Middlesbrough's Climate Change Community Action Plan 2010-2020

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The revised Middlesbrough Climate Change Community Action Plan aims to involve all sectors of the community in reducing greenhouse gas (GHG) emissions in Middlesbrough; prepare the town for the impacts of climate change; and support opportunities for the local economy and community that result from climate change.

Background

The Action Plan builds on the success of Middlesbrough's Climate Change Partnership, a group of local organisations and individuals from the public, private, voluntary and community sectors that have come together since 2004 to identify how Middlesbrough can reduce GHG emissions whilst preparing for the impacts of a changing climate.

Greenhouse gas emission reduction targets

Based on local, national and international objectives, the following targets have been suggested for Middlesbrough.

- A **minimum** target to reduce Middlesbrough's Carbon Dioxide (CO_2) emissions by 21% by 2020 based on a 2005 baseline.
- An **aspirational** target to reduce Middlesbrough's CO_2 emissions by 31% by 2020 based on a 2005 baseline.
- A **long term** target to reduce Middlesbrough's CO_2 emissions by 80% by 2050 based on a 2005 baseline.

Working towards these targets will require a reduction in emissions from all sectors of the community. To understand where and how CO_2 savings can be made from particular areas, the Action Plan has identified potential savings from the following sectors:

Sector	**Baseline (2005) CO_2 emissions (tonnes)**	**Estimated CO_2 emissions by 2020 (tonnes) based on measures in the Action Plan**	**Percentage reduction from 2005**	**Actions to achieve emissions savings.**
Domestic	309,000	215,554	30%	Home insulation programmes; behaviour change; reduction in carbon intensity of grid electricity; micro renewables on homes.
Industrial and Commercial	399,000	269,777	32%	CRC energy efficiency scheme; reduction in carbon intensity of grid electricity; behaviour change.
Transport	330,000	281,300	15%	Improvements in vehicle efficiency; increase in electric vehicles and biofuels; increase in public transport; increase in the numbers of people walking and cycling.
Waste	20,059	4,214	55%	50% of household waste recycled; 5% reduction in the amount of waste sent to landfill.
Total CO_2 emissions	**1,058,059**	**770,845**	**27%**	

Adaptation

The impacts of climate change will be felt in Middlesbrough even if we begin to reduce greenhouse gas emissions significantly. Middlesbrough's first Adaptation Action Plan was produced in 2010 to identify how the council can help ensure climate related disruption to work and operations is kept to a minimum. A flood risk strategy and the existence of a Heat Health Watch scheme to help vulnerable people during a heat wave are just two of 18 key areas the adaptation plan focuses on.

Education and Communication

Not every project that helps to reduce emissions can have a CO_2 saving directly attributed to it. This Action Plan recognises the important role of communication and education in engaging Middlesbrough's communities over the issue of climate change. There is an awareness of the strong links between tackling climate change and themes such as healthy living, sustainable transport and affordable warmth. The Action Plan is a key part of working towards Middlesbrough's One Planet Living approach to sustainability.

Delivering the Action Plan

Middlesbrough's Climate Change Partnership will monitor the progress of the Climate Change Community Action Plan on an annual basis. The partnership includes representatives from organisations across the town and region. However, for the aspirational emission targets to be met, action by every organisation and individual in Middlesbrough is required.

Section 1: Introduction and Aims and Objectives of the Middlesbrough Climate Change Partnership

This document outlines the Middlesbrough Climate Change Partnership's proposed approach for tackling climate change in the town over the next ten years.

Middlesbrough's first Climate Change Community Action Plan was produced in 2004 at a time when climate change was beginning to be widely recognised as an issue that required national as well as global action. Since 2004, climate change has continued to rise up the political agenda. In 2008, the UK Government passed the first Climate Change Act into law and become the first national Government to commit to legally binding CO_2 reduction targets.

Action has continued to progress in Middlesbrough and the North East as a region as well. The work of the Middlesbrough Climate Change Partnership was recognised in 2008 through the award of Beacon Council status. All Local Authorities in the North East of England have committed to reducing Carbon Dioxide emissions by 21% by 2020.

The aims and objectives of the MCCCAP are outlined below

Aims

- To reduce Middlesbrough's contributions to climate change
- To increase Middlesbrough's preparedness for the impacts of climate change
- To improve people's awareness and understanding of climate change and its impacts
- To encourage and support behavioural change to help tackle climate change.

Objectives

- To contribute to the achievement of climate change National Indicator targets.
- To prepare, deliver, monitor, and report on annual work programmes on tackling climate change
- To engage all sectors of the Middlesbrough community in tackling climate change
- To contribute to sub-regional, regional, and national initiatives to tackle climate change
- To support potential opportunities for businesses and the wider Middlesbrough community that result from climate change.

Section 2. Climate Change – Science, background and impacts.

Planet Earth's climate has been changing for millions of years. It is generally accepted that we are now in a period of global warming that has been caused by the release of various gases into the atmosphere as a direct result of human activity. Most of these 'greenhouse' gases are released by the burning of fossil fuels (coal, oil and gas) and the destruction of rainforests.

The earth absorbs energy from the sun and the atmosphere stops some of the infrared radiation from escaping into space. As greenhouse gases, such as carbon dioxide, increase in the atmosphere, more and more of this heat is trapped and average temperatures rise.

