



BIRMINGHAM'S GREEN COMMISSION CARBON ROADMAP

LEADING GREEN CITY

BETTER FOR BUSINESS

PROSPEROUS, HEALTHIER, FAIRER



November 2013

The Roadmap Journey

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In our Green Commission Vision Statement published in March 2013, we set down our aim to make Birmingham a leading green city.

This Roadmap now provides a clear framework for Birmingham to achieve that aim and reduce the city's total carbon dioxide (CO₂) emissions by 60% by 2027.

We believe that this provides the courage and leadership necessary to drive change. We believe it is possible to reconcile the necessary growth and development to create jobs and reduce poverty with the efficient use of the planet's resources – energy, water, materials, food. This is “green growth”.

This Roadmap aims to put this “green growth” agenda at the heart of not just the City Council's corporate plans, but also at the heart of business and community plans and actions across the city. This is a journey we must all take. The Green Commission believes strongly that the greening of both public and private investments can unlock finance to make green growth achievable for Birmingham.

There are huge social and economic opportunities for those cities which show leadership:

- The low carbon goods and services sector is valued at £4.3tn globally,
- The re-balancing away from fossil fuel subsidies in the next 5/10 years creates new opportunities arising from that structural shift,
- People's health will improve with better air quality as a result of reduced greenhouse gas emissions from buildings and transport and more sustainable travel options,
- Reduced spend on heating, thanks to more comfortable, energy efficient buildings; the overall effect being a fairer and more prosperous city where people can have a better quality of life,
- Nurturing and maintaining the city's natural environment is a fundamental component of our quality of life and recognising the vast ecosystem services it offers, including climate regulation, protection, health and food production is vital.

The links we already have between businesses and our world-class university research are critical to help us on our journey. Everybody in the city, from individuals to businesses, has a key role to play in delivering this Roadmap. The Commission has laid the foundations for the projects that will help us to fulfil our ambitions, having listened to what you had to say. The Roadmap gives us clarity over the next three or four years and we must use that window to further develop our collaboration and partnership to work better for the city.

This is not a static document – we are on a journey of change. We want it to evolve. New opportunities and challenges will emerge and we need to be pragmatic and courageous in challenging the desire to maintain a “business as usual” approach.



Councillor James McKay

Cabinet Member for Green, Safe and Smart City

Chairman of Birmingham's Green Commission

Role of the Green Commission

The Green Commission was established to identify Birmingham's priorities around its environmental and sustainability agenda. It has done this with the production of its Vision Statement¹ (March 2013) and now this Carbon Roadmap. The Commission will continue in its role as a strategic advisory body to Birmingham, and provide the momentum to act as the voice on the issues which directly impact on the delivery of the Vision and Roadmap.

The Commission comprises key stakeholders and individuals in the city, with cross sector representation and will now seek to:

- Monitor progress on the Carbon Roadmap and reducing carbon emissions in line with the targets and Carbon Budget periods;
- Provide independent advice, analysis and a voice for the City on a national and international setting;
- Respond to consultations on matters relating to this agenda which will impact on the city;
- Engage with a wide range of organisations and individuals to share evidence and analysis;
- Engage with organisations and individuals on issues and opportunities for Birmingham that will influence our ability to become a leading green city through fostering green growth;
- Address the interdependence of the economy and the natural environment.

Members of the Green Commissions



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Jerry Blackett
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Vice-Chancellor of Aston University, Member of Committee on Climate Change, Non-executive director of Green Investment Bank & Low Carbon Business Ambassador for the UK



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Green Commission Policy Lead Officer



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¹www.birmingham.gov.uk/greecommission

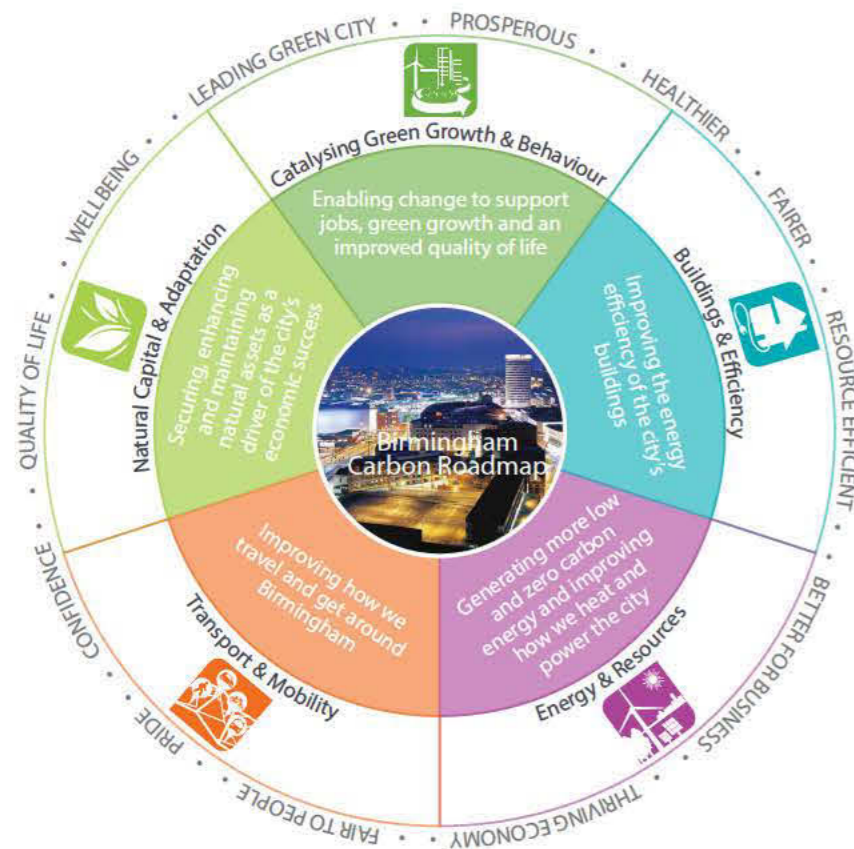
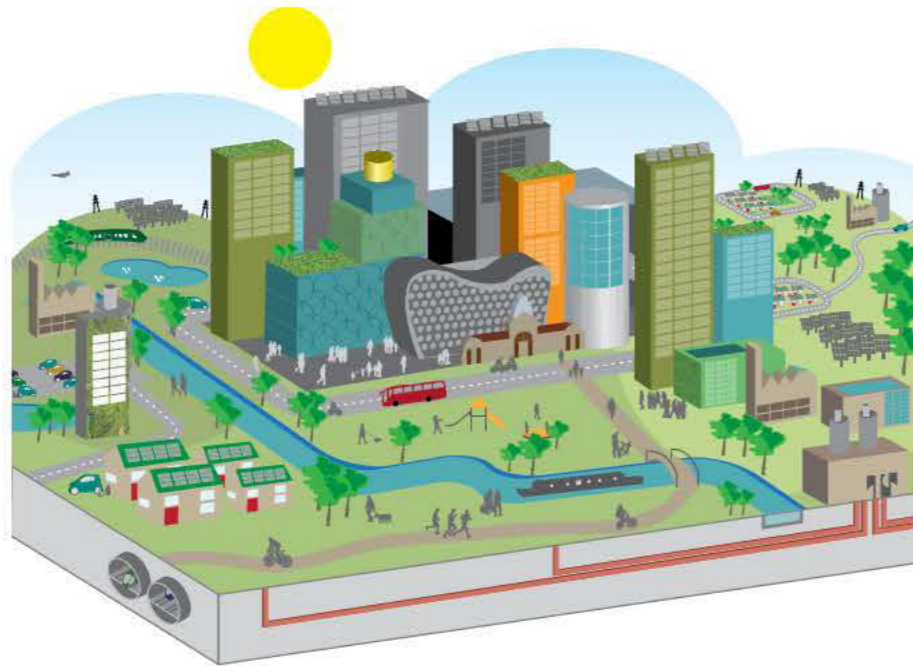
Executive Summary

The Carbon Roadmap identifies the opportunities for Birmingham's green growth. The Commission has set out early wins and short term projects necessary to make Birmingham a leading green city and achieve an ambitious 60% reduction in the city's total CO₂ emissions by 2027.

The Commission want to make Birmingham a leading green city because of the vast benefits this can bring for its people, businesses and the environment.

Birmingham pioneered industry in the 18th, 19th and 20th centuries and has overcome social and economic differences to become the youngest and most ethnically diverse city in the UK.

We must use this legacy of change, leadership and collaboration to pioneer the shift to a city which appreciates the vast social and economic opportunities from overcoming environmental challenges.



Carbon Roadmap Themes

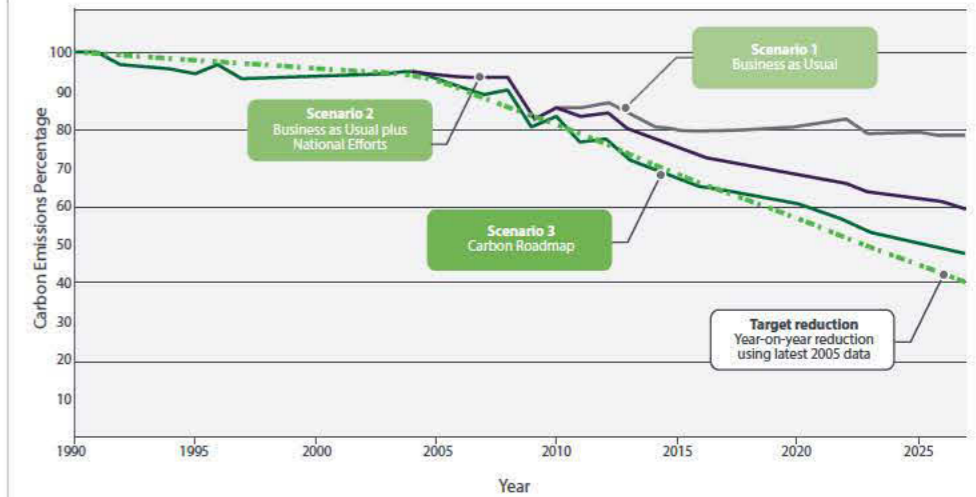
The Roadmap contains five themes to drive our green agenda. Together they will lead Birmingham towards a city which is more prosperous, healthier, fairer, more resource-efficient and better for business.

Each theme contains a number of projects which seek to build on the city's early successes and momentum.

Achieving a 60% total carbon reduction

By the end of 2011 the city had achieved a 24% total carbon reduction against a 1990 baseline.

The Roadmap presents three different scenarios for carbon reduction. The Commission will pursue action to deliver Scenario 3. This results in a 52% carbon reduction. This carbon gap allows room for future developments, opportunities and technologies to influence the agenda after 2017. Between now and 2017, we must use this window to close the carbon gap.



1 Business as Usual Scenario

This scenario assumes that we take no direct action to reduce carbon emissions but population growth, changes in the economy and the carbon intensity of GDP, rising energy prices and shifts in demand from consumer trends and behaviours will reduce the level of CO₂ emissions in Birmingham. This is estimated to result in a 20% reduction.

2 Business as Usual Scenario plus National Efforts

The UK is committed under the Climate Change Act to an 80% emissions reduction by 2050 on 1990 levels, and has legislated five-year carbon budgets covering the period to 2027 that are compatible with this long-term target. The Carbon Roadmap aims to align itself with the national efforts such as decarbonising the UK energy system, buildings retrofit and increasing the use of electric vehicles, public transport and cycling.

3 The Carbon Roadmap Scenario

The Carbon Roadmap Scenario considers the achievements of Birmingham to date, using available data from DECC 2005-2011 and the level of carbon reduction from:

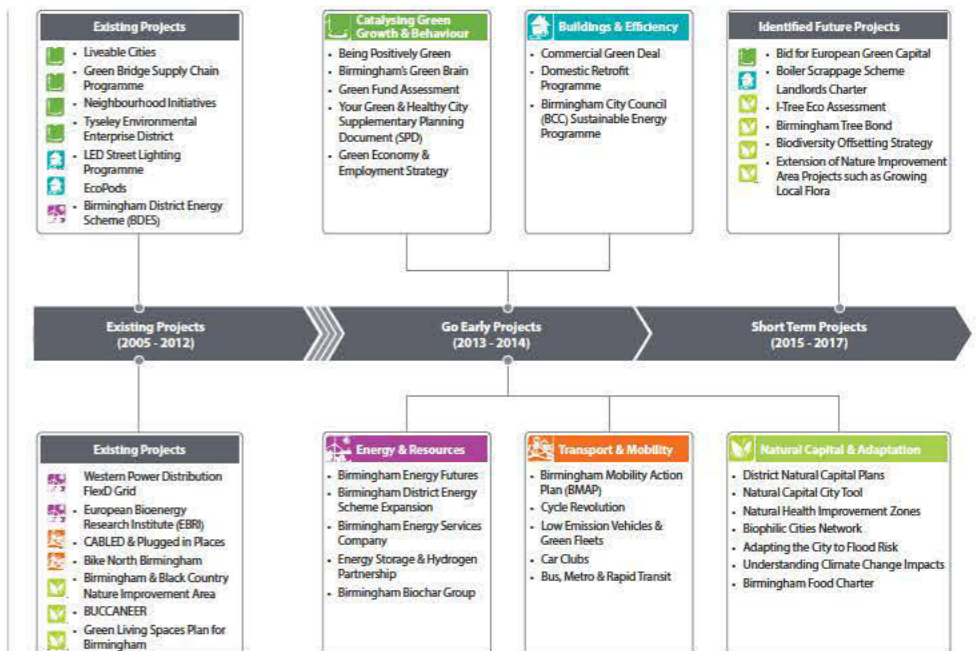
- Carbon reduction from demand trends as a result of price effects (Scenario 1);
- Grid decarbonisation and national efforts to reduce carbon emissions (Scenario 2); and
- Projected reduction as a result of Carbon Roadmap measures, where measurement has been possible.

Carbon Roadmap Projects

Projects have been developed, and must be delivered, in collaboration with people and key organisations across the city.

Everybody in the city has a role to play in achieving the city's vision.

The majority of projects will be established before the end of 2014 and we will continue to update the Roadmap as political, economic, cultural and technological circumstances change.



Birmingham is already taking positive steps to be a leading green city. Visit the online portal, tell us about your project, get involved.

