



**One
Planet
Cardiff**

Our vision for a
**Carbon Neutral
City** by 2030



This document is available in Welsh /
Mae'r ddogfen hon ar gael yn Gymraeg



Executive Summary

One Planet Cardiff – a strategic response to the climate emergency.

The effects of climate change are already shaping our lives. As Greenhouse Gas emissions have increased, Cardiff has experienced all of the key symptoms of man-made climate change, including erratic weather patterns, air pollution, heatwaves and changes in biodiversity. This has also come with associated economic and social costs as businesses and citizens have struggled with issues like flood damage, poor air quality and other interruption to their daily lives.

The time has come for us take urgent and decisive action and the Council has already declared a **climate emergency** in recognition of this. **The One Planet Cardiff Strategy** sets out our strategic response to this emergency. This document presents a detailed vision for how we might become a **Carbon Neutral Council**, and also a **Carbon Neutral City by 2030**. The draft Strategy proposes a wide range of ambitious actions that will begin to form the basis of a delivery plan to achieve Carbon Neutrality. It aims to do this in a way that supports new green economies and greater social wellbeing in the city.

We've already started the journey. Many decarbonisation initiatives are underway around green infrastructure, built environment, energy, transport, food, waste and water. These projects have already demonstrated a key shift in our thinking and a series of more ambitious projects is already agreed and in development. However, we know we need to do more, to speed up our actions and to take bold and impactful decisions that engage and encourage citizens and partners to make the shift to a **Carbon Neutral City**.

The ambitions outlined in the strategy represent those that we believe will deliver real impact, steering us towards a cleaner, greener and decarbonised future in Cardiff. If implemented in the right way, their delivery also offers opportunities to build new sustainable jobs and economic sectors, and ultimately to secure greater social wellbeing and equity in the City and the region.

The development of the Strategy has coincided with the Covid19 pandemic and it is clear that the two emergencies, and our response to them, cannot be mutually exclusive. The One Planet Cardiff Strategy therefore seeks to prioritise projects and initiatives that can stimulate a "green recovery", supporting both environmental and economic goals.

We'd like your views and input to help us shape and prioritise these actions and to help us understand what the barriers are to making these changes so we can help overcome them.



The time has come for us take urgent and decisive action and the Council has already declared a climate emergency in recognition of this. The One Planet Cardiff Strategy sets out our strategic response to this emergency.



The 7 Key Themes of the Strategy



Energy - This includes how energy is used, how it's sourced, distributed and generated. Our aim is to use less, to source more from clean renewable sources, and to help build business around this growing sector.



Built Environment and Housing Quality - This comprises existing and planned buildings and infrastructure. We need to constantly improve the energy efficiency and resilience of our new and existing buildings and communities, and capture the skills and jobs required to achieve this for the benefit of the local economy.



Green Infrastructure - Our integral green spaces and biodiversity need to be protected and enhanced. We need to take bold steps to add to the natural green assets of the city making a healthy, clean, biodiverse, environmentally positive place in which citizens and business can thrive.



Transport - We need to look closely at how we move around the city and at the infrastructure required to minimise the impact of vehicle emissions and air quality. Our plans are to replace as many single user, fossil fuelled trips as possible with sustainable low carbon modes of travel, whilst ensuring that they don't simply migrate problems elsewhere.



Waste Management - By reducing waste production, making thoughtful procurement decisions, and by recycling what waste is produced in the right way, we can reduce our carbon footprint. We also recognise that certain waste can be an important low carbon energy source, helping to build new, clean, local and resilient economic activity.



Food - The production, transportation, processing and disposal of food is a major source of emissions and our proposals are aimed at supporting smarter, more localised and more socially equitable food systems, that could also boost the local food economy.



Water - How we source, use and manage water, and how we protect ourselves against drought and flooding are crucial parts of our aims to build climate resilience and the strategy outlines a series of current and future responses to this challenge.

The Vision for a Carbon Neutral City by 2030

We need to respond to the Climate Emergency across the city and the Council is in a position to lead by example and act as a focal point for this response.

We will set a target for the Council's operations to be Carbon Neutral by 2030

and

We will work with city wide partners to develop a road map and action plan for a Carbon Neutral City by 2030.

By pro-actively addressing the factors that contribute to the Climate Emergency we can build a cleaner, healthier and more equitable city with a higher quality of life and a thriving, more resilient economy.

The journey to becoming a carbon neutral city by 2030 isn't going to be easy. Challenges include lack of up-to-date and locally relevant data, financial and technological limitations, and institutional constraints. It also requires a meaningful shift in social values, attitudes and behaviours. However, we have already demonstrated how, as a society, we can make fundamental shifts in our behaviour and rapidly adapt. Addressing and being mindful of these challenges, in order to encourage constructive shifts, will be a critical part of our response to climate change. We all need to work together to make a difference.

Are you up for the challenge?



We will set a target for the Council's operations to be Carbon Neutral by 2030 and we will work with city wide partners to develop a road map and action plan for a Carbon Neutral City by 2030



Potential priority projects

Analysing the diverse range of projects in the Strategy, especially in the context of the COVID 19 emergency, has identified a series of clear opportunities to support a Green Recovery. The projects listed below are those that we know we need to provide focus to in the short term, and we'll be developing business cases and implementation plans for these during the consultation process so that we can be ready to respond early.

It is important to recognise that the scale of some of the projects proposed is significant. Therefore it will be essential to understand this process with key regional and national partners. Some of the proposals are within the Council's direct control whilst others will require co-ordinated city, regional or even national effort. They include:

Largescale Housing retrofit – Under-insulated housing is a major source of community (fuel) poverty, poor air quality and energy wastage across the city. Upscaling and accelerating work to make existing homes more energy efficient and comfortable not only addresses this but could also stimulate new areas for skills development and employment. We'll be developing our ideas and funding proposals on this to present to potential delivery partners who could assist us in realising this ambition, possibly at a regional or national scale.

Resilient Development: We will be moving forward with a range of planning policy and guidance to facilitate and maximise low energy, resource efficient and resilient development across the city. Crucially, we'll also be leading by example in this in our own construction activities.

Low Cost Efficient Energy – we'll be investigating a new pipeline of clean energy generation schemes in the city, developing detailed business cases for the most promising. We'll be investigating all of the local opportunities, including potential tidal power, so that we can fully understand the Council's facilitating role in some of the more challenging but potentially beneficial projects.

Low Energy Healthy Transport – our sustainable/ active travel projects are increasingly visible across the city, and we need strong and continued focus on these. However we also see opportunity in supporting the early roll-out of Ultra Low Emission Vehicles and charging infrastructure to help decarbonise those types of journeys that are more difficult to make sustainable, including freight and waste management. We have a number of potential projects relating to EV infrastructure, localised hydrogen fuel production, and supporting wider access to Electric Car Clubs. We'll be assessing and promoting the partnership and funding structures that will be needed to deliver the best of these.

Greening the City – increased tree coverage and smarter maintenance and planting regimes will form important features of a future low carbon Cardiff. Ideas for a City Tree Farm concept and biodiversity friendly land management could help to deliver this and could also bring new skills and employment. We'll be looking closely at the business models needed to bring these aspirations to life.

Sustainable Low Cost Healthy Food - the Covid lockdown highlighted the City's imbalance in access to healthy affordable food. We already have great examples of Local Food Pantries providing better access to food for those in need, and sight of the increasingly sophisticated methods available to deliver sustainable Urban Farming. We're looking at how our underused land assets and procurement activities (especially in feeding thousands of school children) could be used to support an enlarged, more sustainable and healthier food economy for the city.

Procurement - the Council's global annual spend is significant. It has a direct impact on the local economy and the associated activities generate a large carbon footprint in their own right. We'll be instigating "circular economy" training for specifiers so that our contracts are more accountable for their climate consequences, and we will also start to investigate procurement policies which could attract and support suppliers to deliver lower carbon goods and services.

Foreword

Climate change is one of the defining global challenges of our generation.

The accumulative impacts of climate change, including rising sea levels, poor air quality and extreme weather events, are putting tens of millions of people across the globe at direct risk. These issues are already impacting the Cardiff area and its population. Our actions in the coming decade are crucial; they will define the shape and wellbeing of our society and our planet for generations to come.

In 2019, Cardiff Council declared a Climate Emergency. This means we as an organisation recognise the challenge and are prepared to play our part. Alongside other cities around the world, we are committed to taking the action needed to prevent climate change becoming much worse.

Furthermore, our actions will now be set in the unforeseen context of the global Coronavirus pandemic, a severe, immediate global health crisis unseen since the Spanish Flu in 1918. The devastating personal and economic impact of COVID-19 will require the rebuilding of both lives and economies over the coming years.

In response to the COVID-19 risk, the world has had to rapidly make fundamental changes in the way we live and work, exposing strengths and weaknesses in our society and economy – revealing gaping inequalities and lack of preparedness but also highlighting the initiative, innovation and humanity of individuals and communities. The two crises and our response to them cannot be mutually exclusive. We recognise there is a way of emerging from the COVID-19 crisis that allows us to adopt some of these learnings and lifestyle changes to help tackle climate change, to live more sustainably, healthily, equitably and considerately to our fellow humans and our future generations.

We've seen nature reclaiming the streets, clearer skies as pollution levels drop and we've cherished green spaces to exercise and support our wellbeing.

We've enjoyed cleaner air and, for some getting back to basics of growing and cooking food, relying on local supply chains, and spending more time with our families.

But as we emerge from the Covid crisis we need to do everything we can to capture and extend these benefits, and to avoid a rebound back to the position we were at before the world changed so dramatically. We need to be bold, ambitious and challenging, and work pro-actively and co-operatively with city-wide partners and stakeholders to prioritise and deliver actions that will have a real and lasting impact on the Climate Emergency agenda, whilst also improving social outcomes and sustainable economics for our future generations.

We recognise that making the right choices now will set us on the path to net zero, driving a long-term downward trend in Greenhouse Gas emissions. By pursuing the right recovery projects in the right ways, we can ensure that the city can thrive within acceptable environmental limits. We will be seeking the views of the public and stakeholders to prioritise these options and actions.

The Scale of the Challenge

It's estimated that the lockdown events of 2020, with dramatic reductions in air and road travel and significantly reduced manufacturing output, could result in global Carbon Dioxide Emissions reducing by around 8% (IEA 2020) which is more than any other year on record.

However, the UN Environment Programme estimates that global GHG emissions must fall by 7.6% every year from 2020—2030 to keep temperature increases to less than 1.5%.

This is a stark demonstration of the scale of the challenge and the need for urgent, impactful and co-ordinated action.



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One Planet Cardiff

This document sets out our ambition to be a One Planet Cardiff (OPC) and **we call on the city to work with us and adopt a goal of becoming Carbon Neutral by 2030**. It also includes immediate and long term action that the Council can take to help reach the goal of becoming Carbon Neutral in it's own activities by 2030.

We have a unique opportunity to build upon the huge shift in the way we work and live that we've had to make in response to COVID-19, preserving some of the key environmental gains and shaping our recovery to embed climate resilience across Cardiff, with equity, wellbeing, sustainability and prosperous green growth for all at its core.

The One Planet Cardiff vision will be the driver for a green recovery that delivers economic, environmental and social goals together; a decade of delivery to mitigate the impacts of climate change, embed climate resilience and underpin sustainable and equitable economic growth.

We need to focus economic growth so that it can help reduce greenhouse gas emissions and facilitate a thriving city operating within environmental limits. We want to deliver equity and social benefits through decisive intervention measures that also prevent an emissions rebound; it's clear that careful policy decisions now can set us on a path to Zero Carbon and that focusing on delivery of a green

economic recovery can result in many co-benefits if we approach it in the right way, with city wide collaboration at the heart of a delivery strategy.

One Planet Cardiff sets out our ambition for a fundamental plan of action to address climate change across the city and we'd welcome your input, feedback and ideas to help shape this.



Cardiff today is a THREE planet city: If everyone in the world consumed natural resources and generated carbon dioxide at the rate we do in Cardiff, we would need three planets to support us. This is not sustainable for us, or equitable to those we share the planet with.

Our aspiration is to become a One Planet City, living and thriving within our environmental means.



One Planet Cardiff sets out our ambition for a fundamental plan of action to address climate change across the city and we'd welcome your input, feedback and ideas.