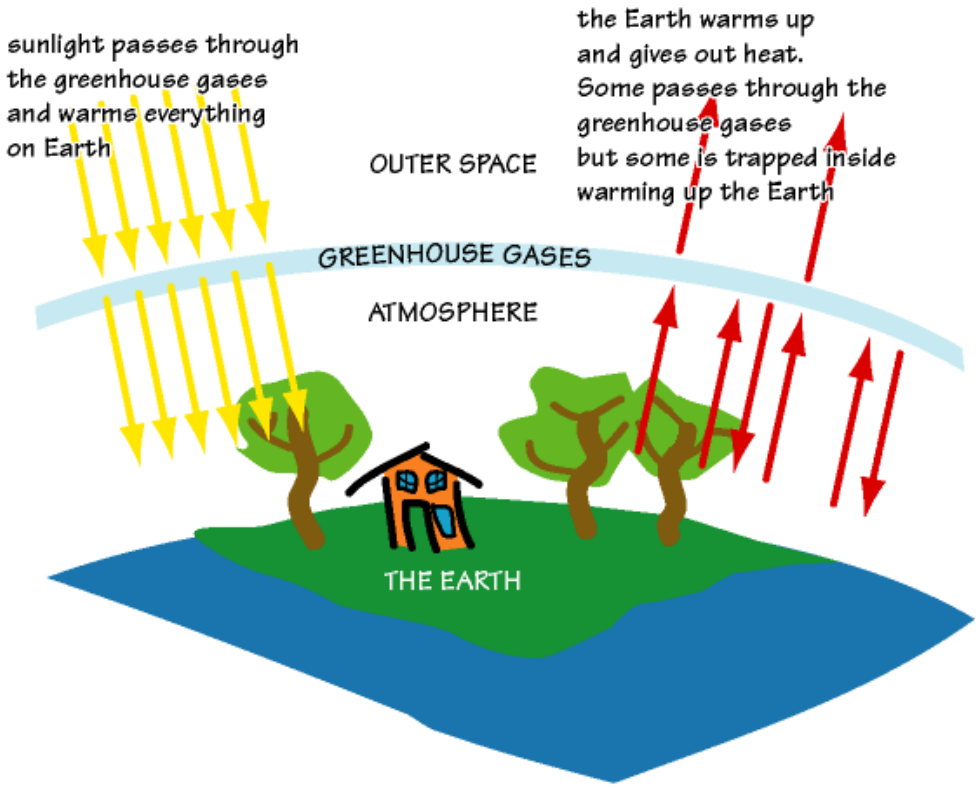


Image 1 The greenhouse effect

We have already seen climate changes at both a local and a global level. Milder winters and more extreme rainfall events in the UK, are just two examples. There is a high probability that over the coming decades significant events such as reductions in the amount of ice in the Arctic may occur. This will have significant knock on effects for the UK.

A number of measures are already taking place to cut greenhouse gas emissions across the globe. However, even if all greenhouse gas emissions were stopped today, we would still experience some climate change over the next 40 years at least.

In Middlesbrough it is predicted that by 2050:

- Annual rainfall will reduce by up to 10%.
- Winter rainfall will increase by up to 21%.
- Summer rainfall will decrease by up to 37%.
- Extreme rainfall events will increase by a maximum of 20% in winter.
- Average daily temperature will increase by almost 2°C.
- Extreme hot temperatures will increase by around 3°C.
- Heat waves will be more frequent.
- Winter snowfall will reduce by between 45% and 83%.
- Mean sea levels will increase by around 0.3m.
- Sea surge levels will increase by around 0.30m to 0.35m.

All of these climate changes will affect the way we live in Middlesbrough. By planning for these changes now we should be able to minimise the worst effects of these changes and maximise the positive benefits that could arise. This work is known as *Climate Change Adaptation*. All future buildings, transport systems and public spaces need to be designed to cope with the climate of 2050. Improved drainage schemes, shaded areas and naturally cooling buildings are all examples of adapting to climate change.

This is only a very brief summary of climate change and the impacts we are expecting in Middlesbrough and the Tees Valley. To find out more about the science of climate change of the expected changes, please visit the websites below:

Met office climate change website – Background to the science of climate change from the UK's National Weather Service. http://www.metoffice.gov.uk/climatechange/

New Scientist – A guide for the perplexed – Another useful website that identifies some of the common misconceptions surrounding climate change. http://www.newscientist.com/article/dn11462

Climate Change Adaptation Study for North East England – A locally produced assessment of the expected impacts of climate change in the North East. http://www.adaptne.org/

UK Climate Impacts Programme – UKCIP works with organisations across the country to help them adapt to climate change. Their reports enable you to see the impact of climate change across the UK. http://www.ukcip.org.uk/

Middlesbrough's Climate Change webpages – Further information on Middlesbrough's approach to tackling climate change, as well as information on One Planet Living. http://www.middlesbrough.gov.uk/climatechange

Section 3: Local, National and International context

Why the need for a revision of the Community Action Plan?