Car2Go and City Car Club

- Offer the unlimited use of cars, some of which are lower carbon emitting
- Use membership cards to gain access to cars at any time
- Other schemes in Birmingham encourage people to share journeys, such as the Liftshare scheme promoted by Brindleyplace and the Travelwise scheme promoted by BCU and Aston University

Green Walls - Birmingham City Centre

- Large green walls in Birmingham include:
- A 604m² long green wall adjacent to the new Two Snow Hill development is the largest green wall in Europe
 - 324m² living wall at the New Street Gateway refurbishment
 - A 90m² green wall at Sir Doug Ellis Woodcock Sports Centre at Aston University

Parks & Green Spaces

- Birmingham has nearly 591 parks and open spaces, covering 3,400 hectares, more than any other European city
- Sutton Park covers an area of 900 hectares and is designated a National Nature Reserve, a Site of Special Scientific Interest (SSSI) and a Scheduled Ancient Monument
- 11 parks have achieved the national Green Flag Award, including Cannon Hill Park, Handsworth Park and Lickey Hills Country Park, Aston Park, Castle Vale Centre Park, Cotteridge Park, Kings Heath Park, New Hall Valley Country Park, Sunset and Moonlit Park, Ward End Park and Selly Oak Park

EcoPods

- An award-winning low carbon heating solution system installed as part of a £4.4 million project in the Harbone area of Birmingham, funded jointly by the Department of Energy & Climate Change, Birmingham City Council (BCC) and through the Energy Company Obligation (ECO)
- Around 120 households are benefiting from a mix of EcoPod and external wall insulation installs
- The work is expected to lower energy bills by up to 40%
- A similar scheme has also been installed in Newtown

Centre for Cryogenic Energy Storage

- University of Birmingham are facilitating leading research into the future Hydrogen and Fuel Cell Economy
- Will be an important part of the UK's energy infrastructure due to its high efficiencies and zero emissions
- Fundamental to developing an early market for the hydrogen and fuel cell economy and to implement the supply chain for Birmingham
- Created a £13m programme for a new Centre for Cryogenic Energy Storage - the first of its type in the UK

University of Birmingham

- Decreased its CO₂ emissions by 24% since 2005, due in large part to the Combined Heat and Power (CHP) system and Steam Bridge on campus

Neighbourhood Initiatives - City-wide

A number of local initiatives in Birmingham are already having a positive impact in engaging residents in more sustainable lifestyles. The notable examples across the city include:

- Balsall Heath is Our Planet
- Eco Sutton
- Kings Heath Transition
- Northfield EcoCentre
- Summerfield Eco Village
- Sustainable Moseley

John Christophers' Zero Carbon House

- Located in Balsall Heath
- First Victorian house in the UK to become carbon neutral and achieve Level 6 of the UK Code for Sustainable Homes
- Uses a tank to collect rainwater which is used for the toilet flushing and washing machine
- Four skylights and floor-to-ceiling doors to allow natural light to flow through the house - providing light and reducing the need for electrical lighting and heating

Birmingham District Energy Scheme

- Operates in the city centre and features trigeneration - for heating, cooling and electricity
- Highly efficient large-scale combined heat and power (CHP) plant
- Three gas CHP schemes in the city centre saving 14,000 tonnes CO₂ per year

Park Central

- Won The Deputy Prime Minister's Award for Sustainable Communities in 2005 as an ideal example of successful urban regeneration
- Once deprived tower blocks of the former Lee Bank area have been replaced with a mix of attractive social housing
- The Moonlit and Sunset Park in the area is one of 10 parks in Birmingham to have been awarded the coveted Green Flag Award

Plugged-In Midlands - City-wide

- Managed by Cenex
- Network of 36 electric vehicle charge points at 18 locations across the city in on and off-street locations
- The Plugged in Places programme offers match-funding to consortia of businesses and the public sector to install electric vehicle charging points to develop a regional network of more than 500 electric vehicle Charging Points across both the East and West Midlands

Birmingham City University

- Platinum EcoCampus award
- CO₂ emissions have decreased 19% since 2005
- Reducing its water usage
- A substantial recycling scheme achieving zero waste to landfill
- Schemes such as the Student Switch Off campaign and promoting the use of sustainable transport through the Travelwise scheme
- Ranked 27th in the People and Planet Green League Survey

A Re-Use Shop

- Opened in partnership between Birmingham City Council and The Jericho Foundation
- Encourage reuse of bikes, toys, electrical goods, furniture and books
- Part of the household waste recycling centre at Norris Way, Sutton Coldfield

Bike North Birmingham

- One of Birmingham's largest cycle schemes in the areas of Erdington and Sutton Coldfield
- It has improved and expanded cycle networks between North Birmingham and the City Centre
- Offers maintenance training
- It has increased cycle training and promotional/educational activities in schools

Aston University

- Platinum EcoCampus award
- Ranked 12th in the People and Planet Green League Survey
- Decreased CO₂ emissions by 42% since 2005
- Absolute carbon targets of 53% reduction by 2020
- Onsite combined heat and power plant, free cooling system for IT servers, LED lighting in key areas, Solar PV panels

European Bioenergy Research Institute (EBRI)

- Aston University is delivering world class research into bioenergies - a rapidly growing energy industry in search of a low carbon alternative
- EBRI's flagship bioenergy solution is the Pyroformer™ which transforms organic wastes and residues into oil and gas to power renewable biofuel CHP engines, whilst producing a solid biochar, which can be used as a fertilizer to increase crop yields and help store CO₂ in the ground

The Cube

- Uses a canal based cooling system
- BREEAM 'excellent' rated building in the heart of Birmingham
- Atrium allows natural light to pass through the complex and air-tight panels on the facades to increase insulation

The Mailbox

- One of the largest mixed-use buildings in the UK
- Located by the Birmingham and Worcester Canal, it uses a canal based cooling to provide an efficient low-carbon cooling system

New Library of Birmingham

- Largest library in Western Europe
- BREEAM 'excellent' rated building
- CHP engine helps cuts CO₂ emissions by approximately 68%
- Mixed mode ventilation system, efficient lighting system and waste recycling centre
- Garden terraces and a brown roof improve biodiversity
- A large surface water attenuation tank reduces rainwater flow on site for the duration of storms

National Exhibition Centre (NEC)

- One of Europe's most prestigious venues for exhibitions and events
- Won an AEO Sustainability Award for "...making the greatest strides towards operating in a sustainable manner" in 2010 and 2013
- Will be self-sufficient for power and heat, thanks to £100 million Biomass Energy Centre - one of the first in the UK

Tyseley Environmental Enterprise District

- Covers over 230 businesses and 100 hectares
- Designation means businesses in the area are eligible for financial assistance to improve sites to meet modern business needs

Do you want to get involved? A new online portal is being developed to provide a space for residents, communities, businesses and the public sector to discuss and share their efforts and thoughts on helping to make Birmingham a leading green city.

The Commission will continue to be involved in monitoring the progress of the Roadmap, responding to consultation and providing advice, analysis and a voice for the city. They will be supported by the City Council's Climate Change and Environment Team.

Roundtable Events

During 2014 we see an open, transparent process of developing and delivering the Roadmap projects. The Commission will host a series of Roundtable Events throughout the year.

We are inviting expressions of interest to be involved with the roundtables. Please contact us to register your interest, stating:

- Name
- Organisation
- Theme
- Project Interest

The Roundtables will be supported by Business in the Community and Midlands Environment Business Council networks and the BVSC Environmental Network.

Community Involvement

There is a wealth of existing community activity in Birmingham and a lot of pent up enthusiasm in our communities which is to be celebrated. The Commission, and the City Council, want to give people more of an opportunity to make a bigger contribution to the city. We are in a financial crisis due to the budget cuts from central government.

Our message to community and voluntary groups is that we welcome your proposals and views on how you might help to deliver projects, proposed or new, and we welcome any initiatives or proposals that can make a greater

contribution to helping us through this financial crisis.

A great example of community action is in our parks where more than 60,000 volunteer hours (more than 3,000 individuals) were recorded last year. Volunteers either work as individuals alongside rangers, in support; in groups on regular work days led by rangers; or groups doing work on their own, supervised by a trained leader to develop, enhance, use and promote their local green space.

Birmingham Open Spaces Forum (bosf.org.uk) is a network organisation which supports the volunteers and 150 Friends Groups members.

It is valued as part of the community sector and is recognised nationally as a model on which other authority-wide networks can be successful.

We want to hear from community groups on how they would like to help the city continue on this journey of change, particularly to achieve our aspirations of reducing fuel poverty, energy bills and making the city a fairer and more prosperous place.

This ties in with the 'Standing up for Birmingham' campaign launched by the City Council leader, Sir Albert Bore on 5 November, to restate the role of the city council in a new landscape, with far less resources, whilst maintaining its aims, values and priorities for the city.

Sustainability Forums

The long established Forums held in the Council House every 3 months will continue to provide an opportunity through 2014 for wider civic engagement on issues raised by the Commission. To register to receive updates in Forums please contact us.

Online Portal

The new online portal is being developed to help raise awareness of the work in Birmingham, the ambitions of the Roadmap and its projects, and to help people:

- Find out what you can do to save money, save energy and be more sustainable;
- Get involved with projects;
- Tell the Commission and Birmingham what you are doing;
- Raise issues & opportunities for the Commission to consider and respond to; and
- Find out about the incentives on offer in the city.

Visit the online portal to find out more:

www.makingbirminghamgreen.com

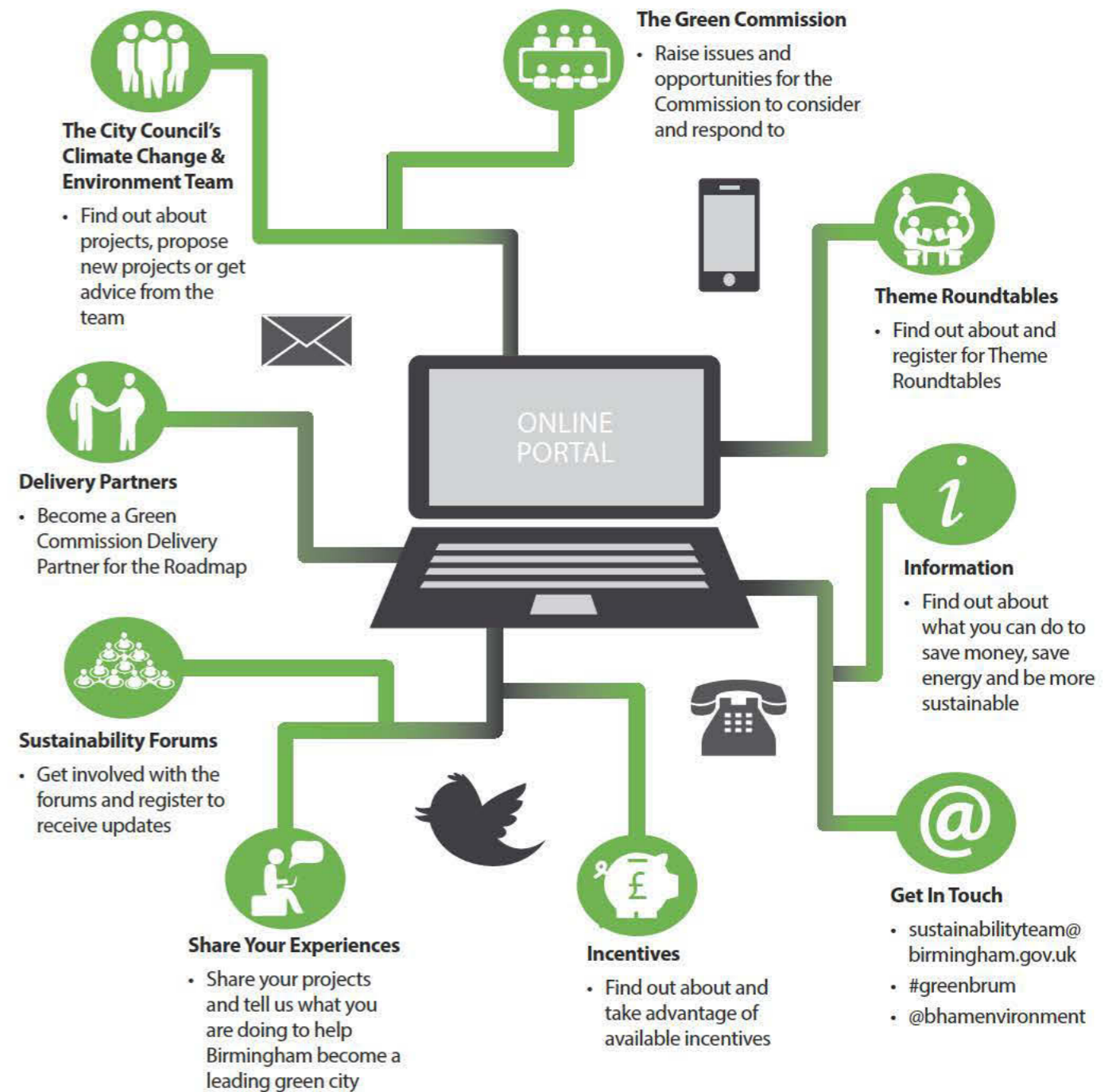
Get In Touch, Play Your Part

www.makingbirminghamgreen.com

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#greenbrum

@bhamenvironment





Introduction

The Fifth Assessment Report by the Intergovernmental Panel on Climate Change (September 2013) states that scientists are now 95% certain that human influence has been the dominant cause of the observed warming since the mid-20th century.

Climate change means that globally, oceans, land and the atmosphere are getting warmer, snow and ice is melting, resulting in sea levels rising and there are more frequent and extreme weather events. In the UK we are already experiencing more frequent and intense rainfall arising from climate change and this is resulting in more frequent and severe flooding. There may also be more droughts and heatwaves which will have a significant consequence for human welfare and ecological systems. How much we experience these effects will depend on how much carbon dioxide we continue to release into the atmosphere in the coming years. Limiting climate change will require substantial and sustained reductions of greenhouse gas emissions. It is now sensible to take action as insurance against risks from dangerous climate change.

The UK is leading the way internationally with the Climate Change Act 2008 to reduce carbon emissions by 80% by 2050 on 1990 levels, and has legislated five-year Carbon Budget Periods up to 2027 that are compatible with this long-term target.

Caught amid the recovery from an economic slump and the reality of growing urbanisation and social challenges such as unemployment, inequality and fuel poverty, cities are tenaciously driving forward change with ambitions that often go far beyond what their national governments are ready to commit to. Cities have a vital role to play in reducing carbon emissions given that they are responsible for the bulk of energy use today – about 80% - but equally they are centres of innovation, and in the EU produce around 85 % of GDP. With the right support, they can drive forward green economic growth and social

prosperity whilst helping to combat climate change. The interconnectedness of a city is such that its sustainability credentials – its energy and transport system, the efficiency and quality of the built and natural environment – all have a vital role to play in the quality of its citizens' lives.

As the UK economy begins to recover, Birmingham is well placed to enter the rapidly growing global market for low carbon goods and services. Incentives such as the Green Bridge Supply Chain Programme and Properties Assistance Programme are already helping SMEs enter this market in the city, particularly in the Tyseley area, but the city can do more to engage its businesses with academic researchers and the city's skilled workforce. The growth in this sector is part of the city's wider green economy which will help people, communities and businesses by generating a thriving sustainable economy that gives us international prestige and attracts investment. This in turn attracts the best businesses and allows jobs to be offered to a skilled workforce.

Birmingham's population is expected to grow by 150,000 people from 2011-2031, requiring an extra 80,000 homes and 100,000 jobs. Whilst this could be seen as hampering the efforts to become a leading green city, it can, and should, be seen as an extremely powerful catalyst for positive, transformational change. Economic uncertainty and population growth, on both a local and national scale, are two key drivers that have influenced the focus of the actions in this Roadmap.

Birmingham is already taking positive steps to become a leading green city and achieve the ambitious 60% reduction in the city's total CO₂

The metropolitan borough of Birmingham in the West Midlands has a population of 1,028,700 people on an area of 267.77 km². It is the second biggest city in the United Kingdom after London and Birmingham City Council is the largest local authority in the UK.

emissions by 2027. These efforts have been recognised with national and international awards including for:

- The building retrofit programme, **Birmingham Energy Savers**, winning the World Green Building Council Government Leadership Award;
- The **Birmingham District Energy Scheme** winning the Partners in Expert Services Award and Overall Winner in the PFM 2011 Awards;
- The retrofit programme in the **Summerfield Eco Village** winning the EUROCITIES 2009 awards;
- The climate modelling project, **BUCCANEER**, winner of the Lord Stafford Award 2012 for Innovation in Environmental Sustainability, which has helped to secure funding to install the densest temperature sensor network in the world in Birmingham;
- The city's horticultural and environmental achievements, winning the **Entente Florale Gold Award 2013 - 2017**, for Birmingham and the **Entente Florale Special Award for Outstanding Public Green Space 2013** for Eastside City Park;
- The city is part of a successful **Nature Improvement Area (NIA) programme** for Birmingham and the Black Country, one of twelve pilots currently running in England, and the only wholly urban NIA; and
- Aston University's **European Bioenergy Research Institute** winning the Best Technological Breakthrough category in the national Climate Week Awards for their innovative pyroformer.

Finally, Birmingham's strategic influence across Europe has been extended through its role as Chair of the EUROCITIES Environment Forum for 2013 and 2014 and Chair of the Working Group for Air Quality, Climate Change

and Energy Efficiency and its role on the international Biophilic Cities network that is looking to change the way we value the natural environment as a fundamental city resource.

Birmingham's Green Commission produced its first Vision Statement in March 2013, for building a leading green city and to reinforce the target of a 60% reduction in the city's total carbon emissions by 2027. See www.birmingham.gov.uk/greencommission for more information.

The Commission sees a leading green city as prosperous and fair to its people, enabling them to seize opportunities, be proud and confident, and have good health and wellbeing – all for a better quality of life.

For businesses it will mean more social responsibility, increased confidence and opportunities for growth and diversification through increased international prominence, better links with our academic bases and through effective local incentives. Reducing energy consumption and increasing efficiency will also reduce overheads and increase profit margins in the long term.

This Roadmap sets down our early actions for 2014 – 2017 and identifies the opportunities that are open to the city. It seeks to encourage future collaboration to deliver the benefits which have been identified both within the city and the Greater Birmingham and Solihull Local Enterprise Partnership.

A leading green city - for people, businesses and the environment.



Green Commission Vision 2027

Our vision is to create a leading green city for a better life and make Birmingham more prosperous, healthier, fairer, resource-efficient and better for business. In doing this we will enhance the quality of life and well-being for all of our citizens.