Next steps

This document sets out the Council's and the city's challenges around the Climate Emergency and catalogues the actions that we've taken, or have agreed to take, in addressing these to date. We know that there is much more to do. This document therefore also sets out our strategic thinking and ambitions for an upscaling of our Carbon Reduction and Climate Emergency work.

We now need to gather as many comments and views on these proposals as possible to ensure that we're targeting the correct issues and prioritising those with the highest and fastest impacts. To help us in this:

- We'll be consulting on this vision over the next few months;
- In parallel we will also be developing business cases and implementation plans for key projects to determine detailed costs and benefits, and;
- We'll also progress our work to develop better, more efficient benchmarking and monitoring systems to measure our progress and to help set our priorities. In this context we need to be sure that the projects we deliver and support are those that stand to achieve the highest and most cost effective impacts across all of our environmental, economic and social goals.

We will then develop and publish a final "One Planet Cardiff Strategy" early next year which will formally set the direction for our decarbonisation ambitions and provide a clear delivery plan for our short, medium and long term actions.



We now need to gather as many comments and views on these proposals as possible to ensure that we're targeting the correct issues and prioritising those with the highest and fastest impacts.



What are we getting on with?

The Climate Change journey is not new. We have been working to reduce Cardiff's carbon dioxide emissions and increase its climate change resilience for many years, with projects like Greener Grangetown sustainable urban drainage scheme, our Low Emission Vehicles Strategy and sustainable council housing.

The development of a solar farm and other renewable energy and energy efficiency schemes being key to this agenda.

Best Practice Examples of Climate Response to Post COVID-19 Recovery in other Cities

#Buildbackbetter Liverpool and Manchester are reviewing policy in light of COVID-19 to rethink how we emerge from the pandemic in a more equitable and sustainable way, utilising the green economy to stimulate economic growth and prosperity. Amsterdam's recovery plan embraces 'Doughnut Economics' for people and planet, an economic model that meet the needs of all people within the means of the living planet.

Milan has announced 35km of road around the city will be transformed to facilitate active travel in 2020 post COVID-19. New Zealand in 2020 has committed \$1.1bn to create 11,000 'nature' jobs to restore the environment and enhance biodiversity.

What are we getting on with?

However, we know that we must do more, and crucially, we must do it faster. We recognise that the cost of doing nothing will be higher than the cost of acting decisively now, catalysing a decade of delivery to respond to the crisis.

We are already accelerating action around opportunities to develop decentralised district hubs to facilitate flexible working, increasing safe, sustainable travel options and we hope to accelerate the many other ambitious measures set out in the strategy.

We're currently delivering some major projects that will increase local resilience including:

The Transport White Paper

Changes are being made to prioritise cycling and walking around the city, but the additional measures now necessary to ensure social distancing in key spaces also have potential to reduce traffic emissions and improve local air quality further and faster than expected. Schemes like Castle Street improvements and the creation of more pedestrian space in district centres have already been implemented as a joint environmental and Covid response.

A City Wide Sustainable Heat Network

In early 2020, Cardiff Council secured UK Government Heat Network Investment Project funding to develop a city wide heat network, utilising in part heat from the Viridor waste incinerator, a by-product of dealing with the hardest to treat waste that can't be reduced, reused or recycled.

A 9 Mega Watt Solar Farm

A renewable energy farm is now installed at the former Lamby Way landfill site that will supply renewable electricity to the city sewage treatment works helping to decarbonise both this facility and the local energy grid

Built Environment and Green Infrastructure

We're working to decarbonise and future proof our Local Development Plan to reflect our carbon neutral ambitions and working to enhance our green infrastructure to support decarbonisation and enhance biodiversity and green spaces across the city through our Biodiversity Plan. We're preparing a property strategy to manage our own building portfolio and the recent successes of agile working triggered by the lockdown have started to shape our thinking for the longer term. We've also facilitated the installation of energy efficiency measures in thousands of homes and have ensured that all new Council houses are constructed to high environmental standards

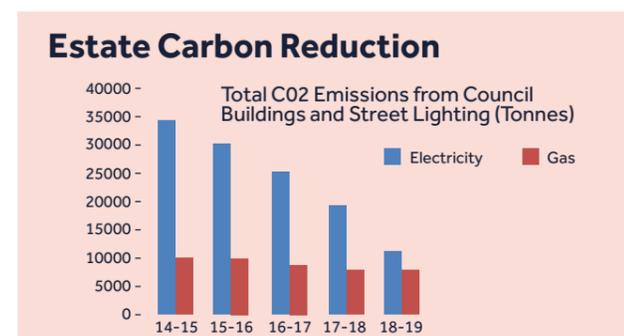
Collaboration

We've established a Climate Emergency Partnership Board made up of large public sector organisations in the city to share best practice and agree and drive forward a city wide carbon neutral target.

Scenario Planning

Our risk team use scenario planning to assess possible future risks to the city from the impacts of climate change.

This helps us plan to adapt and build climate change resilience across the city building in climate risk to our policies to support the assessment of infrastructure and investment to future proof our city, considering multiple benefits of ambitious projects such as a Cardiff tidal lagoon.



Cardiff Housing Partnership

- 2,000 affordable homes planned
- 97 built
- All exceeding national energy ratings



Housing Retrofit (since 2013)

- 1,194 External Wall Insulation
- 8,455 internal insulation and boiler upgrades



Council Owned Renewables

Solar 38 estate = 344 tCO2 100 Houses = 60 tCO2	Renewable Heat Approx 10 = ?
Hydro Radyr Weir = 600 tCO2	

Electric Vehicle Infrastructure

- 18 on street chargers installed
- 6 Rapid chargers secured
- Chargers procured for fleet in council buildings
- Electric Bus Grant

Transport White Paper

- Clean Air Policy
- Socially Responsible Procurement Strategy
- Parks Management and i-Tree study
- Greener Grangetown

What are we gearing up for?

One Planet Cardiff sets out wide ranging projects and actions to deliver a Carbon Neutral City and Council by 2030. In reviewing this document during the COVID-19 situation, we recognise that accelerating these ambitious and scaled programmes of work could deliver an economic recovery and tackle climate change together alongside a host of other equity, sustainability

and wellbeing benefits, resulting in a city thriving within environmental limits. This programme will require citizen engagement and city wide collaboration. We know we need to do this in partnership with all stakeholders across the city, bringing everyone on the journey. In particular, the lockdown has illuminated the following issues as key areas for us to explore in the immediate short term:

ACCELERATED ACTION ON:	WHAT ARE THE BENEFITS AND CO-BENEFITS?
Large Scale Housing and Development Retrofit	Accelerating and expanding this workstream could bring new jobs, skills and economic activity that directly delivers carbon reduction and social equity. It could release growing numbers of residents from fuel poverty and alleviate health conditions exacerbated by under-insulated, cold and damp homes.
Resilient Development	We will be moving forward with a range of planning policy and guidance to facilitate and maximise low energy, resource efficient and resilient development across the city. We will lead by example in our own and our partners construction activities.
Low Cost Efficient Energy Generation	Identifying a pipeline of clean energy generation projects across the city including strategically important and ambitious projects such as a tidal lagoon would bring jobs and climate benefits, and enhancing Cardiff's resilience and reputation as a clean and sustainable place to live and work and act as a catalyst for a wider green energy cluster in the city region.
Low Energy Active Transport	A meaningful shift away from private car use could be further enhanced and facilitated by supporting Ultra Low Emission Vehicles and Car Clubs, rolling out charging infrastructure and enhancing active travel routes to reduce the need for car ownership and its associated emissions and bringing greater social equity, climate change and crucially public health benefits by reducing air pollution.
Greening the City	Increased tree coverage and smarter maintenance and planting regimes will form important features of a future low carbon Cardiff. Ideas for a City Tree Farm concept and biodiversity friendly land management could help to deliver this and could also bring new skills and employment as well as enhancing wellbeing of citizens. We will examine the business models required to bring these aspirations to life.
Low Carbon Affordable Food	The lockdown has both highlighted the social disparities in access to healthy food and underlined the growing support for more resilient local food chains. This will help reprioritise actions in our food strategy to focus on delivering resilience and social equity.
Procurement	The Council's global annual spend is significant contributing directly to the local economy. By considering circular economy models and reviewing contracts to ensure they are more accountable for their climate consequences, we can catalyse supplier innovation to deliver lower carbon goods and services ultimately enhancing resilience.

This programme will require citizen engagement and city wide collaboration. We know we need to do this in partnership with all stakeholders across the city, bringing everyone on the journey.

Co-Benefits

Co-benefits are what happen when by tackling one agenda, we realise significant benefits in other areas.

Tackling climate change will deliver multiple benefits across all Council functions and every aspect of society, from private business to citizens and residents of Cardiff, and the Planet Earth. It is no longer an add on or 'nice to have' option, it is an essential part of a thriving economy.

Collaboration is key. For planning, for delivery and to realise the multiple Co-benefits of actions to alleviate the impacts of climate change.

Some examples include:

Transport: A resilient city economy requires transport to change. The health consequences of poor air quality have an unacceptable social and economic cost and so a solution is essential for a thriving City

Tackling transport to reduce the number of polluting diesel and petrol cars on the road will not only reduce carbon emissions, but crucially improve air quality, health, wellbeing and equity as more flexible transport options are available including safe cycling, scooting and walking routes and flexible car clubs that reduce the need for car ownership come online. We'll also prepare a 'last mile' strategy with city stakeholders to reduce the impact of freight into and around the city.

Social Equity: Mass retrofit of homes will not only improve the quality of homes, improving comfort, health and wellbeing, but will also alleviate fuel poverty as houses take less energy to heat and run, create skilled jobs to deliver the improvements whilst also reducing carbon emissions as heat and electricity aren't wasted.

Waste Management: Our primary aim is reduce the amount of overall waste generated, and secondly to deal with waste that is generated in the most sustainable way, prioritising reuse, recycling and energy recovery. Our decisions around waste treatment for the city have now facilitated development of a heat network that will delivery low carbon heat to key buildings around the city.

A Green Economic Recovery: Delivering mass retrofit of homes, accelerated renewable energy generation roll out, road works and improvements to modernise our transport options ultimately requires skilled jobs and economic activity. Modernising the city to reflect our forward looking ambition and policies will create local jobs, but also enhance the attractiveness to potential investors and citizens as a contemporary place to do business.

Co-Benefits: New ways of thinking & assessing priorities

The world faces twin challenges: delivering a decent standard of living for everyone, whilst living within our environmental limits.

The Doughnut model is one example that brings these dynamics together visually to demonstrate that, just as beyond the environmental ceiling lies unacceptable environmental stress, beneath the social floor lies unacceptable human deprivation.

The model visualizes a space between planetary boundaries and a social floor where it is environmentally safe and socially just for humanity to exist; it highlights the main social and environmental issues that we face today.

In relation to One Planet Cardiff, we must be mindful of the complex interactions between all social and environmental aspects. But embedding climate change at the heart of our decision making will have a positive impact on many of the social elements of our society too.

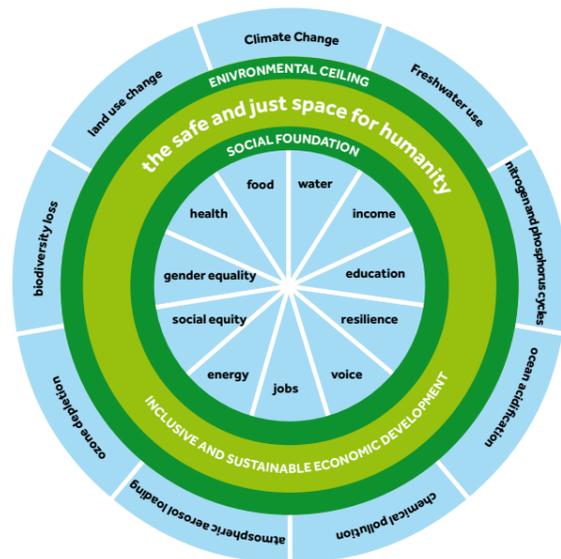
Fundamental to our decision making are people, their standard of living, and equity in our society and city. We need to balance the issues to make informed,

evidence based choices and decisions, engaging everyone in the messaging that small choices can have a big impact.