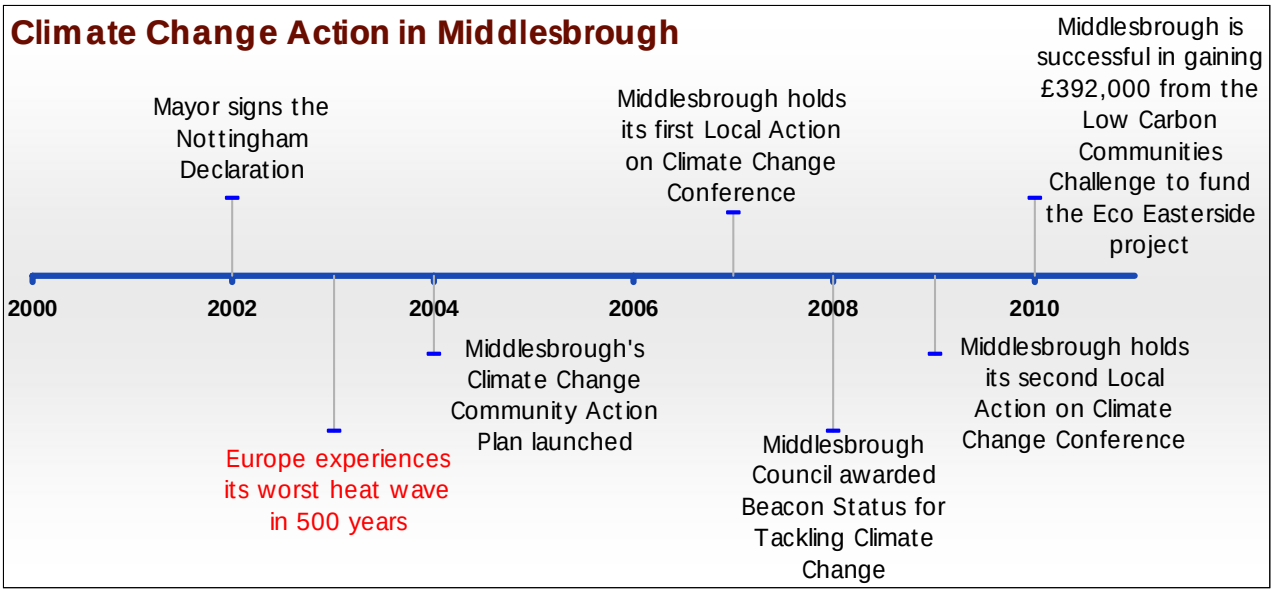
Middlesbrough's Climate Change Community Action Plan (MCCCAP) was produced in 2004 by the newly formed Middlesbrough Climate Change Partnership. The Action Plan represented a significant achievement for the town by signalling Middlesbrough's intentions to reduce CO_2 emissions and adapt to changes in the weather.

Since 2004, the debate over climate change has moved forward and actions on a local, national and international scale are gathering pace. In 2009, Middlesbrough's Climate Change Partnership felt that a revision of the Action Plan was necessary to ensure Middlesbrough's approach to tackling climate change was current and that the Action Plan represented the aspirations of organisations across the town.

What has changed since 2004?

If we want to move forward with aspirational climate change targets, it is important to know what the Climate Change Partnership has achieved since 2004
Below is a summary of issues and changes that have arisen since the original Action Plan was published in 2004:

Brief Timeline



What have we learnt since 2004?

- **We have a better understanding of the carbon footprint of Middlesbrough** - In 2004, Middlesbrough's carbon footprint was estimated from a range of data sources held by the Government, energy supply companies and Middlesbrough Council. The Department of Energy and Climate Change (DECC) now produces annual CO_2 emissions data sets under the title National Indicator 186: Per capita emissions in the Local Authority area. This enables every Local Authority in England to the amount of CO_2 produced within their area every year. In the long term this will help us decide whether the work on tackling climate change in Middlesbrough is making a difference.

- **We need to ensure our CO_2 reduction targets remain both ambitious and achievable –** The 2004 Action Plan set a minimum CO_2 reduction target of 12.5% by 2010 and an aspirational goal of a 25% by 2010 based on a baseline year of 2000. Using new climate science and the UK Government's commitment to reduce CO_2 emissions across the country by 80% in 2050, we need to revise these targets and set Middlesbrough aspirational CO_2 targets in the short and long term. Utilising new CO_2 modelling software, this Action Plan identifies how savings can be made and in which sector. This provides a useful scenario for meeting short and medium term targets.

- **We realise that there needs to be greater emphasis on adapting Middlesbrough to climate change –** Reducing CO_2 emissions is an important part of tackling climate change. However, we are already starting to see changes in our climate, the result of increasing emissions of greenhouse gases over the last 200 years. The 2004 Action Plan recognised the need to start preparing for changes in the weather; we now need to go a step further and start identifying how services, buildings and communities need to adapt. For the first time, Middlesbrough has a Climate Change Adaptation Plan to assess these changes.

- **Working towards *One Planet Living* Middlesbrough** – In 2009, Middlesbrough Council adopted One Planet Living as its framework for making Middlesbrough a more sustainable town. The Action Plan is a key part in achieving the *Zero Carbon, Zero Waste and Zero Transport* principle of lowering CO_2 emissions across the town. The Adaptation Strategy is a key part of the OPL programme. To find out more about One Planet Living, turn to Section 4

- **We are aware of how tackling climate change, reducing fuel poverty and making Middlesbrough a healthy town are all intrinsically linked –** Ensuring people live in a warm, safe home goes hand in hand with tackling climate change. Insulating walls and roofs, fitting double glazing and installing efficient boilers, reduces not only the

amount of money people spend on heating their homes, but also greenhouse gas emissions. Similarly, if we walk and cycle more or make an effort to grow our own food or buy local produce we can improve our health as well as taking major steps to reduce our carbon footprint.

- **We realise that more needs to be done around communicating climate change to the people of Middlesbrough -** Climate change is a complex topic. Differentiating between reliable sources of information and misleading claims, as well as understanding the potential impacts of climate change on your life, can be confusing. Partner organisations in Middlesbrough's Climate Change Partnership are keen to ensure that everyone in the town is aware of how they will be affected, what they can do, and how they can benefit.