At the centre of this vision is a clear focus to ensure Birmingham - its people, businesses and environment – can seize the opportunities of becoming a leading green city.

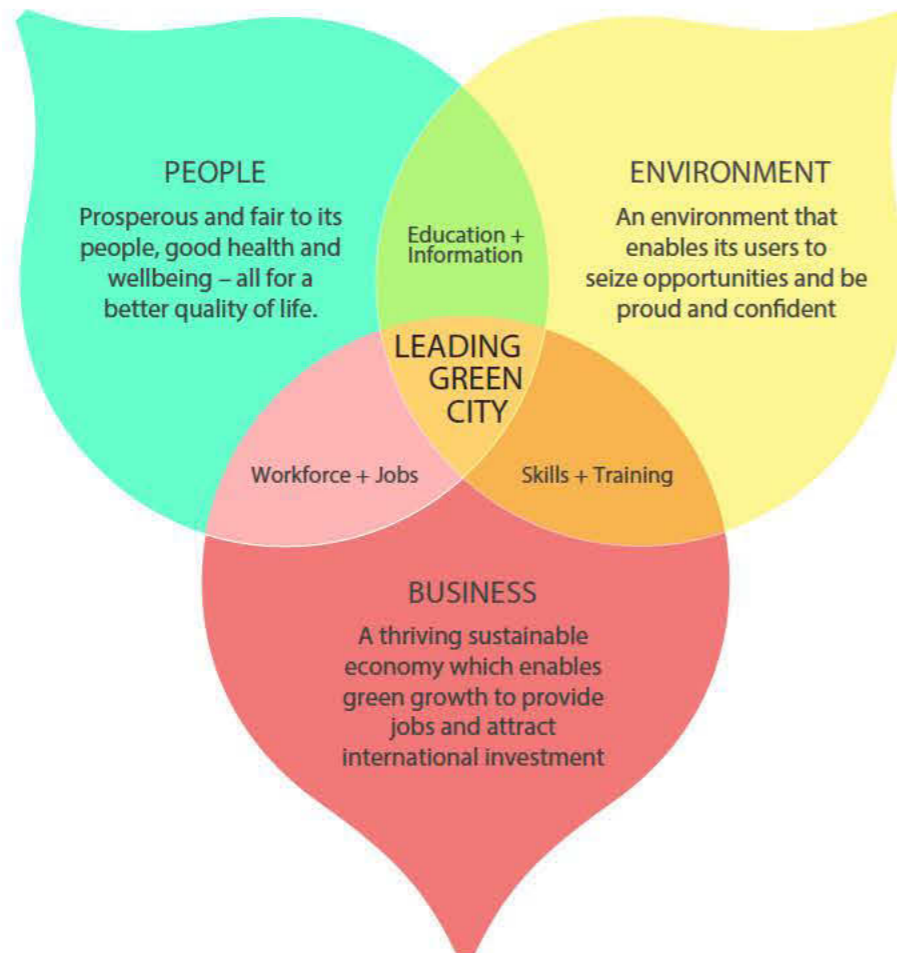
The Commission aims to:

- Create a thriving sustainable economy which enables green growth to provide jobs and attract international investment;
- Reduce our CO₂ emission levels and increase local low carbon energy generation;
- Maintain and enhance our vital natural environment and ecosystems and adapt to climate change impacts;
- Improve quality of life by creating a city that is prosperous and fair to its people with good health and wellbeing.

The Commission recognises that in order to achieve the vision of becoming a leading green city, we must join together our work on carbon reduction, ecosystems services, climate change adaptation, the green economy and planning and policy frameworks.

This will require closer working between businesses and people, from within the city, from the wider local area, such as the Greater Birmingham and Solihull Local Enterprise Partnership (GBS LEP), and nationally, such as the Department of Energy and Climate Change (DECC) - to help bridge the gap between vision and delivery. These evolving partnerships will unlock finance initiatives and encourage inward investment while providing opportunities for skills and jobs as part of an innovative new green economy that focuses on sustainable growth.

We believe it is possible to reconcile the necessary growth and development we need to create jobs and reduce poverty

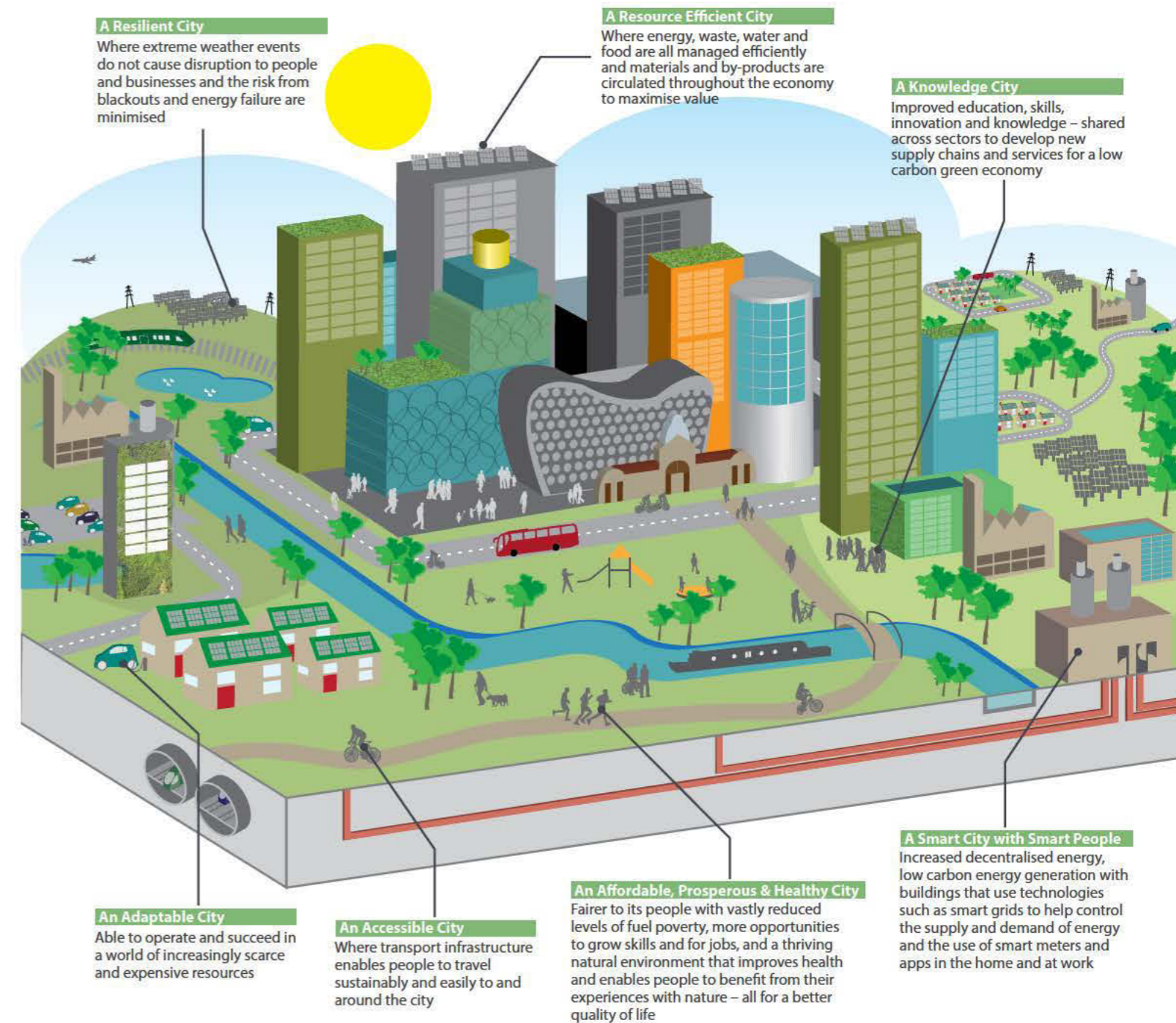


by being more efficient with our use of the planet's resources – energy, water, materials, food. This is part of the major global industrial transition to "green growth" which looks to balance short-term gains with long-term sustainability of the planet, its natural assets and resources, and the global economy. To achieve this we must catalyse investment and innovation which will underpin sustained growth and give rise to new economic opportunities and jobs. These opportunities are available to all sectors in the economy, of which low carbon goods and services is one. By taking a leading role on this agenda we are providing a platform for

Birmingham to innovate, demonstrate and produce the necessary actions that will benefit and enthuse the city, our area and our global economic connections.

This is our business positioning for the future. The incentives programmes such as Green Bridge Supply Chain are the start of our journey. We are eager to work with businesses who also want to make this change and welcome interaction on this. A leading green city with a sustainable green growth economy would include the outcomes and components in the diagram above and opposite.

Birmingham 2027 - a leading green city with a sustainable green growth economy



Why this matters to Birmingham

What it means to be a leading green city

The Roadmap identifies clear positive outcomes for residents, communities, businesses and the public sector in Birmingham. All currently face significant challenges and for the Roadmap to succeed in helping to build a leading green city, it is vital that all sectors work together in a mutually supportive way. This is the scale of the challenge which we can overcome by working together.

Residents, Communities & Third sector

- Reduced energy bills, fuel poverty levels and future prosperity for people and communities
- Help to create low carbon and sustainable communities
- More social enterprise and job opportunities
- Ability to engage with local people
- A better quality of life and greater fairness for everyone
- Resilience against extreme weather events
- Improved travel options and better health with reduced levels of obesity
- Better environment for people to live, work and play in



Business

- Opportunities for new business and growth
- Attract global investment and increase international prominence
- Reduced energy prices and protection against energy price rises
- Business confidence, resilience against extreme weather and security against energy price rises and potential power cuts
- Corporate Social Responsibility and better reputation with customers and employees
- Differentiate from competitors



Public Sector

- Reduced energy consumption and costs
- More efficient use of budgets and retention of functions and jobs
- Leadership for the city
- Social responsibility
- Resilience against energy insecurity, extreme weather and support for government priorities
- Internationally renowned research and a strong supply of highly skilled graduates and students



Why do we need to do this?

We know from Birmingham's social and economic make-up the challenges we face, the factors that influence our efforts and what the added value of becoming a leading green city could mean. The central responsibility lies in the hands of Birmingham's people and businesses.

Social Characteristics



Demographic: Birmingham is a diverse, youthful city with 46% of people under 30 years old compared to the national average 38%. There are high levels of social deprivation – low education levels, unemployment, low paid jobs, low household income, poor living environments, crime or exposure to crime.



Population: the City's population in 2011 was 1,073,045 with projections by 2031 for 1,223,045 which will increase the pressure on the sustainability of the city and our built and natural environment.



Fuel Poverty: the average annual electricity bill went up last year by 5.7% to £479 and the average annual gas bill went up by 11.3% to £800. In 2011 18% of people in Birmingham were in fuel poverty. A household is said to be fuel poor if it needs to spend more than 10 per cent of its income on fuel to maintain an adequate standard of warmth.



Health: a large proportion of Birmingham falls in the bottom 50% for health. Over 25% of adults are obese – the third highest in the UK, and on average across the city, 40% of 11 year olds are obese.

Economy, Business and Jobs



Birmingham is a leading European business destination, with the city and its surrounding area home to 75,000 companies, an annual economic output of over £21 billion and employment for 529,000 people, with the wider Greater Birmingham and Solihull Local Enterprise Partnership providing 840,000 jobs.



However Birmingham is also associated with high levels of worklessness with 44,852 claimants – 9.8% of residents who are economically active and working age – the highest of all core cities.



The Birmingham Development Plan estimates that 100,000 new jobs will be required for the growing population by 2031, with the majority located in the Economic Zones.

Public Sector Organisations



The Roadmap provides an opportunity to address the current financial challenges faced by the public sector - the City Council, for example, has to reduce its controllable budget by two-thirds in seven years.



Birmingham has five universities, Aston, Birmingham, Birmingham City, Newman and University College Birmingham home to over 78,000 higher education students and 25,000 graduates each year. In addition there are three colleges of further education – Birmingham Metropolitan, Bournville, South and City College – and 385 schools.

What is the Carbon Roadmap?

The Carbon Roadmap is a framework which identifies the aims, objectives and targets to be met in order for Birmingham to achieve its target of 60% CO₂ emissions reduction by 2027. It provides a structure for the city to measure, monitor and adapt to its low carbon future.

It has been produced to clarify the scale of the challenge of becoming a leading green city and to identify key opportunities to reduce Birmingham's environmental impact.

It builds on the momentum of previous plans and the projects and initiatives that are already thriving in Birmingham. The existing and planned projects which are already putting Birmingham in the spotlight are included in the Roadmap as a context on which to build momentum and add a range of new projects and proposals across key areas. The new projects and proposals vary widely in their focus and form – from better information availability and closer collaboration between organisations and people, to major investments in new programmes which aim to increase Birmingham's energy independence with district heating networks and more local energy generation and storage capacity. The common thread between them is that they all aim to embrace the anticipated growth in population and they all strive towards making Birmingham a leading green city for the benefit of its environment, its businesses and its people.

It is not intended to be a static document - it will continually evolve as new challenges, technologies and opportunities arise.

Annual updates and comprehensive reviews at the end of each carbon budget period will ensure that these are captured. The Roadmap's target and review periods are aligned with the national government approach to carbon reduction with five year carbon budget periods. At the end of these periods the Roadmap will be reviewed and updated to account for new initiatives, technologies and challenges,

in line with progress on the agenda. This is covered in more detail later on.

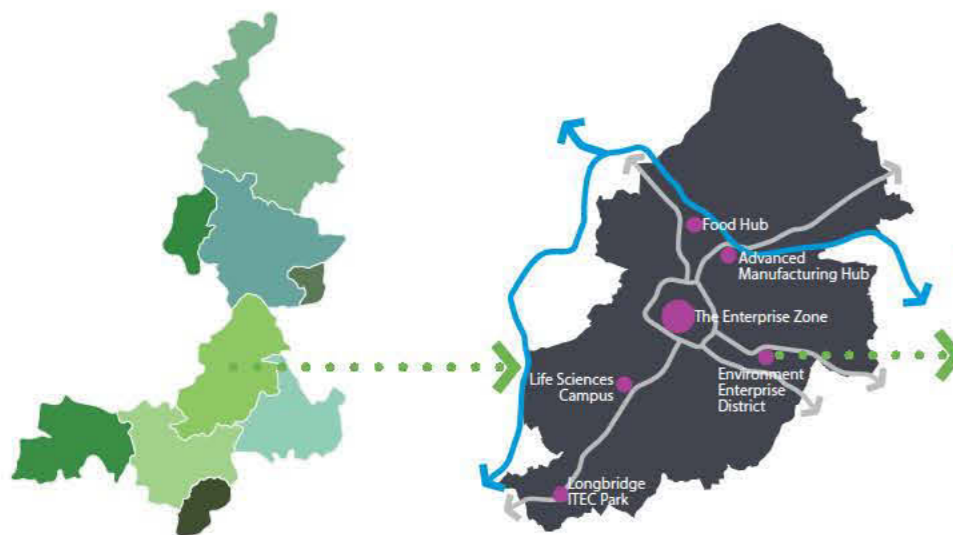
The Roadmap seeks to allow room for stakeholder involvement and flexibility as the local and national context develops. It does not seek to identify every project in the city that may contribute to the carbon emissions reduction for Birmingham between 2013 and 2027. Instead its purpose is to set the aims, objectives and framework into which these projects will sit as Birmingham moves towards achieving its ambitious targets.

Collaboration and communication will be paramount to achieving Birmingham's aspirations. With this in mind, some of the actions have been specifically targeted to enable communication between residents, organisations and businesses – the online portal has been developed to foster that interaction.

...developing the essential collaboration between all sectors – residents, communities, public sector, businesses, academics and financiers - to deliver change.



This is a Roadmap for the city of Birmingham. The Commission is clear that responding to climate change, delivering green growth and improving people's quality of life is equally vital for the success of the Greater Birmingham and Solihull LEP, as well as delivering action on the ground, for example, in our Economic and Enterprise Zones.



The Greater Birmingham and Solihull Local Enterprise Partnership (LEP)

The LEP was set up in October 2010 to help strengthen local economies, encourage economic development and enterprise, and improve skills across the region.

The Partnership is now one of the largest in the country, encompassing a population of over two million people, and 840,000 jobs.