Humanity's 21st century challenge is to meet the needs of all within the means of the planet. In other words, to ensure that no one falls short on life's essentials (from food and housing to healthcare and political voice), while ensuring that collectively we do not overshoot our pressure on Earth's life-supporting systems, on which we fundamentally depend – such as a stable climate, fertile soils, and a protective ozone layer.

Over the course of the consultation period we will be examining this and other potential models to establish the best modelling frameworks and assessment tools for our actions moving forward. It is proposed that these tools will assist in the prioritisation of the One Planet Cardiff Delivery Plan, ensuring that we are selecting and supporting the most impactful and cost effective actions, and prioritising those that have the widest co-benefits for the environment, the economy and society.

We only have one planet.



Introduction to Climate Change

Our climate is changing. In October 2018 the Intergovernmental Panel on Climate Change (IPCC) released a report detailing the short amount of time we have left to tackle widespread climate breakdown: we have until 2030 to cut our carbon emissions to a level that limits global warming to a maximum of 1.5°C from pre-industrial levels.

We are already seeing the consequences of 1°C of global warming through more extreme weather, rising sea levels and diminishing Arctic sea ice. Warming of 1.5°C or higher increases the risk associated with long-lasting or irreversible changes, with devastating impacts around the world and closer to home.

There is a range of well publicised and live international and national policy surrounding this, including:

- The International **Paris Accord 2015** which seeks to keep global temperature increases well below 2 degrees
- The **Welsh Government's Wellbeing of Future Generations Act 2015** which requires accountability for the long term impacts of key decisions
- Welsh Government's ambitions for a **Carbon Neutral Public Sector** in Wales by 2030
- The UK Government's 2019 policy for Net-Zero Greenhouse Gasses in the UK by 2050
- The UK Governments 2020 policy to eliminate petrol diesel and hybrid vehicles by 2035

In light of the assertions and warnings of the IPCC, Cardiff Council declared a 'Climate Emergency' on 28 March 2019. We're not alone; so far, over 250 councils across the UK have also motioned a declaration, alongside the Welsh and UK Governments.

Whilst there is no single definition of what declaring a 'Climate Emergency' means, we are viewing it as an opportunity to take action through addressing all issues impacting climate change and reducing carbon emissions across the city.

We recognise that decisive policy actions and interventions now will set us on course to prevent a large rebound of emissions emerging from the COVID crisis.

Climate change is the long-term shift in average weather patterns across the world. Since the mid-1800s, humans have accelerated release of carbon dioxide and other greenhouse gases into the air by burning fossil fuels including oil, gas and coal. This causes global temperatures to rise, resulting in long-term changes to the climate.

The moment of crisis has come. This is an urgent problem that has to be solved and, what's more, we know how to do it

SIR DAVID ATTENBOROUGH

Risks & Opportunities

If we do nothing, the threat becomes critical...

We'll witness:

- Rising sea levels - with Cardiff already known to be at risk
- Increased frequency and intensity of extreme weather events including droughts, heat waves, placing increased pressure on health and social care services
- The failure of buildings, roads, parks and facilities to cope with the emerging climate change symptoms, with consequential increase in repair and maintenance costs
- A loss of biodiversity - 17% of species in Wales are already at risk of extinction and we have 165 endangered species in Cardiff alone
- Reductions in food availability and higher local food costs, as climate change will affect agricultural productivity in regions that are important for food production
- An adverse effect on human health, with increases in heat and pollution related disease and mortality, and associated care costs
- Energy cost increase, unmanaged consumption and lower reliability
- Mass immigration where resources become unviable elsewhere

... But what could Cardiff be if we commit to this agenda?

We could grow a sustainable economy

- Through creating significant numbers of skilled jobs and local wealth around low-carbon technology; the green economy has consistently grown at around 5% over the last 10 years. Our focus could increase this much further

We could address inequality

- By improving the quality of existing housing stock and implementing energy efficient measures, we could improve living conditions and help people out of fuel poverty

We could make Cardiff greener and healthier

- Through adopting more sustainable travel, reducing air pollution and encouraging active travel; and
- Ensuring resilience in our natural environment by protecting and enhancing crucial biodiversity, reconnecting citizens to nature city-wide

We could make Cardiff a Climate Resilient City

- By generating our own local energy using natural, renewable means, increasing our resilience from global risks;
- Growing and using more food locally; and
- Using Sustainable Urban Drainage to enhance the environment and mitigate flood risk

IF WE DO NOTHING

IF WE ACT NOW



Governance & Leadership: Cardiff Council

We call on the city to work with us and adopt a goal of becoming carbon neutral by 2030

As part of our journey to a carbon neutral city, we want to reduce carbon emissions from all Council activities. This includes direct emissions generated from our use of energy in buildings and infrastructure, fuel in vehicles and the production and disposal of waste to landfill. It also comprises the impacts of our procurement decisions, our housing stock and staff commuting.

We are starting from a positive position, but there is much work to do to address the challenge,

Moving forward, we need to challenge and refocus our decision making and organisational processes, to ensure that all areas of our service delivery are contributing in a fair and proportionate way. We must embed climate resilience and sustainability into everything that we do in order to achieve this target and we need to lead by example. This includes reviewing all of our procurements to identify and reduce unnecessary carbon emissions, alongside training all council employees to be carbon literate—that's around 15,000 upskilled local stakeholders.

We will establish an internal project board chaired by the Leader with cross-departmental representation to oversee the implementation of our strategy.

We'll focus on:

- Climate Change Mitigation**
 We're tackling the cause of climate change, by reducing the amount of greenhouse gas emissions released into the atmosphere as a result of burning fossil fuels. This can be achieved by reducing energy demand; improving buildings and controlling demand more carefully, switching fuels to renewable energy sources and changing procurement decisions to prioritise low carbon options where possible.
- Climate Change Adaptation**
 Adaptation addresses the impacts of climate change, what we need to do to adapt and protect ourselves from climate change impacts such as drought, flooding, erratic temperatures, extreme weather events and availability of resources. We're implementing many measures around the city to increase resilience to extreme weather events including sustainable urban drainage and green infrastructure schemes, local growing and the development of local, sustainable energy.

National Targets

Welsh Government not only endorsed the updated goal, but committed to achieving the overall 100% UK goal, promising to put in law the amended target for 2050. This is alongside an ambition for the Welsh public sector to be carbon neutral by 2030.

Examples of Best Practice

Natural Resources Wales' carbon positive project has calculated the organisation's net carbon status and has identified options for mitigation. "Building upon the priorities identified through the net carbon status calculation, we are evaluating options for emissions mitigation, protecting carbon stocks and increasing sequestration in four key areas: Buildings, Transport, Land and Assets, and Procurement".

Governance & Leadership: Call to the City

We call on the city to work with us and adopt a goal of becoming carbon neutral by 2030

Addressing the Climate Emergency as a city requires bold leadership, robust governance and careful and resilient policy measures and interventions.

It will require us to shape both our short and long-term planning, budgeting and investment to implement initiatives and measure progress, aligning with our obligations under the Well-being of Future Generations Act.

We recognise that post COVID-19 we have an opportunity to build back better, and will work with local and regional partners to integrate climate change into recovery policy decisions.

As Cardiff Council, we will enable, empower and coordinate the city to address the challenge, but we cannot achieve this alone. Tackling the Climate Emergency will only succeed with everyone's involvement and support, requiring a city-wide commitment from citizens, business, academia and the public sector.

We offer to lead the mobilisation of stakeholders, and aim to collaboratively prepare an action plan to make this paradigm shift to a carbon neutral city.

National Targets

Recognising that current targets are not enough, in May 2019 the UK Committee on Climate Change recommended a significant upscaling of climate action and ambition to 100% carbon neutrality by 2050 for the UK.

These major UK cities have also set targets to become Carbon Neutral by 2030: **Birmingham, Bristol, Glasgow, Leeds, Newcastle, Sheffield**

Manchester has a carbon reduction target of 2038, requiring a year-on-year reduction of at least 13%.

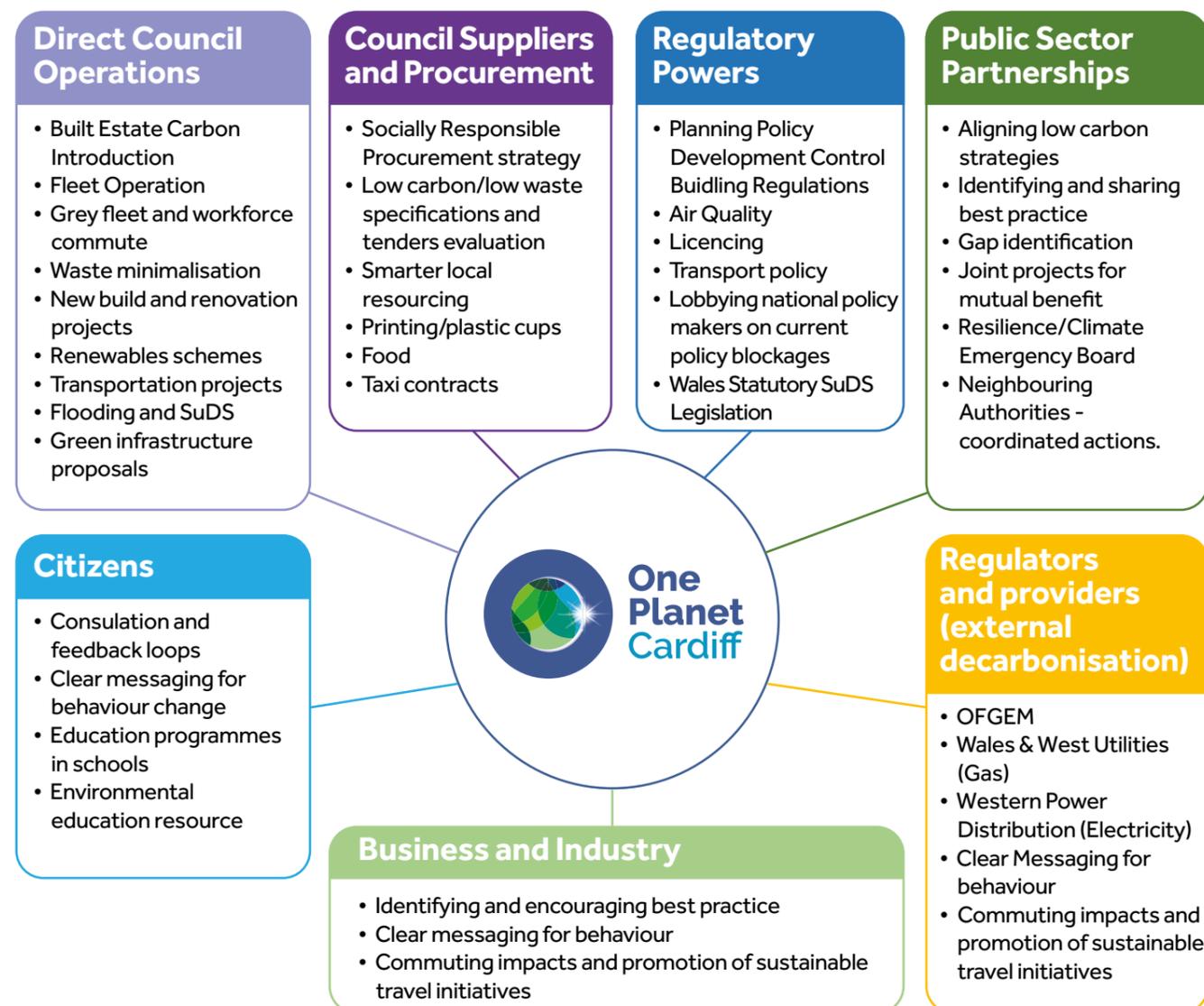
Nottingham has committed to the challenging target of being a Carbon Neutral city by 2028.

Who can we influence?

We recognise that there are many direct actions that the Council can take in our decarbonisation journey, from financial and operational decisions through to smarter selection of suppliers and better use of our regulatory powers. However, we can also work in

collaboration with and seek to influence others. The graphic below illustrates some of the ways in which we plan to work across this wide agenda.

Council's Areas of Influence



Carbon neutral by 2030—measuring the challenge

Monitoring and measuring carbon emissions and the effects of carbon compensation is complex, yet crucial to deciding this pathway and meeting our target.