Local context

The revised Climate Change Community Action Plan contributes to the Middlesbrough Sustainable Community Strategy through its support of the Securing Environmental Sustainability theme and the strategic priority to *reduce carbon emissions and adapt to the adverse effects of climate change*. A reduction in Middlesbrough's CO_2 emissions of between 21-31% by 2020 based on a 2005 baseline, as planned for in this Action Plan, would represent a significant achievement.

The CO_2 emission targets within this Action Plan contribute significantly to addressing National Indicator 186: Per capita CO_2 emissions in the Local Authority area and National Indicator 185: CO_2 reduction from Local Authority operations. The Action Plan is an important element of Middlesbrough's One Planet Living approach to sustainability.

Work to reduce the amount of energy used in the home is also a key part of Middlesbrough's Affordable Warmth group. Fuel Poverty affects a significant number of homes in the town as people struggle to pay to heat their homes to a reasonable temperature. Work such as insulating homes and providing advice and guidance is carried out by oraginsations within the Climate Change Partnership and the Affordable Warmth group.

Action on climate change is recognized at a regional level through the work of the Tees Valley Climate Change Partnership. A revised Tees Valley Climate Change Strategy was published 2010, this outlines how the sub region could contribute towards the UK's target of an 80% reduction in CO_2 by 2050. In the Tees Valley that would a equate to a reduction in the regiojn of 14,000,000 tonnes.

National focus

Since 2004, action to tackle climate change in the UK has continued to gather pace. Increasing support at a national level for communities to take the lead in tackling climate change is hugely important. Below is a summary of key events:

- In December 2008, The Climate Change Act became law in the UK. This commits the Government to a legally binding CO_2 reduction of at least a 34% by 2020 and an 80% by 2050 based on a 1990 baseline.

- Local Authorities now have to report CO_2 emissions from council operations and from their communities, as well as demonstrating plans to adapt their towns to climate change.
- From April 2010, any organisation that spends over £500,000 a year on electricity will have to take part in a scheme called the CRC (Carbon Reduction Commitment Energy Efficiency) scheme. This is designed to gradually lower CO_2 emissions from organisations across the UK.
- The UK Climate Impacts Programme provides increasingly detailed advice on the likely impacts of climate changes in towns and regions across the UK. The headlines for the North East include: an increase in summer temperatures in 2050 by up to 2.9°C, and an increase in average winter rainfall of around 11%.
- The Stern Report, published in 2006, outlined how without immediate attention, the actions that will be essential later to tackle climate change will be much more costly.

International Focus:

- In 2007, the Intergovernmental Panel on Climate Change, the leading scientific body on climate change that reports to the UN, produced its fourth assessment report. This concludes it is more than 90% likely that human generated greenhouse gases are responsible for modern day climate change.
- 2007 saw Arctic sea ice coverage shrink to the lowest extent ever recorded.
- In 2009, the European Commission launches the Covenant of Mayors initiative. All 12 North East council's have signed up to this scheme committing themselves to reducing CO_2 emissions in their areas by 21% by 2020 based on a 2005 baseline. This action plan demonstrates how Middlesbrough will work towards this target.

What could influence the Action Plan in the future?

- Action on climate change is evolving at an ever increasing pace. The list of events and key milestones that have occurred since the first Action Plan demonstrate this. To ensure Middlesbrough remains at the forefront of climate change issues, the Partnership and Action Plan need to be flexible and adaptable. It is proposed that the Action Plan is reviewed every 5 years to ensure the most suitable and ambitious approach to tackling climate change is adopted by Middlesbrough.

- Annual work programmes detailing projects that are planned by the Partnership will ensure that there is a regular update on the approach the Partnership is taking to tackling climate change. The annual work programme has proved to be a useful method of reporting progress and informing Partnership members since 2004. However, there is an awareness of the need to take more challenging targets into account.

Potential future impacts on the plan within 5 years:

International agreements to tackle climate change – Although no legally binding global commitment to tackle climate change emerged from Copenhagen, it is still likely that some form of international action will be agreed on in 2010 or 2011. This may impact on the UK's CO_2 emission targets.

Review of the Climate Change Act - Agreement at International level on greenhouse gas emission targets could result in a change to the UK's Climate Change Act through the setting of more ambitious targets.

Allocation of regional or Local Authority level carbon budgets – The Government may allocate carbon budgets to local authorities to ensure that the UK's CO_2 targets are met. These Local Carbon Frameworks were being piloted across the country in 2010.

Section 4: One Planet Living

Since 2009, Middlesbrough Council has been following a One Planet Living approach to sustainability. This page explains what One Planet Living is and why it is helping us to tackle climate change.

What do we mean by One Planet Living?

Middlesbrough Council recognises that without a sustained change, Earth will be unable to support the existing population and satisfy resource demands. The One Planet Living approach was adopted by Middlesbrough Council in 2009 and provides a model to deliver a programme of environmental sustainability across the town.

Using ecological footprinting, One Planet Living calculates that with 11.7 billion global hectares for humanity to share and a population of 6.7 billion, a fair share of the Earth's resources would be approximately 1.7 hectares per person. The average Middlesbrough resident's ecological footprint is currently 5.1 hectares, an unsustainable three planets worth of resources.