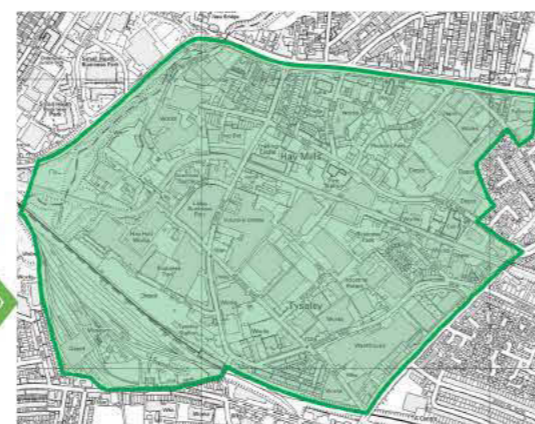
It includes the following areas:

- East Staffordshire
- Lichfield
- Cannock Chase
- Tamworth
- Birmingham
- Solihull
- Bromsgrove
- Redditch
- Wyre Forest

Birmingham's Economic Zones

Birmingham's advantages as a world class city, its location, connectivity and access to a substantial labour force make it a location of choice for business. The sectors which are critical to economic growth in the city have been grouped into a prospectus, as a series of Economic Zones, to marry the growth sectors with the city's spatial opportunities. The Economic Zones have an exciting and bespoke business offer to support the private sector to accelerate development and ease their start up including:

- Business rates relief until March 2015
- Support packages to assist start-ups, business growth and recruitment
- Funding for site development and access
- Funding for infrastructure especially for public transport infrastructure
- Simplified planning
- Superfast broadband to the Digbeth, Eastside and Jewellery Quarter



Tyseley Environmental Enterprise District

The Tyseley industrial area covers over 230 businesses and around 100 hectares of traditional industrial and employment land. As well as being recognised as an important industrial location it has been identified as needing investment in the physical environment - particularly in under utilised sites and premises.

In 2011, the area was designated as Tyseley Environmental Enterprise District, meaning small and medium sized enterprises (SME) in the area, or moving to it, are now eligible for financial assistance to improve sites and premises to meet modern business needs and to purchase capital equipment. The grant aims to generate employment growth, retain jobs, and enhance economic competitiveness. To find out more about how you can access grant funding as an SME visit www.birmingham.gov.uk/erdf



Building the Roadmap

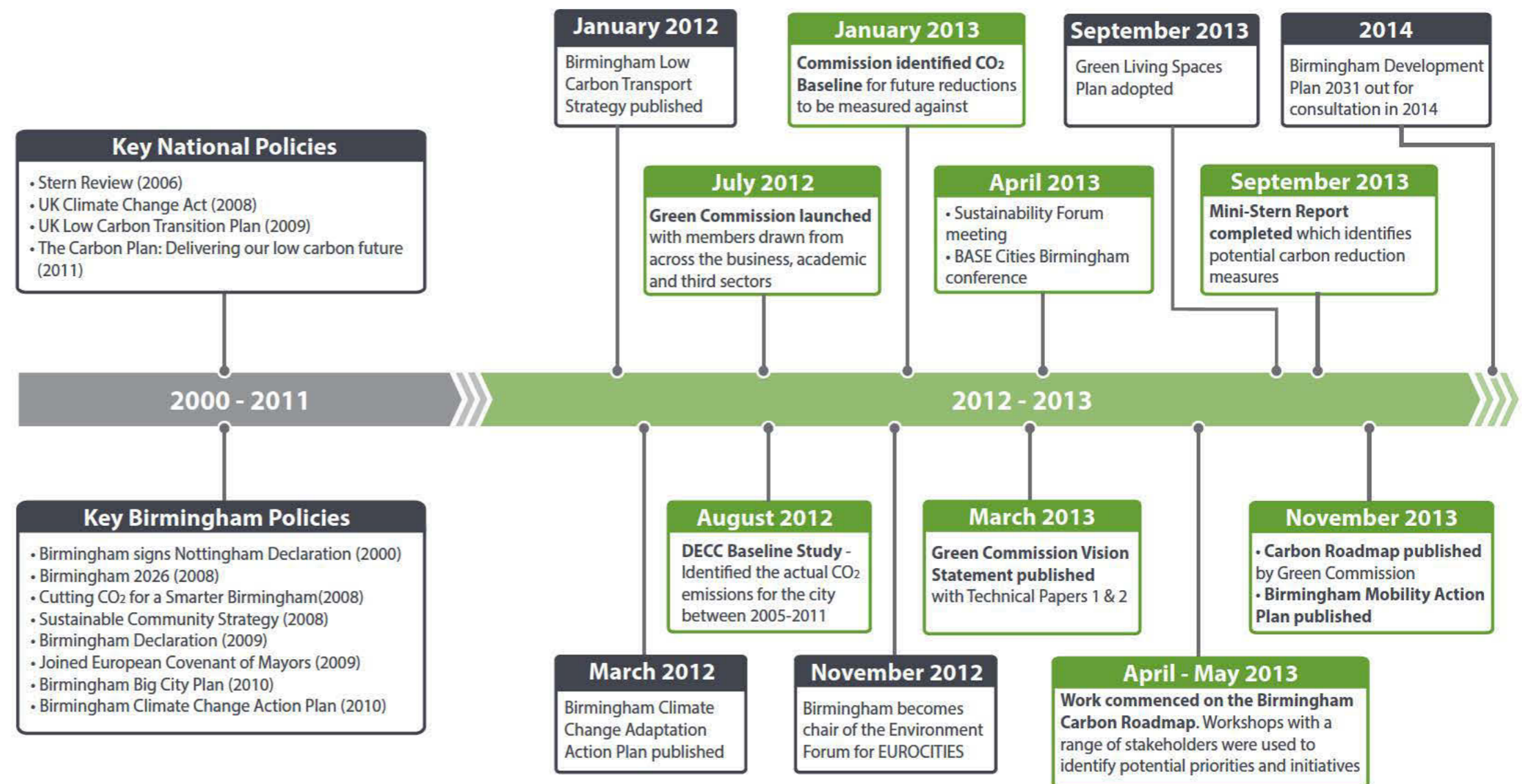
A city which develops a high quality of life based on how it maintains and nurtures its environment, will always be seen as an attractive place in which to live, visit and invest.

Following the launch of the Vision Statement, there was an encouraging response during early consultation on the Roadmap ambitions.

- A Sustainability Forum held in April 2013 gave residents of Birmingham the opportunity to have their say on the Vision Statement and Carbon Roadmap, with key points from the Forum used within this document.
- Three workshops on mobility, energy and buildings gave key stakeholders the opportunity to input their thinking on what should be the major priority intervention areas to achieve the ambitious carbon target.
- And finally, the key discussions and thinking from BASE Birmingham² held in April 2013 have also been included.

In addition to these events, the timeline opposite provides a brief overview of the key milestones underpinning the Carbon Roadmap and previous policies which have helped set Birmingham on course for a low carbon future.

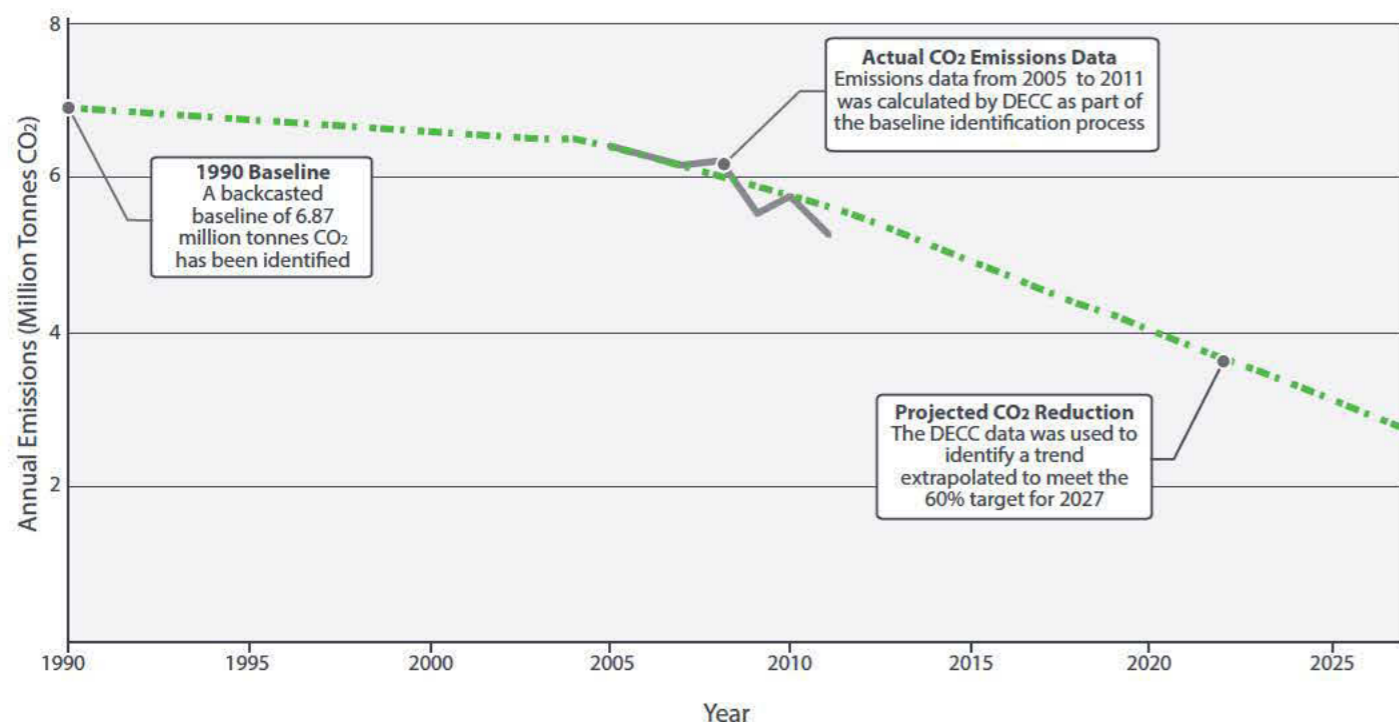
The Green Commission has developed the Carbon Roadmap on behalf of Birmingham using the knowledge and input from these different events and audiences. There has also been close collaboration with the Smart City Commission to capture the opportunities for using data and information to influence people's decision-making that will enable them to reduce carbon emissions and save money.



We are building on the city's success to become a leading green city

²www.basecities.com/birmingham

Meeting the carbon target will be a challenge. The Commission has looked at the scenarios to understand the scale and respond to the challenge. The Roadmap puts Birmingham in a stronger position than ever before.



Identifying the Baseline

In order to understand the scale of the challenge the city is facing, the Green Commission identified the carbon emissions baseline backcasted to 1990, as shown by the dotted line in the graph above, using actual emissions data that is available for Birmingham from 2005 – 2011³, as shown by the solid line in the graph.

This baseline analysis identified that in order for Birmingham to achieve the 2027 target, CO₂ emissions must reduce from a baseline of 6,874,000tCO₂ to 2,749,600tCO₂ by 2027. This represents a reduction value of 4,124,400 tCO₂ against a 1990 baseline⁴.

The latest analysis of Birmingham's progress for 2011 indicates a CO₂ reduction of 24% against the 1990 baseline which is 5% ahead of the projected year-on-year trajectory.

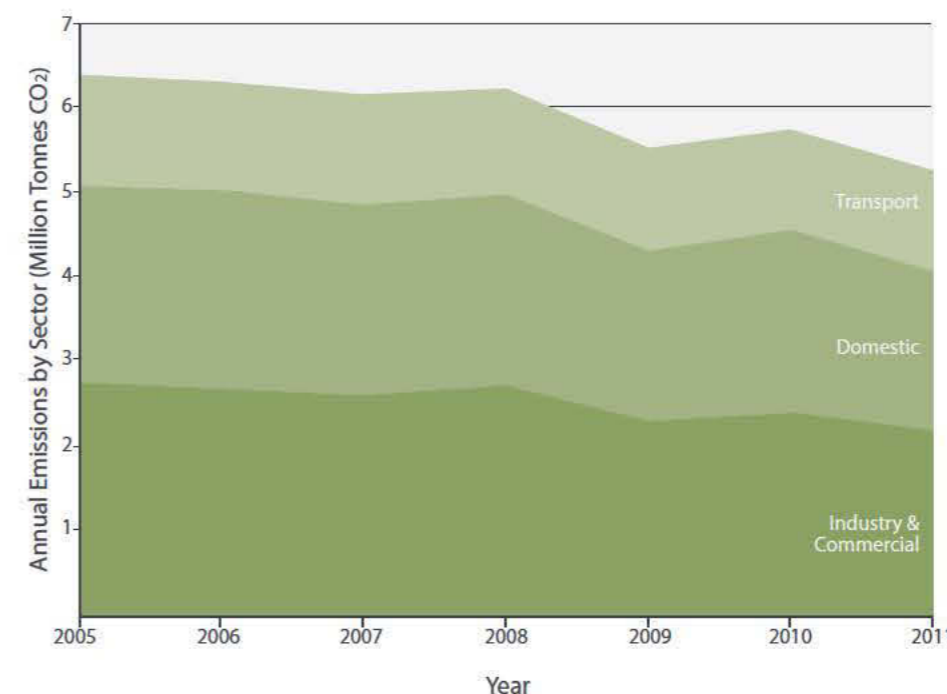
Birmingham has set itself one of the most ambitious carbon reduction targets in the UK - a 60% reduction in total emissions by 2027 against a 1990 baseline.

Birmingham's carbon reduction target relates to emissions from within the administrative boundary of the city. Sectors include domestic, commercial and industrial buildings and road transport.

It excludes emissions that local authorities have minimal influence over - from motorways, diesel rail, emissions covered under the EU Emissions Trading Scheme (EUETS) and Land Use and Land Use Change (LULUC).

This approach is consistent with DECC's advice and aligns with the approach by other authorities since carbon reduction targets were established in 2008.

Whilst the Carbon Roadmap does not focus on embedded and embodied CO₂ (the sum of all the energy required to produce goods or services in the city) the Green Commission recognises that it is essential not to neglect our responsibility and where possible, instigate reductions in embedded emissions.



We are already over a third of the way there with the latest Department of Energy and Climate Change (DECC) data for 2011 showing a 24% reduction in total CO₂ emissions since 1990.

Emissions by Sector

Birmingham's CO₂ emissions are dominated by the industry and commercial sector (41.6%) which reflects its importance to the local economy. This presents a significant challenge to meeting the CO₂ target as emissions from the industry and commercial sector are typically more difficult to control than the transport and domestic sectors.

The domestic sector also contributes considerably to the total CO₂ emissions (36.9%) whilst transport emissions (21.5%) is just over half that of industry and commercial. In terms of fuel sources, Birmingham's emissions are dominated by electricity, natural gas (for heating) and petroleum (for transport) which together account for over 90% of the city's emissions.

Carbon Reduction Scenarios

To understand how the Carbon Roadmap will help Birmingham achieve its carbon reduction target the Commission considered three different scenarios:

- 1 Business as Usual Scenario
- 2 Business as Usual plus National Efforts Scenario
- 3 The Carbon Roadmap Scenario 1

1 Business as Usual Scenario

This scenario assumes that we take no direct action to reduce carbon emissions but population growth, changes in the economy and the carbon intensity of GDP, rising energy prices and shifts in demand from consumer trends and behaviours will reduce the level of CO₂ emissions in Birmingham. This is estimated to result in a 20% reduction.

³There is a two year lag in the data for the time it takes DECC to aggregate national data to a local level.
⁴Further information on Birmingham's CO₂ reduction baseline and target can be found in "Technical Paper 1: Report on Birmingham's carbon dioxide (CO₂) emissions reduction target baseline", February 2013.

2 Business as Usual Scenario plus National Efforts

The UK is committed under the Climate Change Act to an 80% emissions reduction by 2050 on 1990 levels, and has legislated five-year carbon budgets covering the period to 2027 that are compatible with this long-term target. The Carbon Roadmap aims to align itself with the national efforts such as decarbonising the UK energy system, buildings retrofit and increasing the use of electric vehicles, public transport and cycling.