We have a good sense of the Council's direct emissions (those that originate from our buildings and direct

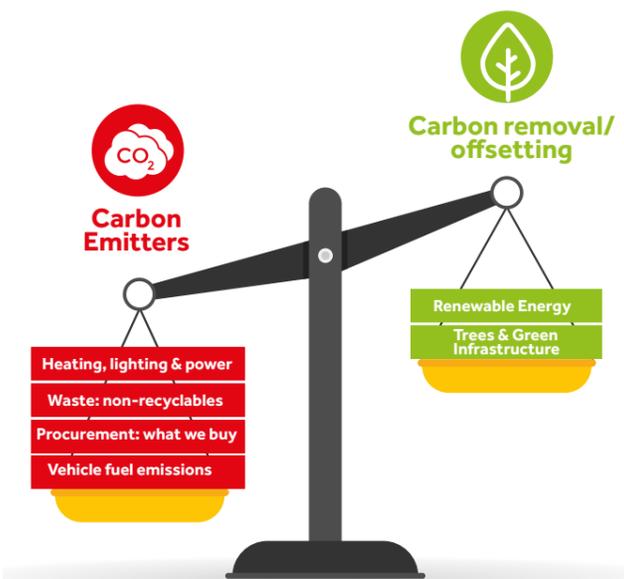
We therefore need to develop a better evidence base for our wider carbon footprint and a consistent and robust means of measuring and monitoring the impacts of our carbon reduction and offset activities. We are already committed to working with Welsh Government as they develop a consistent means of auditing Carbon reduction progress amongst the public sector in Wales and this work will run in parallel with our own studies over the Spring and Summer.

Moving forward, we also will work with Cardiff's public services board to commission a carbon audit of the whole city.

However, whilst we've work to do to define precisely what the city's journey to Carbon Neutrality will look like, we do already know the areas that we'll need to be active in, and this builds on a significant body of work already achieved and committed in our current Capital Ambitions statement.

This document sets out the progress that we've made to date alongside our immediate planned actions to tackle the Climate Emergency. It outlines our ambition and lists the areas that we intend to explore further.

Carbon neutrality, or having a net-zero carbon footprint, is the balancing of carbon emissions against carbon removal, often through carbon off-setting, with the net result being zero.



What do we already know?

Carbon Neutral Council

Work has already been undertaken to understand the Council's direct emissions; during 2018/19 we know that we emitted a total of 28,630 tonnes of CO2. Whilst this will be a challenge to tackle, the Council has already reduced emissions from its direct carbon footprint from 2015 to 2018 by 33.5%, a reduction of just over 11% per year, exceeding our 5% per year annual target.

However, we know our indirect or "caused" emissions are potentially much more significant and this is an area in which we've done less decarbonisation work. Whilst we know that, during 2018/19 we emitted 566 tonnes of CO2 from business travel, we have gaps in areas relating to procurement, staff commute, and sequestration (how much of our carbon is and could be absorbed/offset by our green infrastructure).

What is the difference between emissions?

Scope 1 - All direct emissions from the activities of an organisation or under their control, including fuel combustion on site such as gas boilers and fleet vehicles.

Scope 2 - Indirect emissions from electricity purchased and used by an organisation.

Scope 3 - All other indirect emissions from activities of the organisation, occurring from sources that the organisation does not own or control. This covers emissions associated with procurement, business travel, staff commute and direct waste. It also takes into consideration sequestration - the removal of carbon dioxide from the atmosphere.

SCOPE 1		SCOPE 2		"Caused" Emissions	
Direct Emissions Fuel combustion on site (heating) Emissions from owned vehicle fleet		Indirect Emissions Power purchased and used by the organisation (with emissions at the point of generation)		<ul style="list-style-type: none"> Procurement, purchased goods, capital goods Business travel, "Grey Fleet" and staff commuting Directly generated waste 	
				Direct Sequestration • Carbon capture via trees and green infrastructure from owned estate	
Current Position (tonnes CO2 Emissions) 18/19 Total 1&2 28,630tCO2				?	
Gas	9,769	Electricity	13,916	Procurement	?
Oil	660			Commute	?
Fleet fuels	4,285			Sequestration	?

We will work to the Welsh Government definition of 'Carbon Neutral' or 'Net Zero Carbon' for our Council commitment, including scope 3 emissions as set out below

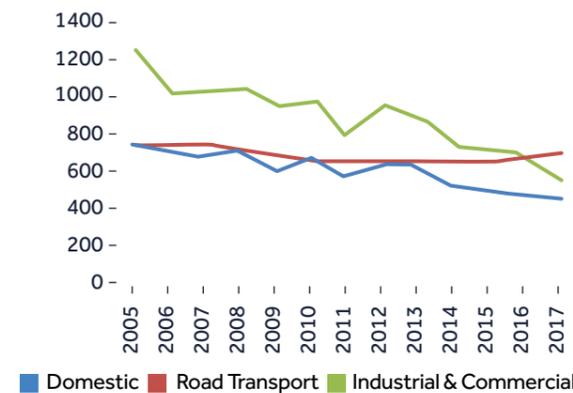
What do we already know?

In 2017, total city emissions were estimated as being 1,665,000 tonnes CO2.

Broadly, we know that the city has reduced its direct carbon emissions across the domestic, road transport and industrial and commercial sectors by 38% since 2005, around a 3% on year reduction.

However, there is much more that we need to understand, especially around Road Transport, which has seen the lowest level of reduction as illustrated in the adjacent graph.

Beis City Wide CO2 Emissions (Kil Tonnes)

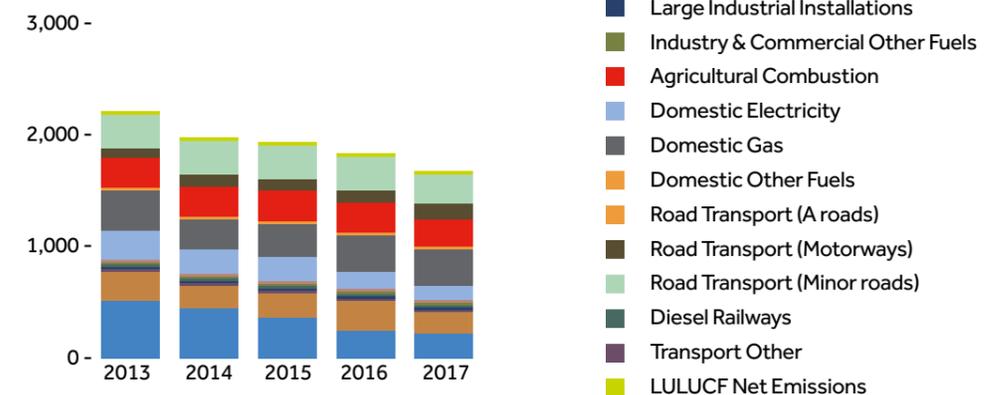


The good data we have at a city level is BEIS data covering scope 1 and 2 emissions. We will use this to help measure the impact of our actions to reduce carbon emissions.

This doesn't mean we don't consider the opportunity to reduce emissions from our day to day activities such as what we buy, what we eat and how we manage our gardens and create and dispose of waste as a city. There is a still significant impact we can have from these actions, they are just currently harder to measure.

In 2017, Cardiff's emissions were estimated as being 1,665,000 tonnes CO2

5 Years Comparison



How households can help reach the 2030 target

Heating

1 in 20 homes with a gas boiler could join a heat network, saving 2 tonnes of CO2 per year

1 in 4 homes currently using oil heating, and 1 in 3 homes using electric heating could switch to a heat pump, saving 3.2 tonnes of CO2 per year and 0.8 tonnes of CO2 per year respectively.

Electricity

Low-carbon generation could reduce emissions by 79%, saving 1.25 tonnes of CO2 per year for the average home.

Transport

By using a more efficient petrol or diesel car, the average home could save 0.9 tonnes of CO per year. A fully electric vehicle could save 2 tonnes per year.

The CCC estimates that 1 in 6 cars will need to be fully electric by 2030

Efficiency

By saving energy, for example through...

better insulation...

smarter lighting and appliances...

and smart heating systems...

...the average household could reduce its emissions by 0.6 tonnes of CO2 per year. These measures could also save the average gas heated home £184 per year.

Waste

By reducing and sorting waste, emissions from the average home could fall by 0.25 tonnes of CO2 per year.

Areas of focus:

In developing our strategy we've identified the following action areas and the following chapters of the strategy focus on each of these in turn, presenting details of progress made and potential future actions. We would like feedback on these to help us prioritise what will have the highest and most broad ranging positive impacts across all or our Environmental, social and economic goals

Key Themes

We recognise the highest areas of impact around carbon emissions to be;

<p>One Planet Energy</p> <p>This includes how energy is used, how it's sourced, distributed and generated.</p>	<p>One Planet Green Infrastructure & Biodiversity</p> <p>Covering the enhancement of all green spaces across the city</p>
<p>One Planet Transport</p> <p>This covers how we move around the city and the infrastructure required to minimise the impact of vehicle emissions and air quality.</p>	<p>One Planet Built Environment</p> <p>This includes how energy is used, how it's sourced, distributed and generated.</p>
<p>One Planet Food</p> <p>The production, transportation, processing and disposal of food is a major source of emissions that could be better</p>	<p>One Planet Waste</p> <p>By reducing waste production and by recycling what waste is produced in the right way, we can reduce our carbon footprint.</p>
<p>One Planet Water</p> <p>How we source, use and manage water, and how we protect ourselves against drought and flooding.</p>	

WHAT ARE OTHER CITIES DOING?

Bristol: The Mayor has committed £250k to facilitate public engagement; a One City Climate Strategy and climate change training for city colleagues.

Nottingham: Nottingham Council has set out a planned of actions to help take the city towards carbon neutrality by 2028. The Council has committed to planting up to 50,000 new trees by the end of 2023 and creating bee-friendly habitats in every ward as a way to offset carbon emis-sions.

Leeds: An initial pipeline of approximately 50 carbon reduction projects across the City Region.

Manchester: Manchester Climate Change Partnership and Agency has prepared a five year framework which sets out how it will tackle climate change. to coordinate the development of action plans by all organisations and individuals across the city. Targets of 100% zero emission cars and buses by 2025, alongside 100% of energy to come from renewable sources by 2050.



One Planet Energy

Our Vision For A Carbon Neutral City By 2030



One Planet Energy

How we **use** and **generate** energy is fundamental to tackling climate change. By using energy more efficiently we can significantly reduce demand, whilst at the same time powering up renewable energy generation to replace fossil fuels including coal, oil and gas. We need to address how we heat buildings, how we use electricity and how we generate energy, and **we need to do it quickly.**

The technology is already there. As a city we need to continue to participate and lead on innovative solutions for local clean energy generation and look to have a range of sources in place including energy from waste, wind, water, solar and land.

“We need to address how we heat buildings, how we use electricity and how we generate energy, and we need to do it quickly”

Carbon Neutral Council

Since 2005, Cardiff as a city has seen a reduction in its carbon emissions in the domestic sector of 38% and in the industrial and commercial sector emissions have reduced by 55%. In the same timescale, the Council has reduced its own direct carbon emissions in its built estate by 45%, and has implemented thousands of energy efficiency measures in homes across the city, alongside installing 100 solar photovoltaic (PV) systems on homes and 1.3MW of solar on schools and public buildings.

We've built a 0.4 MW hydro-electric scheme at Radyr Weir and have supported numerous energy innovation projects, including portable solar panels and shallow groundwater source heat pumps.

We've also worked with British Geological Survey to map available heat under the city, identifying 'hot spots' that could be used to substitute gas heating in new developments; ground source heat is currently being utilised at Grangetown Nursery.

We've introduced LED street lighting to Cardiff, with 14,000 streetlights managed from a centralised Interact City lighting management system, reducing our lighting electricity consumption by 60%.

In 2019, Council called on the Cardiff and Vale Pension Fund to divest from fossil fuel extraction. Around £200 million has been transferred into a fund tracking the Global Low Carbon Index, and the Pension Committee is committed in principle to reduce exposure to carbon emissions and divest from fossil fuel extraction.

“Since 2005, Cardiff as a city has reduced its carbon emissions in the domestic sector by 38%”

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- **A New Solar Farm at Lamby Way:** establishing a new Solar Farm to generate a substantial (9MW) amount of clean, renewable energy, both for direct local use and to help to further decarbonise National Grid electricity.
- **Delivering Phase 1 of a local Heat Network** for Cardiff Bay and the City Centre, providing low carbon heat and reducing reliance on fossil fuels for the heating of large public and commercial buildings. We're also planning for a further phase extension of this network to maximise it's reach within the Bay and City Centre.
- **Continued research and development** into cost effective decarbonisation solutions, maintaining our strong history of engaging with the academic and innovation communities around energy.