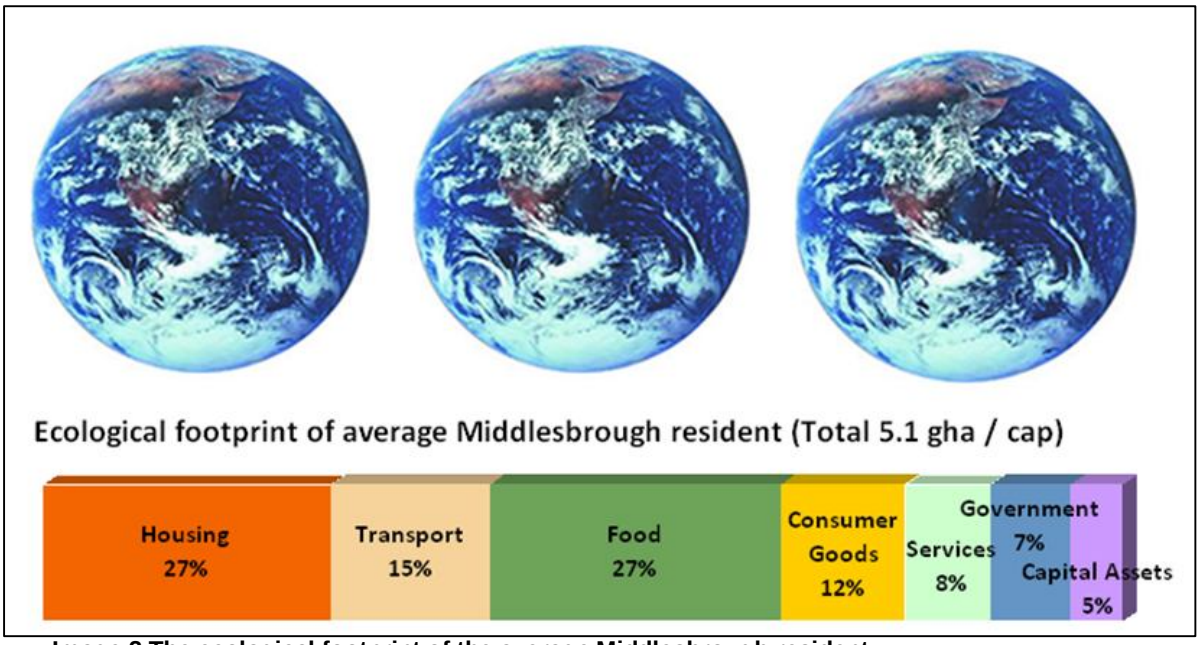


Image 2 The ecological footprint of the average Middlesbrough resident

One Planet Living works to foster a culture of environmental sustainability to ensure that society lives within the available means of our one planet, whilst maintaining the finite resources that Earth provides to ensure the continued survival and prosperity of natural ecosystems and the human population. Part of One Planet Living is working towards reducing the impacts of Climate Change.

What is Middlesbrough Council doing with One Planet Living?

Middlesbrough Council aims to tackle each of the 10 principles of One Planet Living to ensure that sustainability is embedded into the delivery of the wider vision for Middlesbrough.

As the One Planet Living Action Plan is reviewed, contributions from people in all sections of the Middlesbrough community will be incorporated to make sure that practical and effective ways of making sustainable progress are established in a way that benefits everyone.

The Middlesbrough Climate Change Partnership will play an integral role in the implementation and successes of the One Planet Living programme, especially in relation to the Zero Carbon principle.

Summary of the 10 guiding principles of One Planet Living

Section 5: What has the Middlesbrough Climate Change Partnership achieved between 2004-2009?

Before we look to the future, it is useful to know what we have achieved since 2004.

Middlesbrough's first Climate Change Community Action Plan, devised in 2004, led the way in setting ambitious greenhouse gas reduction targets, focusing on adaptation measures across the town, and raising awareness of climate change as an important issue for the whole community to address.

Monitoring progress

To monitor progress on an annual basis, CO_2 savings and increases were estimated for projects undertaken by the Middlesbrough Climate Change Partnership. Any project that produced measureable energy savings such as home insulation measures or reductions in domestic waste, can provide an estimated carbon saving. A breakdown of savings that were estimated for all projects from 2005-2009/10 can be seen on the following page:

Actual CO_2 emissions increases and decreases from 2005-2010

	Total estimated CO2 reductions from the MCCCAP between 2005-2010 (tonnes of CO_2) (Note: 2009-2010 figures are estimated)	Total estimated CO2 increases from 2005-2010
Middlesbrough Local Plan (demolitions and new builds of homes)	**-6,661**	**13,324**
Middlehaven	**-6.00**	**182**
Erimus housing investment programme	**-4,369**	**33**
Tees Valley Energy Savers (2005-2008)	**-1,173**	
Middlesbrough Council Local Authority Carbon management programme	**-1,650**	
Warm homes strategy (2005-2008)	**-1,137**	
Green Tyre company (business)	**-79**	
WarmFront	**-2,427**	
Go Warm	**-1,793**	
Teesside University	**-617**	
Energy saving light bulbs	**-519**	
Saving's from NISP business advice	**-3,012**	
Macmillan Academy	**-10**	

Road traffic		**9,755**
Local transport Plan	**-408**	
Regular cyclists	**-5.43**	
Improvements in the fuel efficiency of vehicles	**-22,365**	
Middlesbrough cycle centre	**-1.48**	
Kerbside Recycling	**-26,220**	
Home composting	**-22**	
TOTAL	**-72,475**	**23,294**

Table 1 Actual CO2 emissions increases and decreases from 2005-2010

Summary:

What have we learnt as a Climate Change Partnership between 2005-2010?