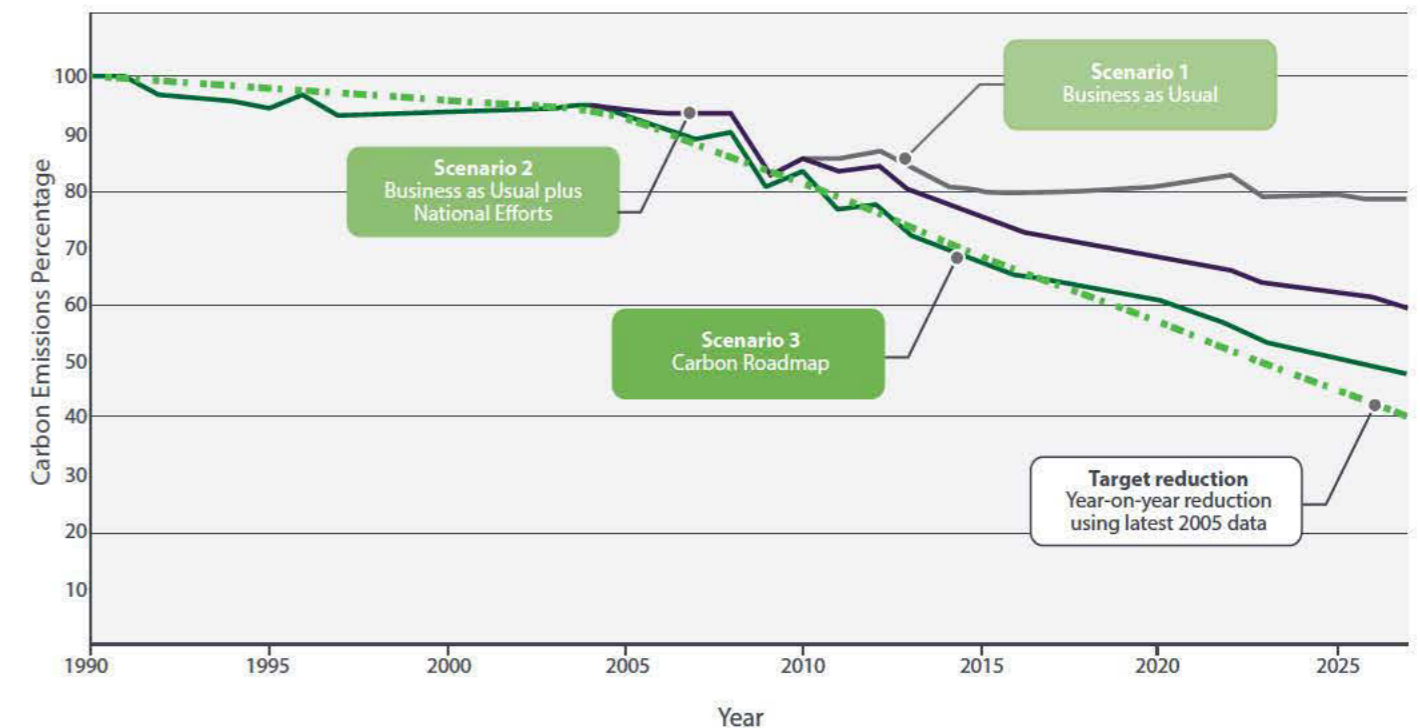
Two studies have been completed for Birmingham⁵ which suggest that even without taking any specific measures locally there should be significant reductions in CO₂ emissions due to international and national policies. When considering the effects of energy trends, consumer behaviour, national efforts and grid decarbonisation they found that Birmingham's CO₂ emissions could reduce by as much as 41% by 2027. This level of reduction is highly dependent on the efforts to decarbonise the national grid, which is a fundamental element of the Energy Bill.

Given the current debate nationally on the Energy Market Reform (EMR), the Green Commission have advised that it is prudent for Birmingham to consider the opportunities and priorities for wider decarbonisation of the city's electricity through decentralised energy networks as part of the Carbon Roadmap. "Technical Paper 2: Report on the impact of national policy and programmes on Birmingham's carbon dioxide (CO₂) emissions to 2027" provides further background and information to this issue of uncertainty.

Further measures and trends from national and international efforts will have an impact on Birmingham's CO₂ emissions. The table below provides an overview of these policies and measures which are not always beyond Birmingham's influence, such as the rate of take-up of low emissions vehicles and ULEVs.

Sector	Impact
Buildings & Efficiency	<ul style="list-style-type: none"> Roll out of smart metering to reduce energy demand Efficiency improvements to appliances and lighting Programmes such as ECO and Green Deal Feed-in-Tariff / Renewable Heat Incentive Fuel switching of major/energy-intensive industry applicable to CO₂ emissions from power plants, a wide range of energy-intensive industry sectors and commercial airlines EU Emissions Trading Scheme covers around 45% of total greenhouse gas emissions from the 27 EU countries Target is for 21% reduction in emissions by 2020, from factories, power plants and other installations in the system from 2005 levels Vary according to the type and nature of industrial plants
Mobility	<ul style="list-style-type: none"> Efficiency improvements in combustion engines Take-up of low emissions vehicles and ULEVs (plug-in hybrids, battery electric and hydrogen fuel cell)
Energy & Resources	<ul style="list-style-type: none"> Mass deployment of wind and carbon capture and storage (CCS) Replacement of gas or oil burners with biomass fuels Continued electrification in heating and transport

The estimated impact of the above factors, predominantly the decarbonisation of the national electricity grid, is an approximate 40% reduction in CO₂ emissions by 2027.



3 The Carbon Roadmap Scenario

The Carbon Roadmap Scenario considers the achievements of Birmingham to date, using available data from DECC 2005-2011 and the level of carbon reduction from:

- Carbon reduction from demand trends as a result of price effects (Scenario 1);
- Grid decarbonisation and national efforts to reduce carbon emissions (Scenario 2); and
- Projected reduction as a result of Carbon Roadmap measures, where measurement has been possible.

The measures of the Carbon Roadmap for which we have been able to calculate a carbon reduction would, in addition to decarbonisation and

national trends, result in a carbon reduction of approximately 52%. It is important to stress that due to the range of uncertainty in some of the projects this can only be considered as a guide value, using our best available evidence.

Path to 60% Total Carbon Reduction

The Roadmap puts Birmingham in a stronger position to achieve our green ambitions than ever before. For the first time we understand the scale and challenge of a 60% reduction in our total carbon emissions and the potential impacts of efforts, nationally and locally.

It is clearly an ambitious target and a challenge for the city to achieve together. The carbon gap which widens after 2017 to 2027 is because project plans during this period are not yet sufficiently defined to provide a

measurement of carbon impact and it is felt a pragmatic approach is required given the possible variables which will influence projects. The political, economic and cultural landscape will change and new technologies will emerge which will impact on the rate of reduction.

Our ability to succeed relies heavily on securing capacity and finance for the projects in the Roadmap, on the sustainability of planning and new development and the effectiveness of national and local efforts. We know that in the next few years our efforts will help us to continue to reduce our overall emissions in line with our target and as we monitor and review progress and create more detailed plans, this carbon gap will close.

⁵(1) DECC Carbon Plan Analysis and (2) Mini-Stern for Birmingham and the Wider Urban Area

To be able to achieve the Roadmap's ambitions, a change in mindset is both necessary and essential. We have identified the following priorities and criteria to ensure that the Vision and objectives of the Green Commission for Birmingham are achieved.

Identifying Roadmap Priorities

The Green Commission's Vision Statement already identified a number of priorities for the Carbon Roadmap to address. These included:

- To accelerate investment in how we heat and power our city
- Create more local renewable energy
- Improve the way we travel and get around
- Widen our investment in building energy efficiency

These priorities were presented and expanded as part of the stakeholder workshops undertaken following the launch of the Vision Statement.

The participants also sought to identify how the Carbon Roadmap should be delivered and what criteria should be used to select and promote key projects. The outcome of the workshops was a clear set of aims for the governance, structure and delivery of the Carbon Roadmap, as listed below.

The Carbon Roadmap's legacy should:

- Provide the leadership, ambition and commitment of a leading green city;
- Communicate a persuasive argument for action to people, politicians, consumers and businesses;
- Reduce Birmingham's carbon emissions and have wider social, economic and environmental benefits as part of an integrated approach to sustainability which maximises the use of local resources (human and material) and builds on existing programmes where possible;
- Promote transparency in decision-making;
- Be based on clear evidence which is measurable, replicable and scalable

- Include and encourage a whole lifecycle consideration on carbon and cost of goods and services;
- Present options which are economically viable, with a credible route to financing;
- Help to make Birmingham commercially competitive, nationally and internationally; and
- Consider future lifestyles, technology and modes of work linked to sustainable business models.

The results from the workshops, in addition to factors identified through a review of similar projects and our past experience in project and policy delivery, were used to create a set of criteria to align with these aims.

Although the leading target for the Roadmap is to reduce carbon emissions, the Commission also seek to address the wider economic, environmental and social aspects of moving towards a low carbon future.

The criteria were selected to enable the assessment and comparison of the strengths and weaknesses of the range of projects considered as part of the Carbon Roadmap in order to achieve Birmingham's ambition of becoming a leading green city.

Using the Criteria

The Commission encourages organisations, businesses and individuals, where relevant, to adopt the criteria when developing their own projects as best practice principles for successful projects to help Birmingham become a leading green city.

Birmingham's population growth and its necessary development provide the opportunity to apply these Roadmap principles through the Birmingham Development Plan. The Birmingham Development Plan itself states:

"By 2031 Birmingham will be renowned as an enterprising, innovative and green city that has delivered sustainable growth meeting the needs of its population and strengthened its position on the international stage."

Changing Mindsets

The criteria help to challenge the existing decision-making process from a leading green city perspective – it is intended to open and supplement discussions rather than add an extra layer to decision-making processes.

Can Birmingham do it?

What will it do for Birmingham?

Criteria		Description
Financial / Deliverability	Capacity	The city's ability to achieve effective delivery of the project based on existing skills/availability
	Capital cost	The estimated capital costs required to deliver the project
	Investment potential	There is a credible route to acquiring financing and it is commercially competitive

Criteria		Description
Economic	Economy	Contribution to sustainable economic green growth, particularly within the low carbon economy
	Skills, training & jobs	Ability to employ, train and up-skill residents in the city
Social	Education & information	Contribution to knowledge sharing, education and behaviour change for city residents
	Health & well-being	Improvements to health and well-being of city residents to achieve a better quality of life
Environmental	CO ₂ reduction	Projected contribution to carbon reduction targets
	Natural capital and adaptation	Contribution to enhancing the city's natural capital assets and adapting to climate change impacts

Carbon Roadmap Themes

The Roadmap is built around five themes to categorise the aims and objectives set out in the Vision Statement. We will monitor, measure and deliver against these themes through more effective collaborative working across partners, communities and agencies.



THEMES

AIMS & OBJECTIVES FOR 2027

	<p>Catalysing Green Growth & Behaviour</p> <ul style="list-style-type: none"> • Create a sustainable economic environment to attract progressive, innovative and dynamic businesses • Create jobs in green growth industries and services with a focus on building green skills, innovation and knowledge • Develop an overall better quality of life; improved health/reduced public health costs, better air quality, less noise and less traffic
	<p>Buildings & Efficiency</p> <ul style="list-style-type: none"> • Reduce levels of fuel poverty • Improve the energy efficiency of our buildings and actively promote affordable warmth • Improve energy efficiency of the city and its buildings through smart energy management
	<p>Energy & Resources</p> <ul style="list-style-type: none"> • Position Birmingham as a leader in resource recovery technologies to reduce the impact of the consumption of scarce resources and materials • Ensure greater energy security and more locally produced and controlled energy generation and distribution • Ensure better management of the city's total waste and improved recycling, re-use and conversion to energy – towards a zero landfill waste city
	<p>Transport & Mobility</p> <ul style="list-style-type: none"> • Ensure that we have a greener public transport system with better travel choices • Encourage greater use of electric and biofuel vehicles through new collaborations between public and private fleet operators to reduce greenhouse gas emissions and improve air quality
	<p>Natural Capital & Adaptation</p> <ul style="list-style-type: none"> • Establish a connected network of green living spaces across the whole city • Integrate preventative health care with improved habitat and access across the city • Increase biodiversity across the city and create a resilient ecological network that provides effective connections for people and wildlife • Tackle flood risk, water quality, air quality and adapting to climate change • Embrace the multiple benefits of urban forestry and urban food growing

Key Steps for 2014 - 2017

THEME

OBJECTIVES

PROJECTS



Catalysing Green Growth & Behaviour

- > Provide a network to develop education, skills and knowledge transfer for people and businesses and build on Birmingham's wealth of research and expertise
- > Create an economic environment that encourage progressive, innovative and dynamic businesses to deliver Birmingham's green growth aspirations
- > Provide guidance within planning policy to control/incentivise developers to design in sustainability from the outset of a project

Being Positively Green

Green Economy & Employment Strategy | Green Bridge Supply Chain Programme | Birmingham's Green Brain | Livable Cities | Green Fund Assessment | Neighbourhood Initiatives | Bid for European Green Capital

Your Green & Healthy City Supplementary Planning Document



Buildings & Efficiency

- > Widen our current programme to improve the energy efficiency of domestic, commercial and industrial buildings in Birmingham to reduce the energy demand required to heat and power the city
- > Expand existing programmes to provide advice and support to reduce energy usage across all sectors

Commercial Green Deal | Domestic Retrofit Programmes | BCC Sustainable Energy Project | LED Street Lighting Programme | Boiler Scrappage Scheme | Landlord Charter



Energy & Resources

- > Create a holistic strategy for the future of Birmingham's energy infrastructure
- > Invest in low carbon decentralised energy generation infrastructure and expand existing programmes
- > Develop alternative sources of energy and storage technology
- > Develop opportunities to use waste and resources more efficiently

Birmingham Energy Futures

Birmingham District Energy Scheme Expansion | Western Power Distribution FlexD Grid | Birmingham Energy Services Company | European Bioenergy Research Institute | Energy Storage & Hydrogen Partnership | Birmingham Biochar Group | Tyseley Information Exchange Event & Resource Recovery Portal



Transport & Mobility

- > Create a truly integrated public transport network which changes the way we travel and get around Birmingham
- > Improve the perception and use of public transport in partnership with Centro
- > Reduce the impact of cars in the city for improved air quality and better health

Cycle Revolution | Birmingham Mobility Action Plan (BMAP) | Bus, Metro and Rapid Transit | Low Emission Vehicles & Green Fleets | Car Clubs | 20 20mph is Plenty



Natural Capital & Adaptation

- > Create tools and plans that expand our understanding of the natural environment and provide more holistic planning and management of our natural assets and resources to future-proof development in the city
- > Share our experience with other cities across the world to help create an improved approach to establishing natural capital for health improvements
- > Understand the risks from climate change and the required actions to adapt
- > Invest in the city's natural environment by enhancing its role in the city's built environment to maximise its benefit to people and wildlife

Green Living Spaces Plan

District Natural Capital Plans | Natural Capital City Tool | Birmingham Food Charter | Biodiversity Offsetting Strategy | I-Tree Eco Assessment | Birmingham Tree Bond | Global Biophilic City Status | BUCCANEER | Pilot Natural Health Improvement Zones | Birmingham and Black Country Nature Improvement Area | Adapting the City to Flood Risk | Expansion of the Growing Local Flora

Carbon Roadmap Projects

*Building on the momentum of the city's early successes, the Roadmap draws together a number of **Go Early Projects** in each theme, which are already underway or will be by the end of 2014, all of them aim to accelerate our efforts towards being a leading green city with a green growth economy.*

Go Early Projects

The majority of the projects which the Carbon Roadmap has identified have either recently started or will start before the end of 2014, signifying the urgent need for action and the potential to use the Roadmap as a springboard to continue the strong momentum.

The remainder of the Carbon Roadmap covers the projects which will have either started recently or will do by the end of 2014, as well as the existing projects which show how Birmingham is already leading by example. To find out how you can get involved and for more detail on the Go Early projects please visit the online portal.

The governance and delivery arrangements for the Roadmap are covered after the project overview.

Project Purpose

The projects have been chosen according to their contribution, as set out below.



Carbon Emissions Contribution Projects

Projects that will make a major contribution to reducing Birmingham's carbon emissions.



Catalyst Projects

Projects that, by themselves, may have little direct contribution to reducing emissions or making a leading green city but are enablers for other projects.



Pilot Projects

Projects that are pilot opportunities to test new and innovative approaches and there is potential for wider implementation.



International Prestige Projects

Projects which will give the city international prestige and prominence and raise the status as a leading green city.





Enabling change to support jobs, green growth and an improved quality of life.

Introduction

The initiatives within Catalysing Green Growth & Behaviour are focused on:

- 1 Compiling and disseminating information, data and guidance to support people, communities and businesses across all sectors, to enable them to make better informed decisions.
- 2 Developing two-way interaction and plans that engage groups in decision-making, coordination and collaboration of all activities in the Roadmap.