Supportive Policies

The Council's Carbon Reduction Strategy outlines our commitment to managing and reducing energy consumption and resultant carbon dioxide equivalent (CO₂e) emissions from the Council's built estate. We exceeded the targets set in our current Strategy but now need to refresh and accelerate this to achieve Carbon Neutrality by 2030.





Ambition: The Scale and Pace of the Challenge

Collectively, we need to power down our energy consumption and reduce our reliance on fossil fuels, including the gas we use for heating, and electricity generated from coal and gas power stations. We have the opportunity to strengthen local energy resilience by developing renewable electricity for use within the

region and switching to low carbon heating sources, coupled with improved home insulation. **We believe the following should be our key areas of focus. We will work internally and with city partners to define and prioritise an action plan by the end of the year.**



What can you do?

- **Get a smart meter to help you understand and manage energy consumption and costs.**
- **Check your loft insulation, doors and windows to prevent heat loss, and to reduce your bills and carbon footprint.**
- **Switch to a green energy tariff. A green tariff means that the bills you pay for your power are passed on by your supplier only to renewable energy generators on your behalf.**
- **Generating your own renewable energy for your heating, hot water and electrical supply saves carbon and can also feed back into the grid. If you're able, consider having solar PV panels or solar hot water on your home .**

AREAS FOR FOCUS AND PRIORITISATION

Carbon Neutral Council

1 Change Behaviour to use energy more efficiently We'll actively encourage installation of smart metering in every Council owned property in the city

We'll roll out a comprehensive smart metering, monitoring and controls programme across our working estate

We'll develop behaviour change campaigns to power down consumption across our own estate and with our housing tenants

2 Shift Away from Reliance on Fossil Fuels We're investigating the feasibility of a target to reduce the Council's Carbon emissions from gas and electricity consumption by 60% over the next 10 years

We'll develop business cases and policy to prioritise renewable or sustainable heat and energy for all Council new builds including schools and housing.

3 Install City-wide Renewable Energy Generation for Direct Use; Electricity and Heat Develop up to 20MW of renewable energy generation across the Council's Estate

Roll out the Cardiff Heat Network phases 1, 2 and 3 to connect large buildings to a low carbon heat source.

4 Decarbonise the Gas and Electricity Grid Work with gas and electricity providers to ensure that much more of the electricity and gas used across the city is derived from renewable sources such as solar, wind, hydro, marine, biogas and hydrogen.

5 Require All New Developments to use Renewable Electricity and Heat We'll undertake review process and ensure that the climate emergency agenda, green infrastructure and biodiversity are key elements of a Replacement LDP

Carbon Neutral City - We'll work with partners to catalyse change in the city including:

Promote a mass roll-out of smart metering and digital controls to support better day-to-day management of energy use for citizens, businesses and the city as a whole

We'll engage with community groups and key stakeholders starting with Public Service Board partners to promote behaviour change to reduce energy demand.

We'll work with city wide stakeholders to plan how to move away from gas as our primary heating source, and utilise more sustainable options such as decarbonised electric heat pumps, ground source heat and hydrogen to reduce demand for residual decarbonised gas.

Work with partners to install the infrastructure to facilitate the uptake of ULEV across the city.

Work with city stakeholders to review travel to work transport policies and encourage a modal shift in journey's into and around the city.

Work with city wide partners to explore the opportunity for the development and deployment of a variety of renewable energy technologies across the city.

Explore a major commercial and domestic roll out of solar PV coupled with battery storage capacity where possible to balance supply and share the benefits.

Work with partners to decarbonise the gas grid supported by a reduction in demand.

Connecting, or utilising suitable lower carbon alternatives where they exist such as the reservoir of heat under the city. We can't allow new development to add to our carbon problems unnecessarily.

What are other places doing?

In 2012, Calgary approved a motion to purchase 100% local renewable electricity to cover the demand from the all electricity consumed in City operations. It led to ENMAX building constructing and operating two wind farms of 144MW capacity.

Burlington was one of the first US cities to source 100% of its electricity from local renewable sources. , and one of over 40 globally. Its city gets its electricity comes from biomass, hydro, wind and solar energy.



One Planet Built Environment

Our Vision For A **Carbon Neutral City By 2030**



One Planet: Built Environment

Over the next 20 years, Cardiff's population is expected to grow to around 400,000 people; a level of growth that could be more than every other local authority in Wales combined.

Development to accommodate that increased population is ongoing with around 14,000 new homes planned, along with associated infrastructure and supportive economic development plans. We need to deliver sustainable new development that won't add to our carbon challenges.

How we manage and use our existing buildings is also one of the biggest areas of impact, and there are ways to practically address this to tackle climate change.

“**Cardiff is expected to be the fastest-growing major UK City, growing to a population of around 400,000 people; more than every other local authority in Wales combined.**”

Making a start

Since 2013, we've installed around 9,500 energy efficiency measures in homes across Cardiff, reducing energy demand by improving building standards.

We've been working on a series of energy efficiency improvements and retrofits to our operational estate which has helped to reduce our energy consumption and consequent carbon emissions ahead of the targets set in our 2015 Carbon Reduction Strategy of a 5% per year annual carbon reduction.

We've built a series of our new schools to high energy performance standards and have a schools energy officer providing advice to school children and school building managers on energy and sustainability issues.

Our latest 'turn down' campaign with schools, prior to the Covid lockdown, demonstrated that significant improvements can be made just through behaviour change, with the 42 participating schools achieving on average a reduction in carbon emissions by 6%.

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- **Updating our property strategy** to support achievement of a carbon neutral 2030 target for the council, including accelerated asset consolidation, retrofit and utilising renewable energy generation.
- **Delivering 1,500 high quality sustainable homes** through the council's Cardiff Living Scheme, including quick build and energy efficient modular housing, and Passivhaus homes.
- **Delivering a Zero Carbon pilot housing estate project** at the old Eastern High School site.
- **Developing a blueprint to build all new schools** to a carbon neutral standard.
- We plan to put climate change at the heart of the updated Local Development Plan; facilitating a city wide Carbon Neutral shift.

“**Since 2013, we've installed around 9,500 energy efficiency measures in homes across Cardiff**”

Supportive Policies

Cardiff's Local Development Plan sets out planning policies to guide development and this is in the process of being reviewed, building in the new climate emergency agenda.

Cardiff Housing Strategy outlines how the Council and its partners will shape and deliver future housing services and provision across the city.

Cardiff 2030 is the Council's 10-year vision for learning and opportunity within carbon neutral environments.



Ambition: The Scale and Pace of the Challenge

To get to Carbon Neutral by 2030, we need to facilitate a paradigm shift in the quality of our commercial and residential building stock, both existing and planned new buildings. Insulating, controlling and managing energy consumption will significantly reduce energy demand whilst also improving the quality of our internal environments and alleviating fuel poverty.

We want to reduce the heat and electricity energy demand of buildings by up to 60% and we believe the following should be our key areas of focus. We will work internally and with city partners to define and prioritise an action plan by the end of the year.

AREAS FOR FOCUS AND PRIORITISATION

	Council	City - We'll work with partners to catalyse change across the city including:
1 Retrofit Existing Buildings and upgrade Infrastructure	<p>We're updating our property strategy to incorporate robust targets and measures to improve the efficiency of our estate.</p> <p>Make all Council street lighting LED by 2025.</p>	<p>Accelerating partnership programmes to deliver mass retrofit of public, domestic and commercial buildings across the city with measures to reduce energy demand such as insulation, better energy controls and more efficient and renewable energy appliances.</p> <p>We'll work with partners to promote and facilitate access to schemes to deliver property upgrades and retrofit.</p>
2 Move away from a reliance on gas fossil fuel for heating in public and domestic buildings	<p>Minimise heating demand by maximising the efficiency of buildings.</p> <p>Review the opportunity to shift to renewable heat source in all council buildings.</p> <p>Ensure existing public buildings are heat network ready to connect to phase 2 and 3 of the Cardiff heat network.</p>	<p>Work with city wide stakeholders to reduce consumption of fossil fuel based gas, helping utility partners achieve decarbonisation targets by ensuring residual gas use can be decarbonised by maximising the efficiency of buildings and utilising controls.</p> <p>Work with city wide stakeholders to install sustainable heat sources in houses, public and commercial buildings</p>
3 Low Carbon New Buildings	<p>We'll Lead by example by ensuring all New Planned Council Developments are built to a low-carbon standard by 2025.</p>	<p>Ensuring all New Buildings across the city are at Building Regs Plus, connecting to low carbon energy and heat sources wherever possible.</p>
4 Behaviour Change and Policy	<p>We'll undertake review process and ensure that the climate emergency agenda, green infrastructure and biodiversity are key elements of a Replacement LDP.</p> <p>We'll engage with schools, using the enthusiasm and ideas of pupils to deliver energy and sustainability aspirations</p>	<p>Lobbying Government policy makers to increase the level of ambition in the policies and regulatory powers for new buildings, to meet the challenges of achieving a Carbon Neutral City in a global climate emergenc.</p> <p>We'll work with city wider partners to support behaviour change in our attitudes to energy efficiency.</p>

What can you do?

- **Insulate your home to reduce heat loss and drafts.**
- **Consider how much energy you're using, could you use less or switch off more to save carbon and money?**
- **You can install a smart meter to monitor energy consumption, helping to manage it more effectively. Contact your energy company to make arrangements.**
- **Turning your heating down by 1°C can save 3% on your energy bills.**
- **If you are in receipt of a means tested benefit or have a health condition made worse by a cold home, and live in an inefficient private property, you may be eligible for Nest support to install energy efficiency measures <https://nest.gov.wales/en/>**

Conversion to LED street lighting will help reduce lighting electricity by

60%

What are other places doing?

Adelaide has set the target to become a net zero-carbon city by 2025. Offering up to 50% rebates to developers, businesses and community groups that install trees/green infrastructure, plant street trees, green roofs and invest in green walls and community gardens.

Bristol are implementing a combination of heat pumps and heat networks, with the aim of supplying 32% of existing domestic dwellings, by 2030.



We want to build all new schools to a Carbon Neutral standard by 2023



One Planet Green Infrastructure & Biodiversity

Our Vision For A **Carbon
Neutral City By 2030**



One Planet: Green Infrastructure & Biodiversity

Cardiff has long had a reputation as a green city dating back to Victorian times, and natural heritage assets are fundamental to the city's character, distinctiveness and sense of place.

The role green infrastructure has in mitigating against and adapting to climate change cannot be underestimated and we recognise the significant value of not just maintaining, but enhancing Green Infrastructure across the city.

Green infrastructure is about multi-functional, connected green spaces that make the best use of land - at the same time providing green open space for all, helping wildlife to flourish, and delivering a wide range of economic, health and community benefits. It can range in scale from private gardens and roadside verges to woodlands and wide open spaces.

Green infrastructure helps to address many of the social and environmental issues linked to urban life and should be valued equally to 'grey' built infrastructure such as roads and buildings. More fundamentally, it is our green infrastructure that will help to absorb and clean the residual carbon emissions that we can't totally eliminate, playing a crucial role in a balanced carbon-neutral future.

Making a start

Through our Giving Nature a Home partnership project, we've connected 11,599 children to nature through our free schools outreach programme and worked extensively with community groups and volunteers to support land management and enhance biodiversity. Our Community Ranger Team is currently working with 14 groups across Cardiff to help improve urban green space for pollinators.

We've recently mapped out Green Habitat Corridors and undertaken an i-tree study of tree cover in Cardiff with the ambition of managing and increasing tree canopy cover in the city.

We've installed green walls at Tredegarville C.I.W Primary School, supporting the introduction of biodiversity and improving air quality, and are looking at how we can roll this out to other schools.

In September 2019, our Biodiversity and Resilience of Ecosystems Duty or 'BRED' Forward Plan drafted by the cross functional green infrastructure group was approved. The Plan sets out delivery of the vision that 'Cardiff's distinctive natural heritage will provide a network of green infrastructure which will be protected, enhanced, developed and managed to ensure that its integrity and connectivity is sustained for the economic, social and environmental benefit of the City and the Region.'