- **Although measuring and recording CO_2 emissions from projects is a useful process, it is by no means an accurate measure of success. While savings reported to the Partnership are very valuable, apparent increases in emissions not included in Table 1 have led to targets not being met.**
- **Government data on the amount of CO_2 emitted in Middlesbrough can be a useful guide as to the progress of reducing emissions in key sectors such as homes and transport. However, this data has often been unreliable in the past meaning any comparisons with previous years are not possible.**
- **The value of communication and education projects could easily be underestimated because a carbon 'saving' cannot easily be placed on them. We need to ensure these projects are not sidelined.**

Section 6: Revised CO2 target for 2009-2020

The MCCP recognise that ambitious CO_2 emissions reduction targets are required across the town.

When considering CO_2 reduction targets, the Action Plan has taken into consideration Middlesbrough's commitments under the European Covenant of Mayors scheme. This requires a 21% reduction in CO_2 by 2020 based on a 2005 baseline. The recommendations of the Committee on Climate Change, the group that advises the Government on their implementation of the Climate Change Act, have also been considered.

The current UK climate change targets proposed by the Committee on Climate Change follows the EU framework of target setting. This produces two sets of budgets: the **Intended budget,** which should apply following a global deal on climate change, and the **Interim budget**, to apply before a global deal is reached.[1]

Middlesbrough will adopt the following targets:

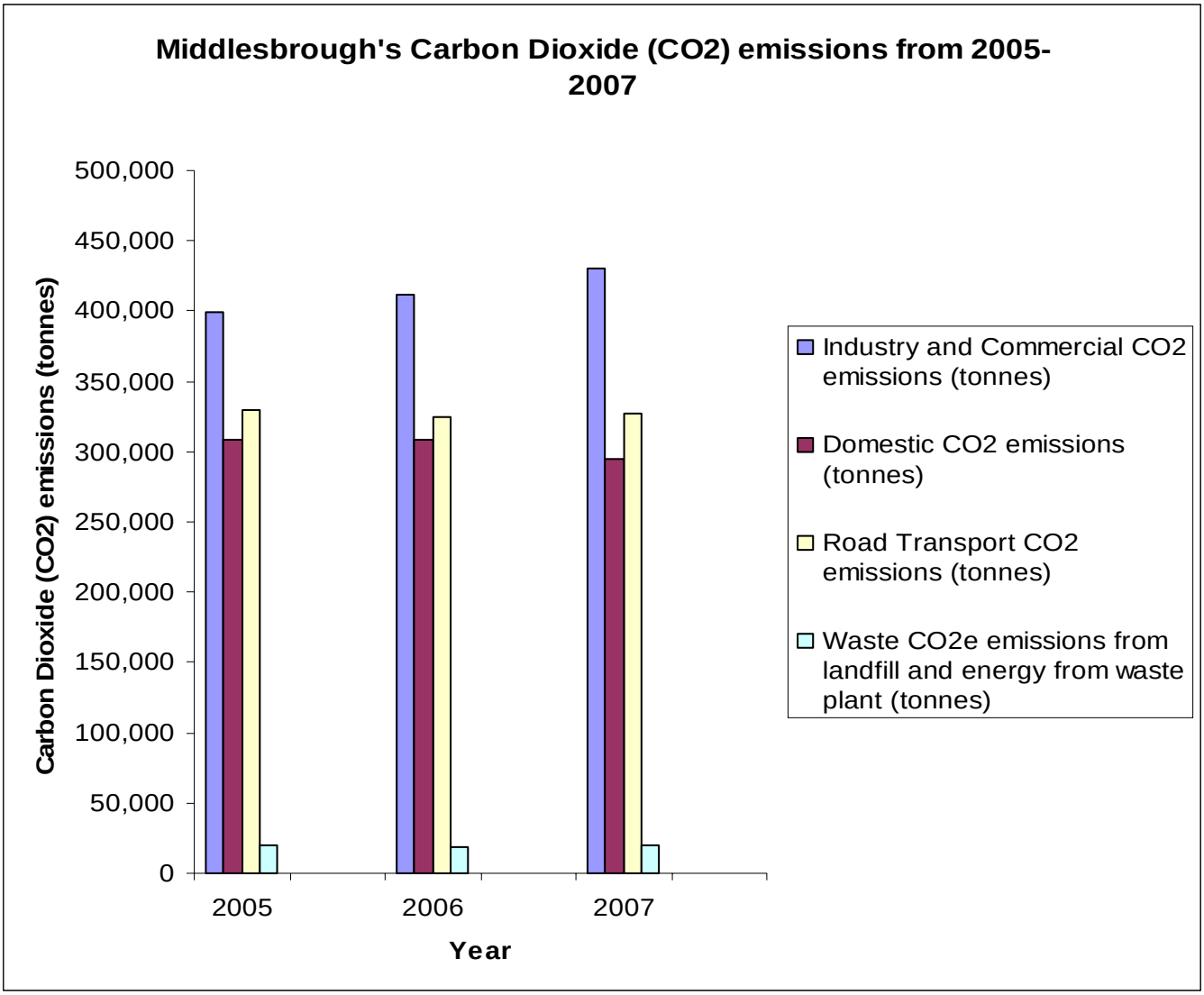
- **Middlesbrough's aspirational target will require an emissions reduction of 31% by 2020 based on a 2005 baseline.**
- **Middlesbrough's minimum target requires an emissions reduction of 21% by 2020 based on a 2005 baseline. This interim budget is the same target Middlesbrough is required to meet under the Covenant of Mayors initiative.**

Middlesbrough will also work towards a longer term target of 80% by 2050. Again, this is based on the CO_2 reduction targets outlined in the Government's Low Carbon Transition Plan.[2]

Middlesbrough's CO_2 emissions data are taken from the National Indicator 186 (per capita emissions in the Local Authority area) data set with the addition of waste data.