NEIGHBOURHOOD INITIATIVES



There are already a number of well-established neighbourhood initiatives in Birmingham which demonstrate a fundamental stride towards making Birmingham greener by reducing local environmental impacts and improving people's lives. Notable examples across the city include Balsall Heath is Our Planet, Eco Sutton, Kings Heath Transition, Northfield Ecocentre, Summerfield Eco Village and Sustainable Moseley. These community groups have been formed by local residents who promote more sustainable lifestyles in their local area.

For Birmingham to build a leading green city it must work with these groups who have indispensable knowledge of their local area and working with residents of the city. Their early successes should be celebrated and supported.

- Catalyst - BVSC Environmental Network
- Partners - Communities and residents
- Timeframe - Ongoing

BEING POSITIVELY GREEN



Development of an online portal with one element that provides information and advice, for example through an online green city TV channel and the other aggregating the innovation and creativity of Birmingham residents (and businesses) by providing space for them to publicise, share and discuss their efforts. This would be linked to awareness and behaviour change campaigns spread across the themes. Competitions will be run, for example, for schools and colleges to develop green communications and engage in behaviour change and new incentive schemes for energy efficiency will be considered.

- Catalyst - Birmingham City Council
- Partners - City-wide - shared space
- Timeframe - 2013 onwards

GREEN FUND ASSESSMENT



An assessment of different funding streams and application requirements will be completed to ensure a co-ordinated and strategic approach to securing funding to deliver Birmingham's Carbon Roadmap. This will include collaboration across the city's stakeholders and different sectors, through the Greater Birmingham and Solihull Local Enterprise Partnership, nationally with government and specialist organisations and through the European Union.

- Catalyst - Birmingham City Council
- Partners - The business and professional community, GBS LEP, investment and banking community
- Timeframe - March 2014 - September 2014



BIRMINGHAM'S GREEN BRAIN



The Green Brain is comprised of two parts:

- 1 The Green Observatory - data transparency and information coordination across agencies in one central place to capture and add intelligence to Birmingham's efforts. This would also facilitate knowledge transfer and learning from new projects in one place for future access, across all themes within the Roadmap.
 - Catalyst - Birmingham City Council
 - Partners - Open Data Institute, Digital Birmingham, Creative Communities, media groups, universities, MEBC and UKBCSD
 - Timeframe - 2013 onwards
- 2 The Knowledge & Research Hub - building on the leading international research and innovation at our universities we will develop a central point of coordination between universities, businesses and the public sector, in supply of, and demand for innovative research relating to the green agenda, knowledge and skills.
 - Catalyst - Universities
 - Partners - Birmingham City Council, Creative communities, media groups, MEB, UK BCSD
 - Timeframe - 2014 onwards



YOUR GREEN AND HEALTHY CITY SPD



This Supplementary Planning Document will provide sustainability guidance for development and investment in Birmingham to support planning policy in the Birmingham Development Plan.

- Catalyst - Birmingham City Council
- Partners - City wide consultation
- Timeframe - Adoption in 2014

GREEN BRIDGE SUPPLY CHAIN PROGRAMME



This competition based fund provides grant support for existing Small to Medium sized Enterprises (SMEs) within the West Midlands Region. The programme is funded by the Regional Growth Fund until March 2015 with grants of between £20,000 and £100,000 available, to support SMEs within the green sector or seeking to diversify into the sector and creating sustainable new jobs and/or safeguarding existing jobs.

Two competition rounds have so far been completed, with 79 applications received, 58 applications recommended for funding, a total value of £4,556,179 in grants awarded and a private sector match worth £25,584,948 generated. 668 jobs will be created and 421 will be safeguarded as a result of the programme so far. For more information got to: www.birmingham.gov.uk/greenbridge

- Catalyst - Greater Birmingham & Solihull LEP
- Partners - Department for Business, Innovation and Skills, Regional Growth Fund
- Timeframe - 2013 - 2015

LIVEABLE CITIES



Liveable Cities is an ambitious, five-year programme of research to develop a method of designing and engineering cities to deliver global and societal wellbeing within the context of low carbon living and resource security through developing realistic and radical engineering that demonstrates the concept of an alternative future.

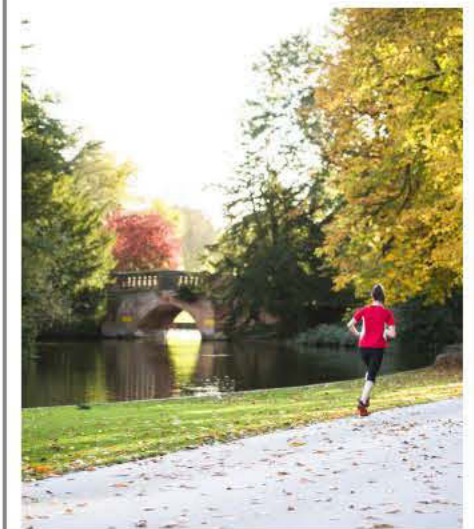
This will be achieved via the development of a unique City Design Framework that will measure how cities operate and perform in terms of their people, environment and governance, taking account of wellbeing and resource security.

Using the Framework, the Liveable Cities team will develop realistic and radical engineering solutions for achieving the UK's ambitious carbon reduction targets and will test them in three UK cities: Birmingham, Lancaster and Southampton.

Liveable Cities is supported in its work by an extensive group of Expert Panellists. Drawn from professionals from across the private and public sector.

For more information and to get involved visit www.liveablecities.org.uk

- Catalyst - University of Birmingham
- Partners - Lancaster University, University of Southampton, University College London, Engineering and Physical Sciences Research Council
- Timeframe - Ongoing





Buildings & Efficiency

Want to get involved with any of these projects or suggest your own?
Visit www.makingbirminghamgreen.com

Improving the energy efficiency of the city's domestic, commercial and industrial buildings.

Introduction

Birmingham's CO₂ emissions in buildings are largely from water and space heating and electricity consumption. In 2011 this equated to 77.6% of Birmingham's CO₂ emissions split between commercial and industry (41.5%) and domestic (36.1%). Using the available data from 2005-2011 building emissions have reduced by 19.7%.

There are 424,967 households in Birmingham, made up of flats (23%), terraced (31%) and semi-detached houses (35%). Only around 11% of houses are detached. Birmingham and the wider urban area will see population growth of 150,000 people between 2011-2031 requiring an increase in households of 80,000.

Since 1990, an increase in domestic gas consumption has been largely driven by higher average internal temperatures in homes and the roll out of central heating. However, increased efficiency of buildings and boilers has acted to limit this trend.

In the commercial sector, residual coal use for low-grade heating has been largely replaced by natural gas, reducing overall emissions. More efficient industrial buildings and industrial processes are critical if Birmingham is to develop a sustainable economic growth, particularly within the low carbon economy.



DOMESTIC RETROFIT PROGRAMMES



There are numerous programmes operating nationally and locally to increase the energy efficiency of domestic properties. This includes Birmingham Energy Savers, the first example of a local authority delivering the Government's Green Deal, delivering energy efficient improvements to homes in Birmingham.

Energy-saving improvements include insulation, heating, draught-proofing, double glazing and the installation of renewable energy technologies such as solar panels.

Birmingham Energy Savers anticipated that it would - create 2,000 jobs by 2020, reduce CO₂ emitted per year by 18,000 tonnes by 2015, and an annual saving in domestic fuel bills between £120 and £300. For more information visit: www.birminghamenergysavers.org.uk

There is a further layer of programmes that are applicable to BCC housing stock, private associations and the rental sector.

There are vast opportunities for improving the efficiency of homes in Birmingham and reducing heating bills, fuel poverty levels and improving the comfort of people in their homes, including the opportunity for scheduled upgrades as part of City Council housing void refurbishment. There are 63,000 dwellings with approximately 5,000 voids per year. Retrofit of domestic council owned properties between transfer & redecoration for new tenants to a minimum of C/D energy standard.

- Catalyst - Birmingham City Council
- Partners - Birmingham Energy Savers, BMHT, Housing Associations and energy companies
- Timeframe - Ongoing



Birmingham Municipal Housing Trust - Built to Code for Sustainable Homes Level 4

BIRMINGHAM CITY COUNCIL (BCC) SUSTAINABLE ENERGY PROGRAMME



This project will include the development of an outline business case for 50 of the City Council's properties with full business cases in 2014. The long term objective is to achieve a 50% saving on the City Council's energy bill from 2016 - 2018, reducing emissions by 80,000 tonnes CO₂ per year.

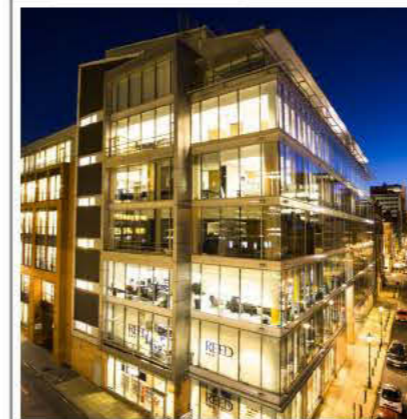
- Catalyst - Birmingham City Council
- Partners - Carillion & ACIVICO
- Timeframe - 2014 - 2018



COMMERCIAL GREEN DEAL

Develop a framework to deliver energy efficiency solutions to commercial, industrial and school properties across Birmingham.

- Catalyst - Carillion and Birmingham Energy Savers
- Partners - Birmingham Property Services, Business Improvement Districts, MEBC, UK BCSD
- Timeframe - 2014 onwards



LED STREET LIGHTING PROGRAMME



As part of a £2.7 billion Highways Maintenance and Management Service Partnership Contract between Amey and the City Council more than 95,000 street lights in Birmingham will be replaced with state-of-the-art Light Emitting Diode (LED) technology which will cut carbon emissions and improve safety.

The cutting edge lights will not only reduce carbon emissions by up to 50% and be brighter than traditional lights, but they will also enable operators to control and adjust their levels remotely according to what is happening in the surrounding area. This offers opportunities for carbon emissions reductions beyond the potential of the technology change.

This Partnership will also see the upgrading and maintenance of the city's road network over the next 25 years.

- Catalyst - Amey
- Partners - Birmingham City Council
- Timeframe - 2010 - 2035

EcoPods



EcoPods are a smart new communal heating system installed by Carillion in partnership with Birmingham City Council. The award-winning low carbon heating solution system developed by the Belfry Group as part of a £4.4 million project in the Harborne area of Birmingham, facilitated through the Carillion-delivered Birmingham Energy Savers Scheme (BES) and is funded by the Department of Energy & Climate Change, Birmingham City Council (BCC) and through the Energy Company Obligation (ECO).

Around 120 households are already benefiting from a mix of EcoPod and external wall insulation, lowering energy bills by up to 40% and significantly cutting carbon emissions. The EcoPods are installed on the roof which means that there is no need to have gas safety certificates or individual maintenance checks for each home. The technology is being installed in more households across the city.

- Catalyst - Carillion and Birmingham Energy Savers
- Partners - Belfry, Tenant Management Organisations
- Timeframe - 2013 onwards





Energy & Resources

Want to get involved with any of these projects or suggest your own?
Visit www.makingbirminghamgreen.com

Generating more low and zero carbon energy to improve how we heat and power the city and maximising the efficiency of our resources to drive the city's green growth.

Introduction

Birmingham's energy consumption is dominated by natural gas (for heating), electricity (for power) and petroleum (for transport) – altogether accounting for 90% of the city's carbon emissions.

Birmingham draws the majority of its energy from the national grid although the Tyseley energy from waste plant generates 25MWh per annum from the thermal treatment of waste, to supply 41,000 Birmingham homes (9.6%). The City Council's Transport, Connectivity and Sustainability Scrutiny Committee are currently assessing options for converting waste to energy, with a particular focus on the expiry of the contract for the Tyseley facility in 2019. A mix of technologies is vital to secure Birmingham's energy supplies and reduce the environmental impact of powering our city.

The energy and resources sector has a key role to play in green growth. Nationally, the renewable energy sector supports 35,000 green jobs. Industrial symbiosis – the sharing of services, utilities and by-product resources among businesses – presents further opportunities for green growth, particularly in the Tyseley Environmental Enterprise District.

An International Synergies study for Birmingham concluded that the potential economic, social and environmental impact of implementing industrial symbiosis opportunities in Tyseley could result in 400-500 direct jobs (and further jobs related to investment), 55,000 tonnes per annum carbon reduction, annual cost savings for existing companies in excess of £1.9M, additional annual revenue for Birmingham-based businesses of £8-10M and total annual GVA impact of circa £12-15M.

EUROPEAN BIOENERGY RESEARCH INSTITUTE (EBRI)



EBRI's new state-of-the-art building at Aston University houses six bioenergy research suites and technology demonstration facilities and is powered by innovative bioenergy technologies developed by EBRI researchers.

Birmingham creates significant biomass resources that can be converted into clean, renewable energy, transport fuels and feedstock to replace crude oil for organic products like plastics. EBRI is working closely with the City Council and businesses in the West Midlands to identify sites, such as Tyseley Environmental Enterprise District, to turn organic waste into renewable energy. It is also promoting bioenergy technologies and supporting organisations to develop their own bioenergy schemes, often free of charge through European funded projects.

Visit www.ebri.org.uk

- Catalyst - Aston University (EBRI)
- Partners - Birmingham City Council
- Timeframe - 2011 onwards

BIRMINGHAM BIOCHAR GROUP



It is anticipated that there will be between 1 and 1.5 tonnes annual output of biochar from the EBRI facility. A Birmingham Biochar Group is being established to consider how Birmingham could utilise the biochar which will be emanating from the EBRI facility later this year with a view to future growth in output. The Group will ensure a planned approach to utilising the biochar on a controlled basis for soil conditioning on different sites.

- Catalyst - EBRI
- Partners - Birmingham City Council, Harper Adams, Birmingham Allotments Association, Birmingham City University, University of Birmingham
- Timeframe - 2014 onwards



WESTERN POWER DISTRIBUTION FLEXD GRID

Western Power Distribution (WPD) has secured £13.5 million from energy regulator Ofgem's Low Carbon Networks Fund to revolutionise the power network in Birmingham. The WPD initiative will use ground-breaking new solutions to reduce the fault level and accommodate more low carbon generation such as heat and power networks across the city, to make the city's supply more resilient and help the city achieve the 60% carbon emission target.

The initiative includes collaboration with Birmingham City Council, the University of Warwick, global consulting firm Parsons Brinckerhoff, and Cofely, who operate the district heating networks in the city. To see more on this project visit:

www.westernpowerinnovation.co.uk/FlexDGrid.aspx

- Catalyst - Western Power Distribution
- Partners - Birmingham City Council
- Timeframe - 2013 onwards

TYSELEY INFORMATION EXCHANGE EVENT & RESOURCE RECOVERY PORTAL



An opportunity for businesses to discuss their available resources that are currently disposed of as waste to explore opportunities for industrial symbiosis. The event would also offer the opportunity for businesses to consider the value of an online platform for them to share opportunities for resource exchange and recovery. The incentives being offered in the Tyseley Environmental Enterprise District make it a prime location for any subsequent investment given the available sites in the area looking for "resource recovery" uses.

- Catalyst - Birmingham City Council
- Partners - EBRI & Businesses
- Timeframe - March 2014 onwards

BIRMINGHAM ENERGY FUTURES



Mapping the city's current energy infrastructure and the demands from people and buildings and masterplanning the future demand and potential for an increased generation of energy from decentralised low and zero carbon sources. In addition we will consider storage opportunities and define energy principles for the city.

- Catalyst - Birmingham City Council
- Partners - DECC, Heat Network Delivery Unity, National Grid, British Gas, Western Power Distribution, Digital Birmingham
- Timeframe - 2013 onwards

BIRMINGHAM ENERGY SERVICES COMPANY



The BEC would be run by the Council to generate local energy, build strategic energy infrastructure and wholesale energy to Birmingham consumers. It would have the ability to generate income for the City Council whilst also supporting economic inclusion and tackling priorities such as fuel poverty for Birmingham residents. A business case will be completed as the first part of its development, building on the success of other local authority led models.

- Catalyst - Birmingham City Council
- Partners - TBC
- Timeframe - 2014 onwards

BIRMINGHAM ENERGY STORAGE CENTRE & THE BIRMINGHAM HYDROGEN PARTNERSHIP



Birmingham's new grid scale energy storage research centre is a £13m partnership between the UK Research Councils, technology companies and the University of Birmingham. With state of the art equipment and laboratory space, and a flagship test-bed facility, Birmingham will be at the forefront of the development of one of the UK's 'Eight Great Technologies'. The hydrogen fuel cell cars to the right are used around the campus.