Our love where you live programme supports community groups to improve the quality of their local environment, including using derelict or unused land for community growing and pollinator projects.

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- Building and developing volunteer networks to support delivery of the Biodiversity & Resilience of Ecosystems Duty Action Plan.
- Delivering Enhanced Green/Blue Biodiverse Habitats through our city wide SuDS programmes
- Implementing recommendations identified in the habitat connectivity and i-tree studies which has valued our urban tree
- Considering options for a Tree Farm function in the city to secure a local supply chain to support a greener city.

Supportive Policies

We have a **Cardiff Green Infrastructure Plan and Biodiversity and Resilience of Ecosystems Duty (BRED) Forward Plan** which set out how we will promote the resilience of our ecosystems.

The Green Infrastructure Plan provides the overarching context to other documents such the approved Green Infrastructure Supplementary Planning Guidance (GISPG), the drafted Green Infrastructure Spatial Strategy and the Green Infrastructure Implementation Programme.

Cardiff's Local Development Plan sets out planning policies to guide development and this is in the process of being reviewed, building in the new climate emergency agenda.





Ambition: The Scale and Pace of the Challenge

To get to Carbon Neutral by 2030, we also need to re-prioritise the city's green infrastructure, ensuring this is valued appropriately for the impact it brings for biodiversity, water attenuation and carbon sequestration.

Using a joined up approach, we can create a city with a wealth of useful and productive green space and biodiversity. Beyond our existing planned actions, we want to identify the opportunity to deliver more ambitious targets including:

AREAS FOR FOCUS AND PRIORITISATION

Council

City - We'll work with partners to catalyse change across the city including:

- | | | |
|---|--|--|
| <p>1 Greening the City</p> | <p>Major Tree Planting, shifting land management and planting activities to maximise environmental protection and carbon sequestration and biodiversity, increasing urban tree cover in the city from 19% to 25%, and rolling out Green Wall initiatives, especially in areas with poor air quality.</p> | <p>We'll work with city wide partners to identify land across the city for tree planting and sustainable land management practices, including reductions in mowing frequency and herbicide use where appropriate.</p> |
| <p>2 Review how land is valued</p> | <p>Building on our recent i-tree report which values our urban trees and Habitat Connectivity mapping study, we'll review how all land is valued to account for biodiversity and carbon capture alongside traditional land price analysis.</p> | <p>The replacement LDP will be addressing protection of open space, managing & enhancing green and blue infrastructure and biodiversity interests and we will be consulting on this with city stakeholders as the plan is developed.</p> |
| <p>3 Declare a biodiversity emergency</p> | <p>We'll create both stock and opportunity maps for carbon sequestration, water quality, natural flood management, air quality, urban heat islands, biodiversity and noise pollution.</p> | <p>We'll also develop a business case to establish a tree farm in the city to ensure a supply of the new trees that we need.</p> |
| <p>3 Declare a biodiversity emergency</p> | <p>Building biodiversity into decision making and governance, enhancing connectivity between habitats across the city.</p> | <p>Work with city wide partners to collaborate on biodiversity plans and delivery.</p> |

What can you do?

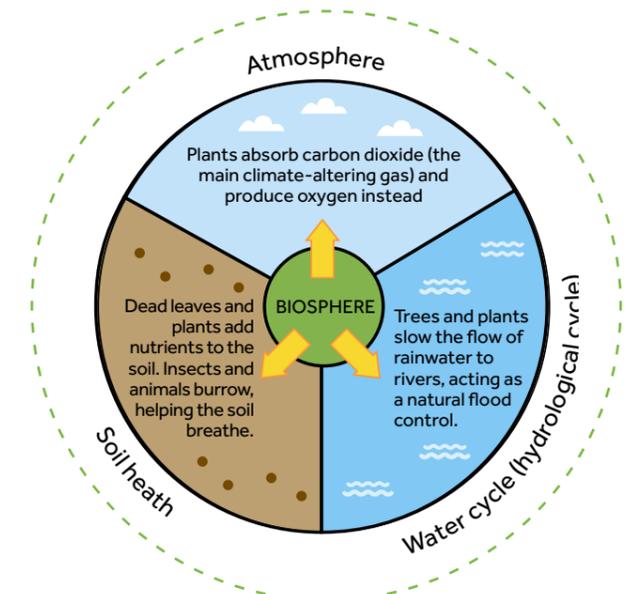
- **Volunteer for conservation activities with our Park Ranger team or join a local park Friends Group. More information can be found on our Outdoor Cardiff website.**
- **Make more sustainable use of your garden by planting trees and bushes or growing fruit and vegetables to help drainage and biodiversity as an alternative to paving, artificial grass or decking.**



We want to increase urban tree cover from 19% to 25% by 2030

What are other places doing?

Singapore has managed to increase both its population and its green spaces at the same time and today it has a 40% vegetation cover, despite its high density.





One Planet Transport

Our Vision For A **Carbon Neutral City By 2030**



One Planet Transport

Radical changes are required to how we move around the city as we head towards a zero carbon Cardiff. Increased walking, cycling, and use of public transport will significantly reduce greenhouse gas emissions and improve air quality, making Cardiff a cleaner place to live and work, helping us to be healthier and more active.

Pre COVID-19, 100,000 or so people used to commute into Cardiff each day – around 80,000 of them by car and many of these with just one passenger per car. We now have an opportunity to try to retain the reduction in traffic seen during lockdown through measures which support active travel e.g. fast-tracking of pop-up cycleways and working with major employers, Welsh Government and other stakeholders to support a long-term shift to more flexible ways of working, reducing the need to travel.



100,000 or so people commute into Cardiff each day – around 80,000 of them by car.



Making a start

Work has already taken place and is ongoing to achieve a modal shift towards more sustainable forms of transport. Initiatives have been accelerated as a result of COVID-19 with fast-tracked pop-up cycleways and re-allocation of space across the city to facilitate walking, cycling and more flexible ways of working around district centres.

Two routes - the 'Cross City' and 'Bay Loop' cycleways - are being brought forward as part of the Council's ongoing Covid-19 recovery plans. They will see semi-permanent 'bolt-down' kerbs with small plastic upright bollards attached to the road alongside the next phase of cycleways also in development. We have rolled out the highly successful Nextbike on-street bike hire scheme, securing initial sponsorship from Cardiff University. Additional external funding has been secured to expand the scheme, building on its success to deliver 1,000 bikes at 130 locations across the city.

We've improved cycling and walking networks through completion of the city's first Cycleway along Senghennydd Road to St Andrew's Crescent. We are working with every school in Cardiff to develop an Active Travel Plan, to enable safe walking and cycling to and from school. 56 schools were supported to develop a plan in 2019, with a bespoke programme to support all schools formally launched in January 2020.

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- Encouraging public transport usage across the city by introducing:
 - **Cardiff Crossrail**, a cross city tram-train service connecting Creigiau in the west of the city with St. Mellons in the east.
 - **Cardiff Circle Tram line**, completing an orbital route around the city and connecting for the first time Radyr with Corryton.
 - **An integrated transport interchange at Cardiff Central**, including a new central bus station in 2022.
 - **A new cross-city bus network**, utilising bus-priority lanes to improve access to key destinations both within and outside the city.
 - **New Park and Ride facilities in key areas**, such as Junction 33 and Junction 32/A470.
 - Develop initial business case on a congestion management scheme to reduce congestion on the city's roads and thereby reducing vehicle emissions.
- Making walking and cycling the best option for a greater number of people. This will include:
 - **Transforming the City Centre** to make it a much friendlier environment for cyclists and pedestrians, alongside improving the quality of the air.
 - **Building a fast, safe and fully segregated cycle network of a further 5 Cycleways across the city**, with each connected to a cycle loop around the city centre.

Supportive Policies

Cardiff's Transport White Paper:

Changing how we move around a growing city outlines an ambitious plan to 2030, outlining how we'll transform public transport in the city.

Cardiff's Low Emission Transport Strategy sets out how we could improve air quality across the city by reducing reliance on fossil fuels in our transport system.

The Council has produced a Clean Air Plan to address illegal levels of air pollution in the City. The Plan includes measures to improve sustainable and active travel in the City Centre and to improve emissions from buses and taxis. The Plan forecasts that the Council will comply with legal limits by 2021. A wider Clean Air Strategy and Action Plan has also been developed.



Ambition: The Scale and Pace of the Challenge

Planned Actions (cont.)

Accelerating the process of making road vehicles clean vehicles, including:

- **Supporting Cardiff Bus** to replace the oldest and most polluting vehicles with electric buses upgrading older buses so they meet Euro 6 engine emission standards through a Bus Retrofitting Scheme for bus operators in Cardiff.
- **Cardiff taxis** are required to meet the latest Euro 6 emission standards for 'new vehicle license' or 'change of a vehicle on a current license'
- **Electrifying the Council's fleet of vehicles**, starting by converting 90 fleet vehicles to EV over the next two years and aiming for 100% ULEV fleet vehicles by 2030.
- **Citywide network of Electric Vehicle charging points** to encourage the use of cleaner electric engines.

Within Cardiff's Transport White Paper, there are ambitious modal shift targets for travel to work. There have already been significant changes as a result of COVID-19 both to travel patterns and the temporary and semi-permanent infrastructure which has been delivered very quickly.

If we continue to deliver these targets coupled with more sustainable commuting solutions into and around the city, we'll be making a huge positive impact on carbon emissions from transport. But to take this even further we believe the following should be our key areas of focus. We will work internally and with city partners to define and prioritise an action plan by the end of the year.

Do you agree with this list, which are the most important actions and are there any other opportunities?

AREAS FOR FOCUS AND PRIORITISATION		
	Council	City - We'll work with partners to catalyse change across the city including:
<p>1 Implementing Cardiff's Transport White Paper If these targets are achieved, coupled with more sustainable commuting solutions into and around the city, we'll be making a huge positive impact towards reducing carbon emissions from transport.</p> <p>Beyond the white paper, we believe the following should be our key areas of focus and we'll work internally and with city partners to define a low carbon transport action plan by the end of the year.</p>	<p>The strategy includes ambitious targets to change how we choose to travel to more sustainable modes of transport, focusing on increasing walking, cycling and use of public transport and reducing reliance on car journeys.</p> <p>We're aiming to deliver the ambitious targets set out in the white paper to change the way we travel around Cardiff.</p>	<p>We'll work with key partners to deliver the infrastructure that gives citizens and commuters the confidence to move away from cars to other sustainable modes of transport.</p> <p>We'll work with the city to promote the opportunity for modal shift and incentives and support to facilitate this shift.</p>
<p>2 Achieving a 90% reduction in emissions from Council business mileage and staff commute by 2025</p>	<p>Accelerate the roll out of ULEV to replace Council fleet and work with staff to identify measures to minimise business mileage.</p> <p>A complete post COVID-19 review of working practices to facilitate flexible working and seek ways to reduce staff commuting where possible.</p>	<p>Work with city wide partners to delivery the transport infrastructure to facilitate a significant modal shift.</p>
<p>3 Facilitate a 100% shift to zero emission passenger vehicles by 2030</p>	<p>We'll continue the implementation of charging infrastructure across the city and look to accelerate the expansion of the network through a delivery partner. We'll commit to the revised EV Strategy setting out actions/ targets for number of charge points and other infrastructure charging hubs etc.</p> <p>We'll identify and promote policy measures and incentives to encourage a move to ultra low emission vehicles.</p>	<p>We'll work with the city to identify opportunities for charging infrastructure and incentives to move to ultra low emission vehicles.</p> <p>We'll also be looking for opportunities to support other non-electric sustainable fuel options such as hydrogen.</p>
<p>4 Facilitating an EV Car Clubs</p>	<p>We'll support the development and deployment of car clubs across the city to reduce the need for car ownership</p>	<p>We'll work with city wide stakeholders to promote the benefits and opportunities to using car clubs.</p>
<p>5 Move to 100% low emission taxis and buses by 2027</p>	<p>We'll work with local bus operators including Cardiff Bus and local taxi companies to facilitate the shift to low emission taxi's and buses.</p> <p>We'll help deliver charging infrastructure across the city to ensure businesses have the confidence to make the shift in line with the most recent EV Strategy.</p>	<p>We'll work with private and public sector partners across the city to implement incentives for the taxi and bus sector to make the switch to ultra low emission vehicles as developed in our Clean Air Plan.</p> <p>Welsh Governments has a national ambition to have zero (tailpipe) emission bus and taxi fleet by 2028. Further strengthened in the new Clean Air Plan for Wales launched by WG on 6 August 2020.</p>
<p>6 Working with partners to help reduce the carbon impact of freight</p>	<p>Working with partners such as Nation Grid, Transport for Wales and the Hydrogen Association we'll support development and deployment of large scale low carbon infrastructure.</p>	<p>We'll work with key city wide stakeholders including business, public and transport sectors to develop a last mile delivery strategy with a focus on zero carbon emissions.</p>

