic Climate Change - Climate Change caused by human activity as opposed to natural processes.

B

Baseline (for cuts) - The year against which countries measure their target decrease of emissions. The Kyoto Protocol uses a baseline year of 1990. Some countries prefer to use later baselines. Climate Change legislation in the United States, for example, uses a 2005 baseline.

Biofuel - A fuel derived from renewable, biological sources, including crops such as maize and sugar cane, and some forms of waste.

Business as usual - A scenario used for projections of future emissions assuming no action, or no new action, is taken to mitigate the problem. Some countries are pledging not to reduce their emissions but to make reductions compared to a business as usual scenario. Their emissions, therefore, would increase but less than they would have done.

C

Carbon dioxide (CO₂) - Carbon dioxide is a gas in the Earth's atmosphere. It occurs naturally and is also a by-product of human activities such as burning fossil fuels. It is the principal greenhouse gas produced by human activity.

Carbon dioxide (CO₂) equivalent - Six greenhouse gases are limited by the Kyoto Protocol and each has a different global warming potential. The overall warming effect of this cocktail of gases is often expressed in terms of carbon dioxide equivalent - the amount of CO₂ that would cause the same amount of warming.

Carbon footprint - The amount of carbon emitted by an individual or organisation in a given period of time, or the amount of carbon emitted during the manufacture of a product.

Carbon neutral - A process where there is no net release of CO₂. For example, growing biomass takes CO₂ out of the atmosphere, while burning it releases the gas again. The process would be carbon neutral if the amount taken out and the amount released were identical. A company or country can also achieve carbon neutrality by means of carbon offsetting.

Carbon offsetting - A way of compensating for emissions of CO₂ by participating in, or funding, efforts to take CO₂ out of the atmosphere. Offsetting often involves paying another party, somewhere else, to save emissions equivalent to those produced by your activity.

Carbon sink - Any process, activity or mechanism that removes carbon from the atmosphere. The biggest carbon sinks are the world's oceans and forests, which absorb large amounts of carbon dioxide from the Earth's atmosphere.

CFCs - The short name for chlorofluorocarbons - a family of gases that have contributed to stratospheric ozone depletion, but which are also potent greenhouse gases. Emissions of CFCs around the developed world are being phased out due to an international control agreement, the 1989 Montreal Protocol.

Climate Change - A pattern of change affecting global or regional climate, as measured by yardsticks such as average temperature and rainfall, or an alteration in frequency of extreme weather conditions. This variation may be caused by both natural processes and human activity. Global warming is one aspect of Climate Change.

COP15 - The official title of the Copenhagen conference, which took place from 7-18 December 2009. Alternatively, it can be called the 15th Conference of the Parties to the United Nations Framework Convention on Climate Change (UNFCCC).

D

Dangerous Climate Change - A term referring to severe Climate Change that will have a negative effect on societies, economies, and the environment as a whole. The phrase was introduced by the 1992 UN Framework Convention on Climate Change, which aims to prevent “dangerous” human interference with the climate system.

Deforestation - The permanent removal of standing forests that can lead to significant levels of carbon dioxide emissions.

E

Eco Schools - Schools work towards gaining one of three awards – Bronze, Silver and the prestigious Green Flag award. Bronze and Silver are both self accredited through this website and Green Flag is externally assessed by Keep Britain Tidy.

Emission Trading Scheme (ETS) - A scheme set up to allow the trading of emissions permits between business and/or countries as part of a cap and trade approach to limiting greenhouse gas emissions. The best-developed example is the EU's trading scheme, launched in 2005.

F

Fossil fuels - Natural resources, such as coal, oil and natural gas, containing hydrocarbons. These fuels are formed in the Earth over millions of years and produce carbon dioxide when burnt.

G

Green Flag Award - (Eco Schools Programme) symbolises excellence in the field of environmental activity.

Global warming - The steady rise in global average temperature in recent decades, which experts believe is largely caused by man-made greenhouse gas emissions. The long-term trend continues upwards.

Global Warming Potential (GWP) - A measure of a greenhouse gas's ability to absorb heat and warm the atmosphere over a given time period. It is measured relative to a similar mass of carbon dioxide, which has a GWP of 1.0. So, for example, methane has a GWP of 25 over 100 years, the metric used in the Kyoto Protocol. It is important to know the timescale, as gases are removed from the atmosphere at different rates.

Greenhouse gases (GHGs) - Natural and industrial gases that trap heat from the Earth and warm the surface. The Kyoto Protocol restricts emissions of six greenhouse gases: natural (carbon dioxide, nitrous oxide, and methane) and industrial (perfluorocarbons, hydrofluorocarbons, and sulphur hexafluoride).

Greenhouse effect - The insulating effect of certain gases in the atmosphere, which allow solar radiation to warm the earth and then prevent some of the heat from escaping. See also Natural greenhouse effect.

H

Hockey stick - The name given to a graph published in 1998 plotting the average temperature in the Northern hemisphere over the last 1,000 years. The line remains roughly flat until the last 100 years, when it bends sharply upwards. The graph has been cited as evidence to support the idea that global warming is a man-made phenomenon, but some scientists have challenged the data and methodology used to estimate historical temperatures. (It is also known as MBH98 after its creators, Michael E. Mann, Raymond S. Bradley and Malcolm K. Hughes.)

I

IPCC - The Intergovernmental Panel on Climate Change is a scientific body established by the United Nations Environment Programme and the World Meteorological Organization. It reviews and assesses the most recent scientific, technical, and socio-economic work relevant to Climate Change, but does not carry out its own research. The IPCC was honoured with the 2007 Nobel Peace Prize.

J

K

Kyoto Protocol - A protocol attached to the UN Framework Convention on Climate Change, which sets legally binding commitments on greenhouse gas emissions. Industrialised countries agreed to reduce their combined emissions to 5.2% below 1990 levels during the five-year period 2008-2012. It was agreed by governments at a 1997 UN conference in Kyoto, Japan, but did not legally come into force until 2005.

M

Methane - Methane is the second most important greenhouse gas caused by human activity. Sources include both the natural world (wetlands, termites, wildfires) and human activity (agriculture, waste dumps, leaks from coal mining).

Mitigation - Action that will reduce man-made Climate Change. This includes action to reduce greenhouse gas emissions or absorb greenhouse gases in the atmosphere.

N

Natural Greenhouse Effect - The natural level of greenhouse gases in our atmosphere, which keeps the planet about 30°C warmer than it would otherwise be - essential for life as we know it. Water vapour is the most important component of the natural greenhouse effect.

P

Per-capita emissions - The total amount of greenhouse gas emitted by a country per unit of population.

Pre-industrial levels of carbon dioxide - The levels of carbon dioxide in the atmosphere prior to the start of the Industrial Revolution. These levels are estimated to be about 280 parts per million by volume (ppmv). The current level is around 380 ppmv.

R

S

Stern review - A report on the economics of Climate Change led by Lord Nicholas Stern, a former World Bank economist. It was published on 30 October 2006 and argued that the cost of dealing with the consequences of Climate Change in the future would be higher than taking action to mitigate the problem now.

T

U

UNFCCC - The United Nations Framework Convention on Climate Change is one of a series of international agreements on global environmental issues adopted at the 1992 Earth Summit in Rio de Janeiro. The UNFCCC aims to prevent “dangerous” human interference with the climate system. It entered into force on 21 March 1994 and has been ratified by 192 countries.

W

Weather - The state of the atmosphere with regard to temperature, cloudiness, rainfall, wind and other meteorological conditions. It is not the same as climate which is the average weather over a much longer period.



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