This national facility complements the Birmingham Hydrogen Partnership which is working to make Birmingham an international centre of research, development and deployment of hydrogen and fuel cell technologies for low carbon energy applications. Through the University of Birmingham the city hosts the national Centre for Doctoral Training which is meeting the rising industrial need for hydrogen and fuel cell expertise.

- Catalyst - University of Birmingham
- Partners - Birmingham City Council, EPSRC and UK industry
- Timeframe - Winter 2013/ Spring 2014 onwards

BIRMINGHAM DISTRICT ENERGY SCHEME (BDES)



Developed by the Birmingham District Energy Company (BDEC), the BDES is perhaps the most significant project that has been undertaken in Birmingham to reduce CO₂ emissions. It is owned and operated by Cofely District Energy working in partnership with Birmingham City Council.

The scheme features trigeneration - producing heat, electricity and chilled water through highly efficient large-scale combined heat and power (CHP) technologies specifically in the city centre.

There are three gas CHP schemes in the city centre. The CHP plant at Broad Street is estimated to save 4,000 tonnes of CO₂ each year, a 50% reduction in emissions. CHP plants at Aston University and the Children's Hospital together contribute to saving approximately 14,000 tonnes of CO₂ emissions each year.

- Catalyst - Cofely District Energy
- Partners - Birmingham City Council, Birmingham Children's Hospital
- Timeframe - Ongoing





Transport & Mobility

Want to get involved with any of these projects or suggest your own? Visit www.makingbirminghamgreen.com

Improving how we travel and get around Birmingham and reducing the impact of transport for better air quality and health.

Introduction

Transport emissions account for 23% of Birmingham's controllable CO₂ emissions. Between 1990 and 2005, emissions from transport rose steadily, driven primarily by rising road traffic levels and freight transport, and people have, on average, travelled more.

In recent years, emissions have fallen back to near-1990 levels partly as a result of the economic downturn, but also due to improvements in new car fuel efficiency and the increase uptake of bio fuels. From 2005 - 2011, the average CO₂ intensity of new cars fell from 169.4 gCO₂/km to 138.1 gCO₂/km (4% reduction) and the industry is on track to meet the UK national 2020 targets. Birmingham's road transport emissions have fallen by 10% from 2005-2011.

Whilst overall transport emissions have fallen, as a proportion of all emissions it continues to increase and therefore remains an area where more action is necessary to further reduce emissions. In addition, there are significant social and economic benefits of an effective, sustainable transport system.



BIRMINGHAM CYCLE REVOLUTION



The 'Birmingham Cycle Revolution' is a 20 year strategy to provide a network of new and improved cycle routes across the city.

Birmingham won £17m from the Department for Transport as part of the Cycle City Ambition Grant with local match-funding providing a total investment of £22.9m. New cycling infrastructure and facilities will build on the existing cycle network, making the best use of canals and green corridors, with a comprehensive on-road network supported by cycle parking and bike hubs. This will complement the existing Smarter Choice initiatives, such as TravelWise, Top Cycle Location, Women on Wheels and Be Active.

It also builds on Bike North Birmingham, one of Birmingham's largest cycle schemes to encourage cycling in Erdington and Sutton Coldfield for commuting and leisure.

See www.birmingham.gov.uk/bcr and <http://bikenorth.birmingham.gov.uk>

- Catalyst - Birmingham City Council & Centro
- Partners - Centro, Transport Operators, Local Authorities & LEPs
- Timeframe - 2013 onwards

CAR CLUBS



The City is encouraging new sustainable models of car use by supporting the development of Car Clubs such as City Car Club and car2go. These offer people access to a car without the need to own one, avoiding the costs that come with them.

Research shows that one car club car replaces between four and five privately owned vehicles, and members make significant changes to their travel behaviour towards more sustainable options. Former car owners increase their use of non-car transport modes by 40% and two-thirds of those who owned a car before joining saw their mileage fall, by an average of around 25%.

- Catalyst - Birmingham City Council
- Partners - City Car Club, Car2go
- Timeframe - Ongoing

LOW EMISSION VEHICLES & GREEN FLEETS



This initiative aims to increase the number of low emission vehicles fleets used privately or in fleets in the city, to decrease carbon emissions and improve air quality.

The national Plugged in Places funding supports consortia of businesses and the public sector to install electric vehicle charging points. Plugged in Midlands, managed by Cenex, is developing a regional network of more than 500 electric vehicle Charging Points across the East and West Midlands. Working with Plugged-In Midlands, Birmingham now has a network of 36 electric vehicle charge points at 18 locations across the city in on and off-street locations. This includes the four locations originally installed as part of CABLED.

To encourage take up within fleets, a pilot of the City Council's fleet will be completed to establish principles through a Green Fleet Strategy. The development of low emissions vehicle fleets will be matched with providing additional charging and fuelling infrastructure points across Birmingham, including electric and biofuels.

- Catalyst - Birmingham City Council
- Partners - Cenex, MEBC, Amey, Freight Transport Association
- Timeframe - September 2013 - March 2015 to produce Green Fleet Strategy



BUS, METRO & RAPID TRANSIT

Plans to enhance public transport by complementing traditional bus and rail services with rapid transit options such as additional metro lines or Bus Rapid Transit (BRT) will provide a fast and reliable travel mode for more sustainable choices and improved access to key employment locations.

The Metro line between Birmingham Snow Hill and Wolverhampton is currently being extended to New Street station, with proposals to extend to Centenary Square, tied into the redevelopment of Paradise Circus. As part of proposals for High Speed 2 it is also planned to link the Metro through to the proposed City Centre station.



- Catalyst - Birmingham City Council & Centro
- Partners - Centro, Transport Operators, Local Authorities and LEPs
- Timeframe - 2013 onwards

20 MPH IS PLENTY



There is increased recognition that by reducing vehicle speeds in Birmingham, an estimated £5million per year could be saved in reduced road accidents and it would encourage more people to use their bikes or walk, taking traffic off the streets, reducing emissions and improving air quality and be healthy. The City Council is considering the introduction of 20mph zones across 90% of Birmingham's roads.

- Catalyst - Birmingham City Council
- Partners - City wide consultation
- Timeframe - Consultation until end November 2013

BIRMINGHAM MOBILITY ACTION PLAN (BMAP)



BMAP is a twenty year strategic vision for the future of transport in Birmingham to ensure that all transport investment decisions and schemes contribute to a single vision and set of objectives. It builds on Birmingham's Low Carbon Transport Strategy (LCTS), published in January 2012.

The document deals with transport under three overarching themes:

- 1 Strategic Connectivity - To facilitate Birmingham's economic development by improving movement within the city, to/from the West Midlands Region and the UK/Europe.
- 2 Connected Communities - To improve safety and encourage walking and cycling for trips within 3 miles of the home.
- 3 City Centre Connectivity - To maximise benefits from reducing congestion and over reliance on private car use both to the City Centre and then within it.

BMAP builds on the Local Transport Plan and complements the Birmingham Development Plan but goes further in its recommendations by setting ambitious targets for change. It addresses a wider agenda of health, education, carbon reduction and the Smart City initiative. It was developed in close cooperation with Centro and Transport Operators.

- Catalyst - Birmingham City Council
- Partners - Centro, Transport Operators, Local Authorities & LEPs
- Timeframe - 2013 onwards





Natural Capital & Adaptation

Want to get involved with any of these projects or suggest your own? Visit www.makingbirminghamgreen.com

Securing, enhancing and maintaining natural assets as a driver of the city's economic success.

Introduction

The natural environment is vitally important; as well as having intrinsic value, it is accepted that there are clear links between a healthy natural environment and our own quality of life. The economic and social benefits that we get from the natural environment are known as ecosystem services. More than one fifth of the city's area consists of parks, nature reserves, allotments, golf courses and playing fields, many of which are linked by rivers, watercourses and canals.

The projects and initiatives contained within the Natural Capital and Adaptation theme, are in their nature cross cutting. There are synergies across the other themes, which need to be identified and captured as the Roadmap is delivered.

Essentially this theme will focus on how the City can make better use of its natural resources to benefit human well being and the economy. Its inclusion reflects current global thinking economically and environmentally.



GREENING THE CITY



- 1 Green Living Spaces (City Scale)** - The GLSP has introduced 7 new cross cutting principles to the planning framework, in particular the SPD – Your Green and Healthy City, to ensure all future development addresses those 7 principles. The Plan's outcomes have been based on a unique global study, for any city, a comprehensive Ecosystem Services Assessment of its green and blue infrastructure, using the National Ecosystem Assessment methodology. This has been applied to 6 urban factors affecting the city - aesthetics and mobility, flood risk, education, recreation, biodiversity and climate change. Supply and demand maps have been created for each factor. When combined the 6 maps generate a single multiple challenge map for the city. This is the closest the city has got to mapping its dependency on its natural environment; the plan also commits the city to adopting a natural capital approach.
- 2 District Natural Capital Plans (District Scale)** - The multiple challenge maps from the GLSP will be used to help co-ordinate public services, such as public health. These Plans will provide a clear evidence base for community groups to bid for external funding. This mechanism will also apply to Biodiversity Offsetting and mainstreaming the Nature Improvement Area programme.
- 3 Natural Capital City Tool (District or Site Scale)** - an assessment tool for Birmingham's developers to value natural capital and ecosystem services –to be tested on sites in the city.
- 4 Natural Health Improvement Zones (Neighbourhood or Site Scale)** - To utilise the District Natural Capital Plans to deliver pilot projects in Birmingham for Natural Health Improvement Zones.
 - Catalyst - Birmingham City Council
 - Partners - Environment Agency, Birmingham Open Spaces Forum, MEBC, Forestry Commission, University of Birmingham, Wildlife Trust, EcoRecord, UK BCSD, Severn Trent, WBSCD, Developers, AECOM and Public Health
 - Timeframe - 2013 onwards



BIOPHILIC CITIES NETWORK



In October 2013, Birmingham was invited to join this new global network of aspiring green cities. The network is committed to ensuring that nature is put at the heart of future decision-making. Biophilic Cities have the potential to drive forward their new vibrant local green economies; and help shape a totally new global economic market that of Biophilic Investment. For more information: www.biophiliccities.org

- Catalyst - Birmingham City Council
- Partners - 11 global cities
- Timeframe - October 2013 onwards



ADAPTING THE CITY TO FLOOD RISK



- Catalyst - Birmingham City Council
- Partners - Severn Trent Water Ltd, Environment Agency, Network Rail, Canal and River Trust
- Timeframe - consultation on SWMP in 2014

Birmingham City Council (BCC) has established a governance structure for flood risk management (FRM) and coordinates and liaises with partners.

The Birmingham Surface Water Management Plan for Birmingham (SWMP) is an extensive, detailed and technical document and a summary report is to be produced for consultation in 2014. The SWMP is a major component of BCC's Flood Risk Management strategy which will be developed in 2014. The process has taken account of climate change scenarios and looked at potential mitigation measures as part of the action planning process.

BIRMINGHAM & BLACK COUNTRY NIA



The Birmingham and Black Country Nature Improvement Area is one of the first twelve Nature Improvement Areas in England. The partnership aims to achieve long-term environmental gains for the wildlife and people of Birmingham & the Black Country by delivering targeted, on the ground, biodiversity projects at a landscape scale.

It is a partnership of over 50 organisations, led by the Wildlife Trust for Birmingham and the Black Country and covers Birmingham, Dudley, Sandwell, Walsall and Wolverhampton. The NIA is working towards the ultimate vision of an urban landscape permeated by a network of high quality greenspace which is rich in wildlife and enjoyed by the people who live and work here. It represents a step-change away from site-focused nature conservation to a joined-up landscape-scale approach. Find out more and get involved - www.bbcwildlife.org.uk/NIA

- Catalyst - Wildlife Trust for Birmingham and the Black Country
- Partners - See www.bbcwildlife.org.uk/nia/ partners for more information
- Time Frame - 2012 onwards

UNDERSTANDING CLIMATE CHANGE IMPACTS



The BUCCANEER (Birmingham Urban Climate Change and Neighbourhood Estimates of Environmental Risk) is a modelling tool created through a partnership between Birmingham City Council and the University of Birmingham to quantify, for the first time, the likely combined impact of the city's urban heat island effect and the future impact of climate change up to 2100.

The project won the 2012 Lord Stafford Award for Innovation in Environmental Sustainability and will now move on to understand the impact of wind speed and direction on the urban heat island, as well as potential impacts from a health perspective for people. The BUCCANEER has also helped Birmingham secure funding to develop the densest urban climate monitoring system in the world.

- Catalyst - University of Birmingham
- Partners - BCC, Public Health England, NERC
- Timeframe - 2011 onwards

BIRMINGHAM FOOD CHARTER



A new Birmingham Food Council will be established to deliver the Food Charter which was drafted by Garden Organic and Public Health earlier this year. The Charter aims to make Birmingham a city whose citizens have a healthy diet, which helps them to live long, happy lives, maximise the contribution of food to the City's economy and minimise the impact of the food we eat on the local and global environment.

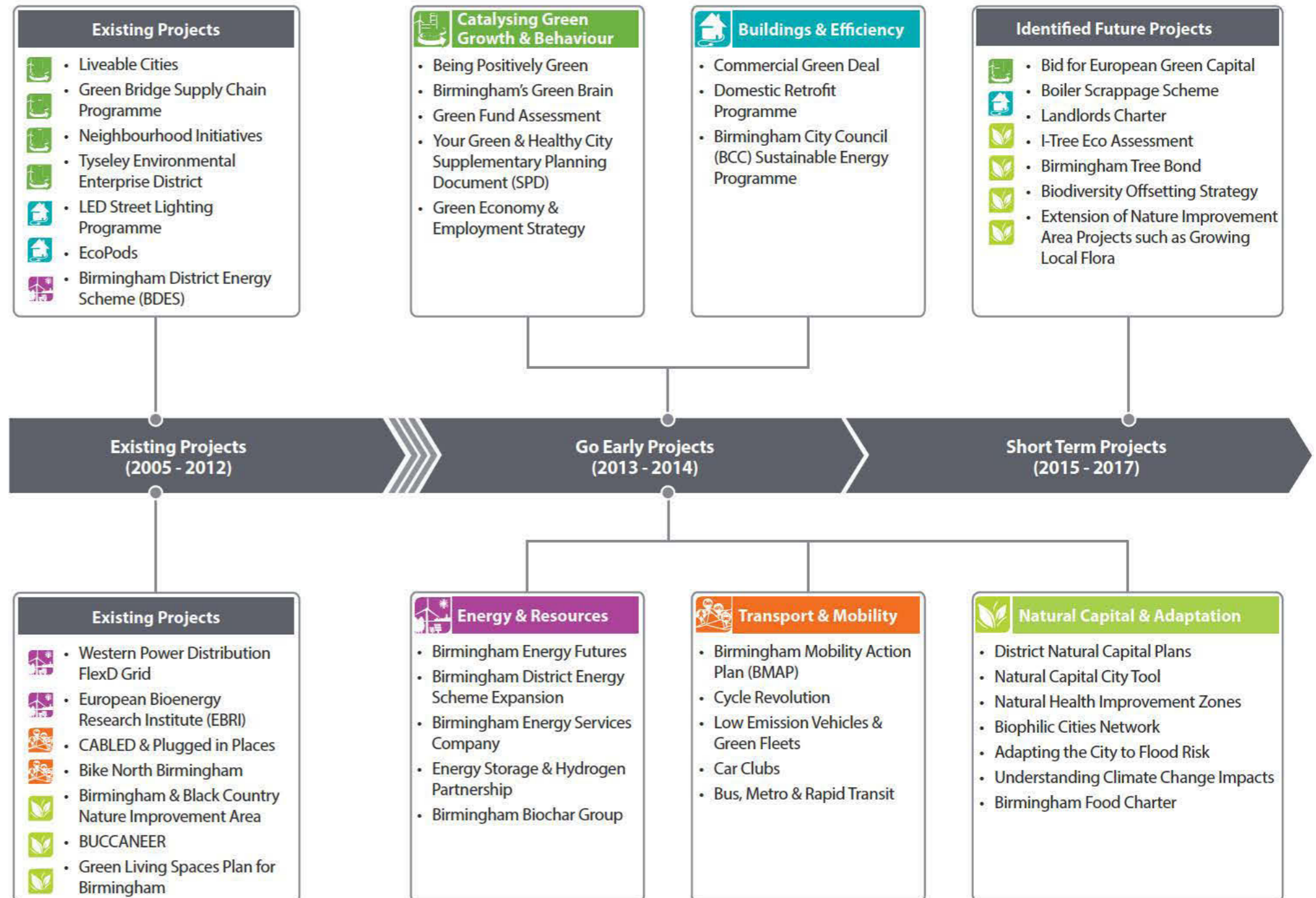
In recognition of its pioneering work transforming food culture, Birmingham was selected as a founding member of the UK-wide Sustainable Food Cities Network in 2013.