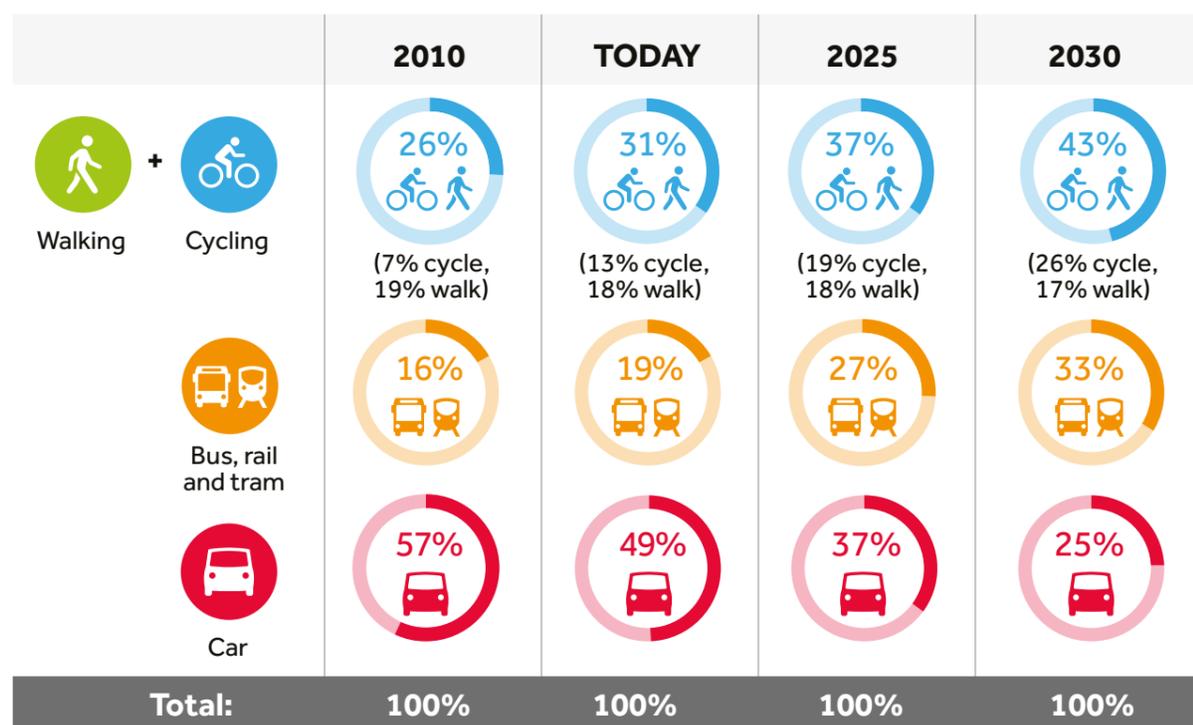


What are other places doing?

Nottingham City Council introduced a Workplace Parking Levy in 2012 as a way to reduce reliance on the car and make it easier to get around the city. The levy works by imposing a charge for every parking space provided by an employer. The move has been incredibly successful, reducing congestion while also generating £9m in income to provide a public transport system fit for the 21st century, such as the UK's first all electric park and ride.

Transport for Greater Manchester (TfGM) established the Greater Manchester Electric Vehicle (GMEV) Network in 2013. The network offers free charging for a nominal membership fee, with the costs being absorbed by TfGM. It also developed a procurement framework for the whole region to facilitate an accelerated roll out of infrastructure.

We want to double the number of people cycling and using public transport by 2030



What can you do?

- When possible, walk or ride your bike in order to avoid carbon emissions completely. Carpooling and public transportation also drastically reduce your carbon footprint.
- There are a number of maps available showing safe cycling and walking routes around Cardiff:
 - Cardiff Existing Routes Map Cycling
 - Cardiff Bay Trail
- Consider a switch to an electric or hydrogen vehicle when replacing your car, or even consider, do I need a car at all?
- Think about how your travel patterns changed in the lockdown and how you can retain the best of these habits.



Nottingham have reduced congestion while also generating £9m in income to provide a public transport system fit for the 21st Century, such as the UK's first all electric park and ride.

Cardiff is leading the way on **20mph in Wales**
- we will rollout 20mph limits across the city





One Planet Waste

Our Vision For A **Carbon Neutral City** By 2030



One Planet: Waste

Climate change has accelerated the need to find measures to reduce and manage the waste we create. By reducing waste production and by recycling what waste is produced in the right way, we can reduce our carbon footprint. This means cutting down the waste we produce and recycling in a 'closed loop' way, where items are used again for their original purpose or in a way that adds value, known as 'up-cycling.'

Cardiff is Britain's leading major core city for recycling with household recycling having increased from 4% to 58% since 2001. As Cardiff grows however, more people will live in the city, more businesses will locate here and more people will visit. This will mean more waste. It's therefore vital that we continue the improvements in recycling rates and make sure that waste is managed in a sustainable way.

COVID-19 temporarily impacted on the waste services we were able to deliver, however, we are now operating normally and keen to accelerate waste minimisation programmes.

Making a start

As part of our ongoing shift from disposing of waste in landfill to waste treatment and recycling, we've delivered, in partnership with surrounding authorities, an Energy from Waste plant and an Organic Waste Treatment facility which treats segregated food and green waste.

The innovative facility also generates renewable energy, with sustainable fertilisers recycled to local agriculture. Organic food waste is a significant contributor to climate change from the release of the Greenhouse Gas methane and we are making food recycling a priority.

We have continued to work with residents by supporting new 'Keep Tidy' volunteer groups, increasing litter picking hours, rolling-out community planters and establishing a partnership with Keep Wales Tidy. Our associated 'Love Where you Live' campaign helped drive success, with targeted engagement to encourage recycling across the city.

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- Looking for ways to reform our recycling services further still, maximising recycling quality by taking advantage of recent innovations.
- Working with residents to ensure that each waste bag contains the correct content, so that no bag is left behind. This includes rolling out our 'See Pink, Stop and think' scheme, whereby bright pink stickers will be placed on recycling and garden waste bags or bins, alerting residents that they contain incorrect items.
- Introducing an 'education station' at HWRCs to further support residents to sort their waste appropriately, enabling as much recycling as possible.
- Exploring new models for the management of garden waste.
- Exploring options for a new domestic and commercial Household Waste and Recycling Centre (HWRC) to accommodate further growth areas of the city, futureproofing maximum reuse and recycling opportunities for non-kerbside collected waste.
- Delivering new ReUse Centre facilities in partnership with the third sector.
- Extending the successful 'Love Where you Live' campaign to encourage greater community and volunteer action in relation to social responsibility for alleyways, woodland, public open spaces, recycling, smoking litter and single-use plastics.
- Removing single-use plastics from Council venues and working with partners to develop a city-wide response to single-use plastics in all public services.
- Working with Welsh Government to deliver the circular economy strategy.

Supportive Policies

Our actions are in accordance with the Welsh Government's Blueprint Strategy for Waste in Wales, which outlines a commitment to delivering a long-term transformation in the scale of recycling and sustainable waste management.

We have a Recycling Waste Management Strategy 2018-2021, which reaffirms the Council's core principles for increasing recycling.

Welsh Government is also consulting on a strategy to go beyond recycling; to make the circular economy in Wales a reality.





Ambition: The Scale and Pace of the Challenge

Wales aspires to be a Zero Waste nation by 2050 and Cardiff is at the forefront of this journey. However, we need to accelerate our efforts to meet statutory targets:

- 70% recycling by 2025
- Zero waste to landfill by 2025 (Landfill disposal accounts for the majority of waste emissions)
- Zero waste by 2050

Our ambition is to boost recycling rates by placing a focus on: Education in schools, Community engagement and Behavioural change. However, these things alone will not get us to 70% recycling. We need to challenge the way that services are currently provided, how individuals and business generate and manage waste and work on plans to improve recycling rates.

To achieve these greater ambitions we will be exploring and prioritising the following actions:



AREAS FOR FOCUS AND PRIORITISATION

	Council	City - We'll work with partners to catalyse change across the city including:
1	<p>Change waste management behaviour and how we manage waste</p> <p>Work with all departments in the Council to embed waste minimisation and circular economy principles and practices.</p> <p>Work with staff and community groups to focus on waste minimisation.</p>	<p>Work with city partners to embed circular economy principles through procurement, reducing waste and specifying raw materials made from recycled content, to drive demand and the market for recycling materials.</p> <p>Work with stakeholders across the city in relation to waste to support a fundamental shift in waste behaviour; focusing on reducing the amount of waste we produce.</p>
2	<p>Decarbonise the waste fleet by 2030</p> <p>Replace refuse trucks and the waste fleet with low carbon emission alternatives.</p>	
3	<p>Consider waste innovation systems</p> <p>Review waste innovation systems for all new Council developments.</p>	<p>Encourage waste innovation systems for new developments as part of the planning process.</p>
4	<p>Work to eradicate single use plastics</p> <p>Aligned to Welsh Government's ambitions, we want to eradicate single use plastic and facilitate the move to a more circular economy.</p>	<p>We'll support the eradication of single use plastic across the city and support the move to a more circular economy that extends the life of products and prioritises recycled content.</p>

What can you do?

- Pass on any unwanted larger items so that they can be reused and redistributed to someone else who needs them.
- Prepare your waste appropriately before putting out your bins or visiting recycling centres to enable as much recycling as possible #seepinkstopandthink.
- Join a 'Keep Tidy' volunteer group. Latest events and groups can be found on the Keep Cardiff Tidy website.



What are other places doing?

Borås (Sweden), is one of the world's most efficient cities in terms of waste disposal. Less than 4% of the city's waste is taken to landfill. The rest is reused, recycled or converted into energy to run cars and buses. "No waste goes to waste" is the city's motto; visitors to Borås are informed about which bags to place their rubbish into.

London: Veolia has partnered with Westminster City Council to trial two electric Refuse Collection Vehicles (eRCV) on the streets of London, upgrading the engines from diesel powered to electric, in aid of its zero-emission plans. This will not only improve air quality, but will more than meet the requirements of the Ultra Low Emissions Zone in central London.



We want to recycle 70% of the city's waste by 2025, becoming a zero waste city by 2050



One Planet Food

Our Vision For A **Carbon Neutral City By 2030**



One Planet: Food

Producing food, processing and transporting it, alongside storing wasted food in landfills, produces Greenhouse Gas Emissions that contribute to climate change. Environmental benefits can be reaped from seasonal, local and fresh food, which has a lower carbon footprint than processed food and food transported longer distances.

Changing the mix of foods that we eat, reducing emission and land-intensive foods, such as meat and dairy, and replacing them with plant-based foods, can also benefit the sustainability of our agricultural systems.

Whilst it is unattainable for a city the size of Cardiff to be completely self-sufficient in its production, there is a clear opportunity, and an emerging ambition, for us to increase the volumes of food produced locally.

We all need food and it is therefore possible for us all to engage through making small choices for healthier, more sustainable food options.

Making a start

The Council's influence on food in the city is wide ranging, from providing catering services to hosting major events and ensuring food hygiene. We also have close relationships with other key players across the city, meaning positive steps are already being taken to improve our environmental impact in relation to food.

For example, Cardiff has a local food partnership, Food Cardiff, through which Cardiff has already achieved status as a Bronze Sustainable Food Place. We also belong to the 'Edible Cardiff' network, which supports individuals and groups of people to grow their own food.

Supportive Policies

Cardiff's Food Strategy has a vision of wanting everyone in Cardiff to have access to affordable good food, and to understand where their food comes from. Sustainability is a key theme throughout.

The Cardiff Well-being Plan has evidence, narrative and action around food related issues, in particular food poverty.