Year	Local Authority	Industry and Commercial CO_2 emissions (tonnes)	Domestic CO_2 emissions (tonnes)	Road Transport CO_2 emissions (tonnes)	Waste CO_2 emissions from landfill and energy from waste plant (tonnes)	Total
2005	Middlesbrough	399,000	309,000	330,000	20,059	1,058,059
2006	Middlesbrough	412,000	308,000	325,000	19,559	1,064,559
2007	Middlesbrough	430,000	295,000	327,000	18,995	1,070,995

[1] Committee on Climate Change – Building a low carbon economy http://www.theccc.org.uk/pdf/7980-TSO%20Book%20Chap%203.pdf
[2] Low Carbon Transition Plan http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx



Graph 1 Middlesbrough's carbon dioxide emissions from 2005 to 2007

What would these new targets mean for Middlesbrough?

A 21% reduction applied to Middlesbrough

Total CO_2 for 2005 was **1,058,059**

A 21% reduction by 2020 is **222,192 tonnes of CO_2**

This would mean an average annual reduction of **22,219 tonnes of CO_2**

A 31% reduction in CO_2 applied to Middlesbrough

Total CO_2 for 2005 was **1,058,059**

A 31% reduction by 2020 is **327,998 tonnes of CO_2**

This would mean an average annual reduction of **32,799 tonnes of CO_2**

Meeting these CO2 targets

Setting a target to reduce emissions is the easy part. Identifying where and how carbon dioxide will be saved is hard, particularly when attempting to forecast savings to 2020 and 2050. Middlesbrough has used carbon modelling software called Vantage Point to create a scenario and help work out what measures will need to be put in place to reduce emissions by a minimum of 21% by 2020.

Based on these carbon reduction scenarios, the table below shows the savings that are possible from different sectors. Actions that will be required on a local scale as well as anticipating changes on a national level, such as the switch to 30% of our electricity coming from renewable energy sources. This represents just one scenario for meeting the 2020 carbon emissions reduction targets.

Section	**Estimated CO_2 reduction resulting from actions within the Community Action Plan by 2020 (tonnes of CO_2).**
Domestic Energy	-93,446
Industrial and Commercial energy	-129,223
Transport	-48,700
Waste	-15,845
Total CO_2 reduction	-**287,214** **This is a 27% reduction in CO_2 emissions based on a 2005 baseline**

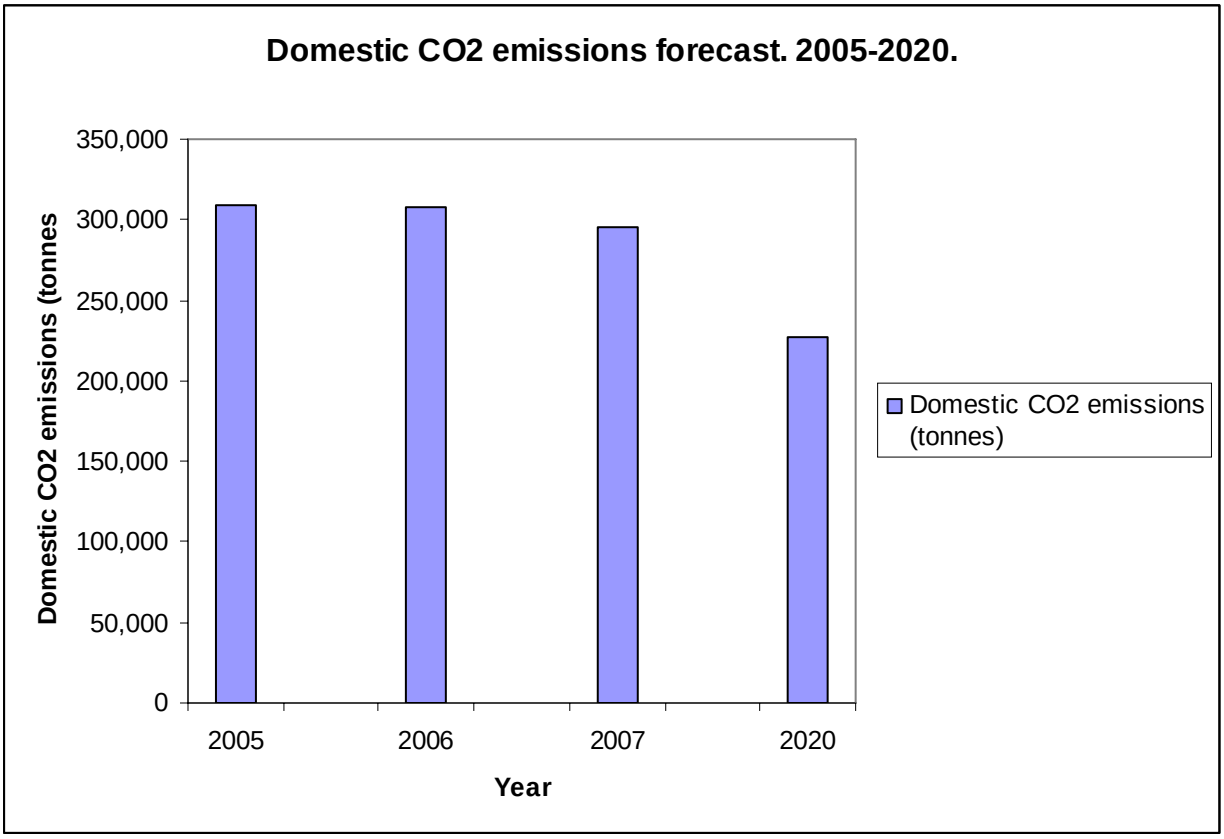
Table 2 estimated contribution of actions within the MCCCAP to achieving CO2 by 2020

Further explanation of how the CO_2 reductions identified above will be met, are outlined in the following pages.