- Catalyst - Public Health
- Partners - Wildlife Trust, EA, BOSF, MEBC, UK BCSD, Severn Trent
- Time Frame - November 2013 onwards

The journey so far and the road

we must take

We already have existing projects being implemented which exhibit being a leading green city – we have set down what our actions for 2014 are. We have also identified some future projects but we are only just beginning this journey. We want everybody to get involved with delivering these projects and forming new projects.



Delivering the Carbon Roadmap

The Carbon Roadmap has identified the early wins and short term projects which the Commission feels are necessary for Birmingham to maintain momentum on becoming a leading green city and reducing our total carbon emissions by 60% by 2027.

Responsibility for implementing the Carbon Roadmap

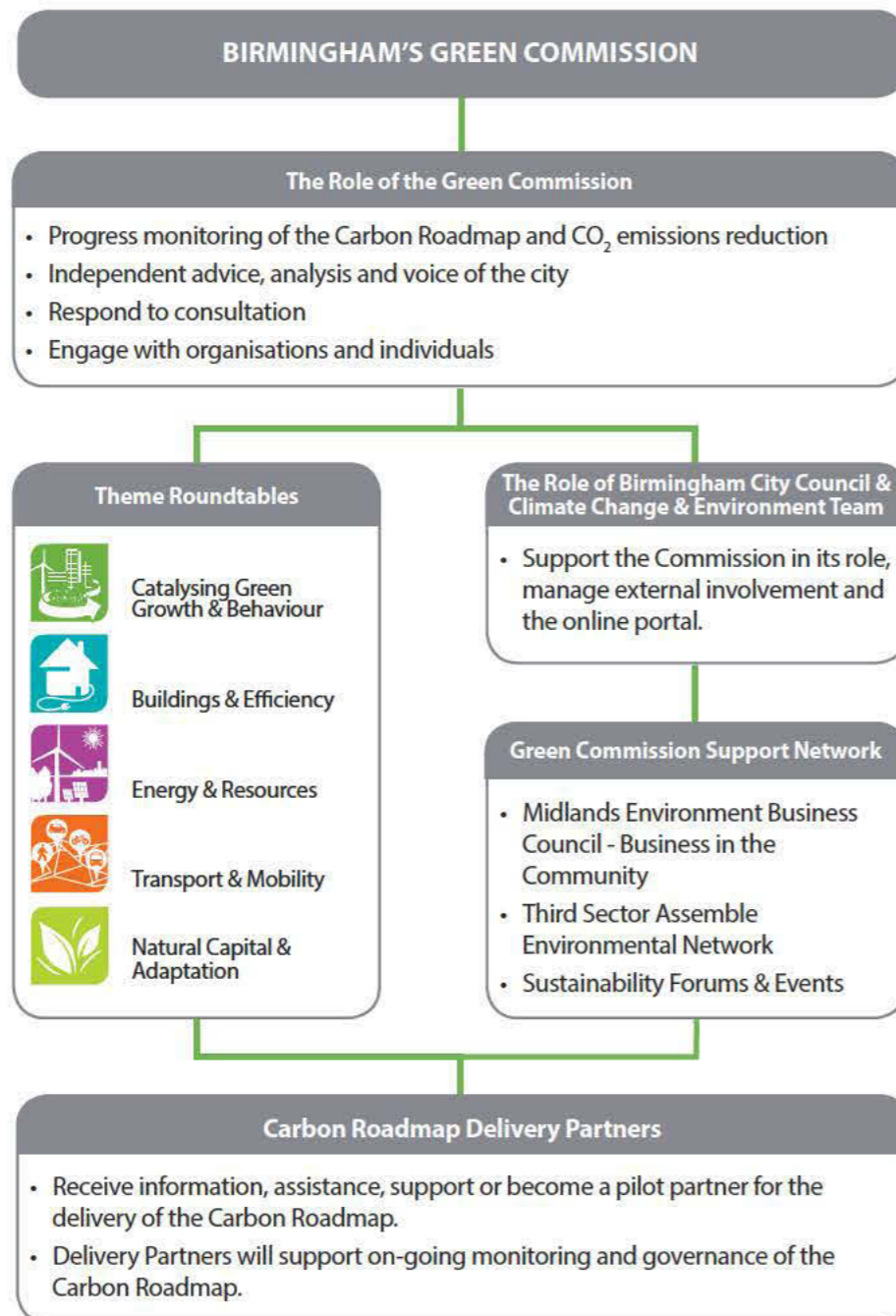
The Carbon Roadmap is a long term journey to deliver green growth for Birmingham. The responsibility to make sure this happens lies beyond the membership of the Green Commission.

Residents and communities, academics and students, businesses and public bodies are key to making this a success. Collaboration and cooperation will ensure that scarce money, resource and effort is spent most efficiently and effectively.

We want to make the Roadmap as transparent a process as possible. The Commission and its members are vital to this process. The Commission will delegate responsibility to members to oversee the progress of the themes.

A number of organisations are already influencing this agenda through the nature of their work or as early adopters. We have already been able to identify "catalysts" who will kick start or lead projects.

We have set down the links between the work of the Commission and the city as a whole in the diagram. This also builds on the links which have been established with the business community through Business in the Community and the third sector through the BVSC.



It demonstrates that there are still some unknowns in meeting the long term carbon target but we have a clear view of the scale of the challenge and the vast opportunities available. During 2014 we will open up the Roadmap so you can have your say and get involved.

Becoming Involved

- **Roundtable Events** - During 2014 we see this open, transparent governance of the Roadmap continuing to evolve, and to help us in this process we will be holding wider stakeholder Roundtable Events over this period. We will be inviting expressions of interest to be involved in these roundtables shortly with the support of the Business in the Community and MEBC networks, and the BVSC Environmental Network.
- **Online Portal** - we will be launching the online portal to raise awareness on the work of the Commission, the wide range of actions, programmes and plans which are being implemented, are being developed and are planned. This gateway will also enable:
 - Finding out about what you can do to save money, save energy and be more sustainable.
 - Getting involved with projects.
 - Telling the Commission & Birmingham what you are doing.
 - Raising issues & opportunities for the Commission to consider & respond to.
 - Finding out about & take advantage of incentives on offer.
- **Sustainability Forums** - these long established Forums will continue to provide an opportunity through 2014 for wider civic society engagement in policy issues raised by the Commission.



Funding

The Commission is convinced that the Roadmap will provide a strong framework to provide the necessary foundation to secure investment in the city's green growth agenda.

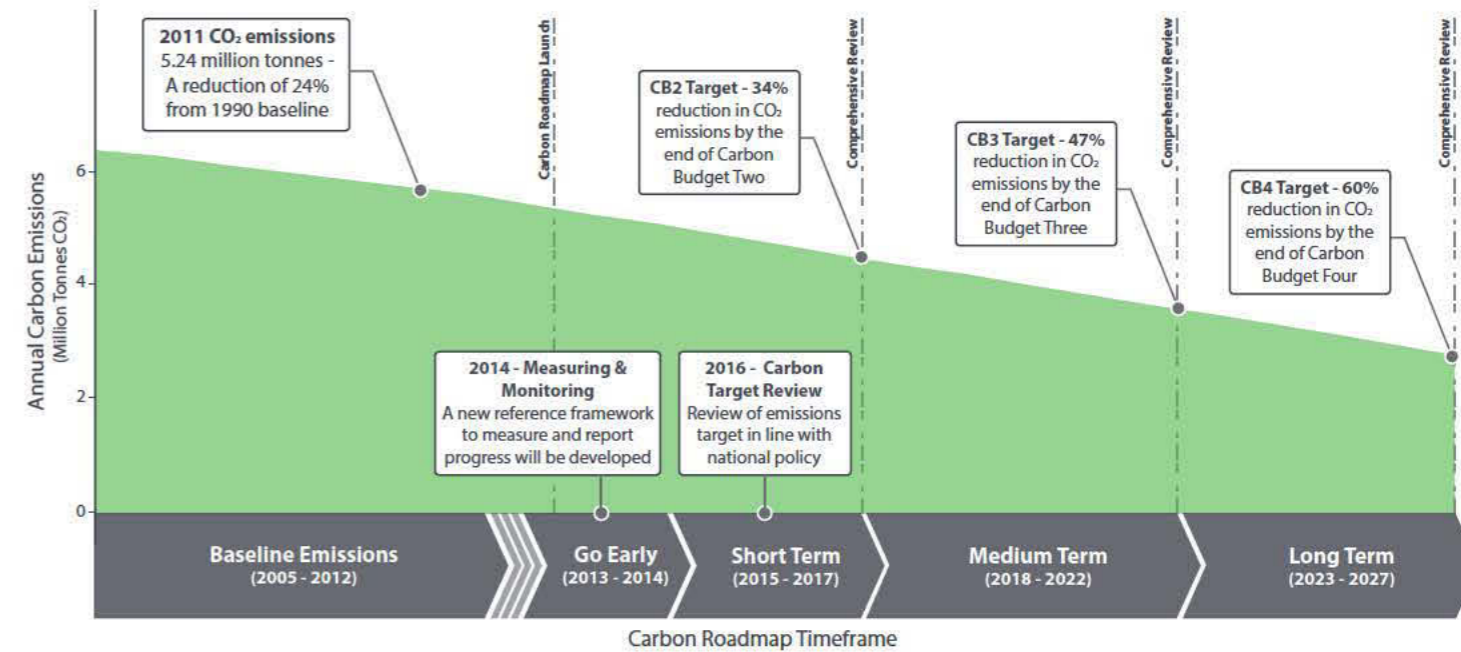
The Roadmap lays the conditions for better collaboration across Birmingham and the wider area to ensure strong communication and collaboration between all partners to secure funding for the delivery of the Roadmap. The projects that have been selected do

not necessarily have confirmed funding sources but the Commission feels that there are sufficient routes to funding to make the projects eligible for inclusion in the Roadmap.

This will include collaboration across the city, through the Greater Birmingham and Solihull Local Enterprise Partnership, nationally with government and specialist organisations and through the European Union's new 2014/2020 funding programmes. A Green Fund Assessment will be completed as part of the Roadmap

delivery – details are included on page 38.

The Commission is also very interested in exploring alternative and innovative funding sources including the fiscal framework to support and encourage energy and resource efficiency, especially with the changes which are being contemplated on fossil fuel subsidies nationally and internationally.



Monitoring and Progress

The Green Commission will continue to monitor the progress of the Carbon Roadmap and report annually on Birmingham's CO₂ emissions reduction progress. Emissions data is released by DECC annually for two years previous. As new projects come to the fore, they will be posted on the online portal for everybody to consider their involvement and potential role.

A major review and update of the Carbon Roadmap will take place in 2016 when national policy announcements on electricity sector decarbonisation are expected. As part of Birmingham's carbon reduction relies on national decarbonisation, the Commission will have to decide whether the 60% target is still realistic, and how Birmingham might subsequently alter its investments and commitments to local decarbonisation. The Roadmap will be reviewed at the end of Carbon Budget Periods thereafter. Carbon Budget

Periods align with those adopted nationally:

- Carbon Budget 2: 2013 – 17
- Carbon Budget 3: 2018 – 22
- Carbon Budget 4: 2023 – 27

Indicators of Success

The Roadmap identifies a range of actions. The effectiveness of these actions will be measured against a set of key success indicators:

- Achieve carbon reduction targets in Budget Periods
- Fuel poverty
- Household fuel bill
- Number of green businesses and size of green economy
- Number of journeys made by sustainable transport mode.



Risks and Issues Summary

The Commission is very conscious that there are numerous external factors which will influence Birmingham's green growth and its carbon reduction target. Some of these, including the national efforts to reduce carbon emissions have already been covered on page 28. Other factors may include:

- Market forces and government incentives which will influence the affordability and therefore take up of renewables and energy efficiency measures;
- The strength or lack of a central coordination and oversight role is an essential aspect of driving the Roadmap. Capacity for this role will be a fundamental element of continuing the momentum through the Green Commission;
- The commitment and buy-in from all sectors to the Roadmap;
- The ability or otherwise to provide comprehensive monitoring of both public and private sector measures;
- The ability or otherwise to communicate the benefits of the Carbon Roadmap to interested parties and how they can engage with groups;
- The extent to which conflicts of interests within the city inhibit action and policy making across the city;
- The ability or otherwise to raise required funding for projects – links to criteria and green fund assessment;
- The pace at which national carbon intensity of the grid is reduced will influence the level of carbon reduction in Birmingham;
- The impact of seasonal weather has proven to have an influencing factor on carbon emissions. In years that are colder than average, heating requirements go up therefore increasing gas consumption.

Procurement

Procurement should provide a vital driver of low carbon and sustainable actions across all sectors – public, private and community. The City Council is already committed to take a consistent and responsible approach to procurement across Birmingham. It has developed the Birmingham Business Charter for Corporate Social Responsibility - a set of guiding principles to which Birmingham City Council requires its contracted suppliers to adhere to and which it invites it's the wider business community, other public sector bodies (including schools) and third sector organisations (including grant recipients) to adopt.

The Charter will help reform the authority's procurement strategy; leading to the creation of job opportunities, support to the local supply chain and ensuring contractors' employees get paid a fair wage. Its six principles are:

- Local employment
- Buy Birmingham First
- Partners in communities
- Good employer
- Green and sustainable
- Ethical procurement

Signatories of the Charter are expected to commit to the principles which can be viewed in more detail at:

www.finditinbirmingham.com

Next Steps

Key Milestones and Next Steps

In the immediate future the Green Commission will:

- Set up the Roundtables during 2014;
- Continue to expand the features and content of the online portal - www.makingbirminghamgreen.com;
- Continue to hold Sustainability Forums on relevant and timely issues;
- Assess new monitoring mechanisms for becoming a leading green city;
- Provide consultation feedback on the Birmingham Development Plan;
- Look at the potential to develop supply chains in Birmingham which could support future proofing Birmingham's homes that will be built under the Birmingham Development Plan; and
- Review and influence policy across the city and the GBS LEP, to align it with the ambitions of the Roadmap.

As part of its role in influencing decisions and policy in the city, the Green Commission believe there are a number of organisations who will have a key role to play in Birmingham becoming a leading green city. The Commission look to work with :

- The Birmingham Chamber to guide businesses into the opportunities presented by the Roadmap;
- DECC to reform ECO to make it work more effectively;
- The City Council to move as quickly as possible to set a standard equivalent to Passivhaus – www.passivhaus.org.uk; and
- People, businesses and organisations who wish to be involved in the Carbon Roadmap and making Birmingham a leading green city.



Acknowledgements

The Green Commission would like to thank the following organisations and groups who attended Carbon Roadmap workshops and who we look forward to continuing to work with in the future to achieve our ambitions:

- Accenture
- ACIVICO
- Amey
- Arup
- Aston University
- Atos
- Birmingham Airport
- Birmingham & Black Country Local Nature Partnership
- Birmingham City Council
- Birmingham City University
- Birmingham Open Spaces Forum
- Birmingham Property Services
- Birmingham Municipal Housing Trust
- British Gas
- BVSC Environmental Network
- Carillion
- Canal and River Trust
- Centro
- Cenex
- Cisco
- Cofely District Energy
- CTC
- Department of Energy and Climate Change
- Digital Birmingham
- EcoRecord
- Energy Saving Trust
- Environment Agency
- Eon
- ETI
- European Bioenergy Research Institute
- Forestry Commission
- Greater Birmingham Chambers of Commerce
- IBM
- International Synergies
- Loughborough University
- Marketing Birmingham
- Midlands Environment Business Council
- National Express
- National Grid
- Network Rail
- Northfield EcoCentre
- Mace
- Renewable Energy Alliance
- Severn Trent Water
- Skanska
- Sustrans
- University of Birmingham
- Urban Traffic Management & Control
- Western Power
- Wildlife Trust
- WSP

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