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- A Hydroponics unit at Bute Park; this will be 1 shipping container, growing an estimated 3.5 acres worth of food.
- Revamping Cardiff Market as a sustainable and local food market.
- Increasing local food production by:
 - Developing a plan for food growing using council-owned land across the city that community groups and others could utilise for food growing projects, using the 'Edible Cardiff' network.
 - Integrating policy/ standards on expected space for local growing within planning.
 - Increasing commercial food growing and production opportunities in the city.
 - Assessing options for a Food Park which brings together advocates for local food in a spatial location, from farmers to food entrepreneurs.
- Developing a sustainable food framework: to define and integrate sustainable food goals, thresholds and targets across all council operations.
- Developing a 'sustainability mark' for local food businesses.
- Trialling a pop up 'sustainable food option' street vendor selection for major events.
- Reviewing and agreeing actions to maximise benefits from food procurements to ensure food options are healthy, local and low environmental impact.

Positive steps are already being taken to improve our environmental impact in relation to food





Ambition: The Scale and Pace of the Challenge

Whilst Cardiff will never be able to become fully self-sufficient in terms of food production, we can do more to minimise the impact our food choices make on the environment and become a more sustainable food place.

A recent report by the Centre for Alternative Technology, Zero Carbon Britain: Rising to the Climate Emergency, models how, through dietary change, food waste reduction and improved agricultural practices, we could provide a healthy, sustainable diet for the whole UK population.

The modelled dietary change contains significantly less protein from meat and dairy and more from plant-based sources like beans, nuts, cereals and vegetables.

This means considering the source of food and switching to less, but better quality, locally produced meat and dairy products. We believe the following should be our key areas of focus. We will work internally and with city partners to define and prioritise an action plan by the end of the year.

AREAS FOR FOCUS AND PRIORITISATION

	Council	City - We'll work with partners to catalyse change across the city including:
1 Develop a clear plan for food growing	Develop a clear plan for food growing in spaces where the Council has control, working with the Edible Cardiff network.	Work with community groups, and city wider partners to identify growing spaces across the city.
2 Develop restrictions on fast food culture	Map food deserts and areas of fast food outlet saturation and develop policy aimed at reversing these trends.	Work with city wider stakeholders to offer sustainable and healthy fast food.
3 Change the Council's own procurement practices	Ensure that the majority of food served by Council catering is locally sourced, seasonal and sustainable.	Work with local suppliers to deliver cost effective, sustainable, low impact and healthy food choices.
4 Improve schools food culture	Support schools to adopt a whole school approach to food through curriculum, procurement, school meals, holiday hunger programmes and food growing etc.	Work with children and city stakeholders to promote the benefits of healthy food choices
5 Develop a city centre food plan	Coordinate stakeholders, including the Business Improvement District, to support the development of a city centre food plan.	Work with Business Improvement District partners.
6 Develop a Sustainable Food Framework	Define and integrate sustainable food goals, thresholds and targets against all Council Operations.	Roll out the Sustainable Food Framework with our partners.

What can you do?

- Eat locally-produced, seasonal fresh food. Processing, storage and transportation of food both produce carbon emissions, but these can be cut down with local purchases since everything is sourced nearby.
- Cook 'smart' as much as possible. The most environmentally-friendly cooking methods are stove-tops and microwaves.
- Why not try Meatless Mondays? You don't have to give up meat completely but a great way to make an impact is to eliminate meat and dairy out of your diet once a week.
- Grow your own fruit, vegetables and herbs at home to make their trip to your table even shorter!



What are other places doing?

Monmouthshire County Council has developed a successful policy and license that allows the use of small bits of council owned land to grow food on. The Monmouthshire Community Growing Policy has been developed to support and promote the 'Incredible Edible' movement.

This is where groups of people get together to grow produce on easily accessible land. The produce can be taken away freely by anyone, not just those who have been growing.

Processing, storage and transportation of food all produce carbon emission, but these can be cut down by buying locally produced fresh produce



One Planet Water

As a result of climate change, the water cycle is expected to undergo significant change. Changing global patterns of water availability, with shrinking glaciers and changing patterns of precipitation, increase the likelihood of both drought and flood. Coastal and river basin cities, like Cardiff, must respond to the threat, particularly the prospect of flash flooding and rising sea levels.

An integrated approach on water, the biosphere and environmental flows is required to devise sustainable systems that allow us to decelerate climate change, protect us from extremes and adapt to the unavoidable at the same time. Whilst a challenge, opportunities present to collectively develop new ways of supplying water, treating water, making energy from water and ensuring water security.



Cardiff is Britain's leading major core city for recycling with household recycling having increased from 4% to 58% since 2001.



Our Vision For A Carbon Neutral City By 2030



One Planet: Water



Making a start

A number of projects are already underway on flood risk management and sustainable drainage schemes. Our award-winning Greener Grangetown project uses the latest Sustainable Drainage System (SuDS) to catch, clean and divert rainwater directly into the River Taff, replicating natural drainage. This is the first time that these techniques have been retrofitted into an urban environment at this scale and has resulted in 42,480m² of surface water being removed from the combined waste water network—the equivalent of 10 football pitches! As well as providing water resilience this also removes substantial energy requirements that would otherwise be needed to pump water through to sewage treatment works.

We've also established a Flood Defence Project in Rhiwbina, greatly improving local resilience to flooding in the area, protecting more than 200 homes and businesses. The defence comprises of low walls alongside the brooks.

Supportive Policies

Schedule 3 of the Flood and Water Management Act (FWMA) 2010 requires surface water drainage for new developments to comply with mandatory National Standards for SuDS.

We have developed a Local Flood Risk Management Strategy (LFRMS) to understand risk levels; take steps to reduce these risk and raise awareness across our communities so they can prepare for flooding.

Cardiff's Flood Risk Management Plan takes forward the objectives and actions set out in our LFRMS, alongside the objectives set out in the Welsh Government's National Flood and Coastal Erosion Risk Management Strategy.

Planned Actions:

Our immediate plans to respond to the Climate Emergency and become Carbon Neutral by 2030 include:

- SAB legislation: This includes ensuring that all new development with a construction area of 100m² or more have a SuDS to manage on-site surface water, including our new Cycleways.
- Effective Coastal & River Flood Defences: deliver our Coastal Flood Management Project, this includes developing a Flood Defence Scheme along the foreshore of South East Cardiff. The scheme will include the river mouth and lower estuary area of the River Rhymney, with soft engineering approaches enhancing biodiversity and the natural environment.
- Open Churchill Way Canal Dock Feeder: Sustainable approach to water management. Restore the historic Cardiff City Centre water way as part of the redevelopment of the Canal Quarter masterplan.
- Making drinking water refill stations available across the city to reduce the need for single use plastics.



Greener Grangetown project uses drainage techniques to catch, clean and divert rainwater directly into the River Taff





Ambition: The Scale and Pace of the Challenge

Recent weather patterns have significantly highlighted the impacts of climate change and the high importance of mitigating against extreme events, such as flooding, along with ensuring we have adapted to be resilient against the impacts.

As a planning authority, we need to ensure all new developments are meeting Welsh Government Sustainable Drainage (SuDs) legislation through our SuDs approval body.

Scenario planning is crucial, particularly given the risk of rising sea levels and increased river flow from the three rivers cutting through the city.

We believe the following should be our key areas of focus. We will work internally and with city partners to define and prioritise an action plan by the end of the year.

What can you do?

We need to use water wisely and become a Water Sensitive City

- Don't pave or use artificial grass in your garden. This prevents rain water being absorbed into the ground and exacerbates flash flooding.
- Consider installing a water butt on one or more of your downpipes to catch rainwater. The water can be used for watering the garden or washing the car; it's not only sustainable but a free resource!
- Fit a water efficient shower head in your bathroom to reduce your water usage.
- Join Cardiff Rivers Group, a voluntary group who meet to make a difference in the city's rivers and waterways, including habitat management and the removal of rubbish from rivers, streams and ponds.

AREAS FOR FOCUS AND PRIORITISATION

Council

City - We'll work with partners to catalyse change across the city including:

<p>1 Developing Ambitious Sustainable Water / Drainage Strategy for Cardiff</p>	<p>Identifying opportunities to improve environmental quality, water and flood sustainability across the city based on the best practice ensuring the City Centre is a sustainable drainage exemplar.</p> <p>Review land management practices across the Council's estate; increasing organic matter in soil can significantly increase water retention.</p> <p>Creating new urban green/blue corridors to deliver multi benefits in a city centre environment.</p>	<p>Work with all city stakeholders to prioritise sustainable drainage in new developments including urban multi benefit projects.</p> <p>Work and coordinate with all sports bodies to develop a programme to renew and improve existing Council playing surfaces; installing drainage to reduce maintenance and increase operational hours.</p>
<p>2 Identifying Priority Flood Mitigation Locations Programme</p>	<p>Working with Welsh Government to prioritise reducing flood risk to our communities through sustainable drainage.</p>	<p>Engage further and faster with existing business and the community to see what they could do with their buildings, gardens and local areas to mitigate flood risk and support water retention and reduced flow.</p>
<p>3 An increase in Urban Green Infrastructure</p>	<p>Support an accelerated roll-out of green infrastructure across the city centre and residential areas to support water management, with the co-benefit of enhancing air quality and supporting the enhancement of biodiversity.</p>	<p>Work with partners to emphasise the benefits of green infrastructure to employees, residents, and business.</p>
<p>4 Supporting Cardiff River's Groups and community groups to ensure rivers, streams and gullies are kept clear of debris</p>	<p>Help coordinate voluntary organisations to regularly manage our blue corridors (water course and rivers).</p>	<p>Encourage all organisations to support and sponsor voluntary environmental groups.</p>

What are other places doing?

Wessex Water's operations centre was designed with sustainable drainage in mind, both for foul and surface water. Solutions such as grey water use, storm water storage and re-use, the use of permeable paving and disposal of surface water runoff by infiltration have all been put into practice on this site. Water from the roof is collected in 380,000 litre tanks in each of the courtyards, which is filtered and pumped back into the building. The project was completed in 2000, highlighting the durability and prolonged benefits of such a scheme.

Cross Cutting Topics

Central to our ambition and facilitating delivery are some key topics:

- **Collaboration is key** - We can't do this alone. We need city wide support from engaged citizens, communities, organisations, businesses and academia.
- **Governance** - Bold collaborative leadership is required. Climate impact and carbon emissions will need to have a more central place in decision making activities, and be appropriately integrated amongst other priorities.
- **Engagement and Behaviour Change** - We need to get the right messages out to stakeholders, ensuring that we're all making well informed, climate responsive choices.
- **Finance** is crucial as significant investment and funding will be needed to create a carbon neutral Cardiff by 2030. We need to invest to save and need to bring carbon into our cost equations and explore all sources of support and grant funding.
- **Economic Development** needs to focus on growing a sustainable local economy, ensuring that we have the right skills to achieve and maintain a successful carbon neutral Cardiff.
- **Procurement** - Our Spending activities can have a huge carbon impact across all operational areas. Are we buying the right things in the right way?
- **Digital capacity** underpins our ability to deliver many of our objectives and targets, especially in communications and in measuring and monitoring progress.
- **Regulation and Policy** needs to be fit for purpose in the context of the climate change emergency.

What are other places doing?

Leeds: <https://www.leedsbyexample.co.uk> is a campaign by leeds city council to widely engage citizens in climate change. What started as a recycling initiative has been expanded to support citizen engagement and action to target climate change.

Manchester: Have set up an independent climate change agency to coordinate the efforts of city wide stakeholders in achieving their science based reduction target.



Opportunity

By pro-actively addressing the factors that contribute to the Climate Emergency we can build a cleaner, healthier and more equitable City with a higher quality of life and a thriving more resilient economy.

We believe that, together, we have the knowledge and technology available to deliver on this agenda and bring a significant shift in our climate responsiveness.

Bold leadership and governance will result in;

- **A huge boost in economic development and local skills**
 - Improved equity across the city and the alleviation of fuel poverty
 - A more resilient city, proactively addressing climate change
 - A more prosperous and innovative city
 - A greener and cleaner city
 - A healthier city
- **Our aim is to position Cardiff as cutting edge city demonstrating global best practice in Climate action**

We believe that, together, we have the knowledge and technology available to deliver on this agenda and bring a significant shift in our climate responsiveness.