Domestic energy.

This section covers the energy use from households across Middlesbrough. Electricity and Gas use in the home accounted for 29% of all Middlesbrough's emissions in 2005. However, the work of the Middlesbrough Climate Change Partnership contributed to a reduction of 4.4% in domestic emissions, from 309,000 to 295,000 tonnes of CO_2, between 2005-2007.

The most significant carbon saving measures are associated with improving the energy efficiency of Middlesbrough's housing stock. The move to greener forms of energy production such as wind and solar power, should lower the carbon footprint of our housing stock. It is predicted that the demand for energy in homes will fall due to the increasing costs of gas and electricity and the increased availability of energy savings products and schemes such as solid wall insulation.



Graph 2 Domestic carbon dioxide emissions in Middlesbrough forecasted to 2020

Aspirational goal	Explanation of measure/assumptions.	Who can deliver the actions?	What are the risks?	Estimated annual CO_2 saving (tonnes) or measure of success
DE1 - Cavity wall insulation for homes that are suitable.	Aim to insulate 9,250 homes, 50% of remaining unfilled cavity walls, by 2020. Data for properties has been taken from the Private Stock Condition survey 2008 and Local Authority Housing Stock data.	Middlesbrough Council, Registered Social Landlords, EAGA, Go Warm, Energy Saving Trust, Middlesbrough Environment City	Medium – Financial support will be required to fund insulation schemes. The Governments commitment to insulate homes is set out in the *Warm homes, greener homes* strategy of March 2010.	-5,669
DE2 - Loft insulation for homes.	Aim to insulate 15,350 homes, 50% of the remaining uninsulated lofts, by 2020. Data for properties taken from Private Stock Condition survey 2008 and Local Authority Housing Stock data.	Middlesbrough Council, Registered Social Landlords, EAGA, Go Warm, Energy Saving Trust, Middlesbrough Environment City	Medium – As above.	-5,472
DE3 - Solid wall properties insulated	Aim to insulate 4,973, 20% of all remaining solid walled properties, by 2020. Data for properties taken from Private Stock Condition survey 2008 and Local Authority Housing Stock data.	Middlesbrough Council, Registered Social Landlords, EAGA, Go Warm, Energy Saving Trust, Middlesbrough Environment City	High – The Government's *Warm homes , greener homes* strategy recognizes the difficulty in treating solid walled properties. Support from private landlords and homeowners will be required to ensure all homes are covered.	-12,160
DE4 - Double	Aim to fit double glazing to 3,060 homes, 30% of	Middlesbrough Council,	Medium – A significant	-2,089

Glazing	the homes that require it by 2020 (). Data for properties taken from Private Stock Condition survey 2008 and Local Authority Housing Stock data.	Registered Social Landlords, EAGA, Go Warm, Energy Saving Trust, Middlesbrough Environment City	number of homes requiring double glazing are private rented or owner occupied. Cooperation and possible financial support is required.	
DE5 - All new housing is to be built to Sustainable Homes level 4 to 2016, and level 6 (zero carbon) from 2016 onwards. This is a Government requirement	Based on the Government's 'Code for Sustainable Homes' that was launched in 2006.	Middlesbrough Council, housing developers.	Low – Middlesbrough Council already requires new housing to be built to Sustainable Homes level 3.	All new homes built to Sustainable Code level 6 from 2016 onwards.
DE6 – Promote the adoption of energy saving measures in the home.	• Including the introduction of smart meters and energy monitors into every home. • All homes switching to efficient boilers. • Assumes a reduction in gas and electricity use due to rising fuel prices. With these actions in mind, a 10% saving in both electricity and gas CO_2 is assumed.	Middlesbrough Council, Registered Social Landlords, EAGA, Go Warm, Energy Saving Trust, Middlesbrough Environment City	Medium – Smart meters have been identified for roll out across the country in the Government's *Warm homes, greener homes* strategy. However, energy savings may not be as significant as first thought. Gas and electricity use may continue to increase despite rising costs.	-28,531 from electricity savings -21,180 from gas savings
DE7 Implement the Eco Easterside Low Carbon Communities Challenge project	The Easterside area of Middlesbrough will see the introduction of micro renewable, energy efficiency measures and energy monitors to public buildings and homes.	Eco Easterside Steering Group.	Low – DECC has confirmed the award of capital funds. Revenue funding is being provided from local sources. There may be delays in the	-280

			acquisition of renewable technology due to high demand.	
DE8 - Introduction of new renewable energy technologies to generate electricity distributed through the national grid.	The Government aims to see 30% of the UK's domestic electricity generated by renewable or green electricity by 2020[1]. To ensure Middlesbrough is not over reliant on decarbonisation of the grid, only a 15% saving will be claimed in this scenario.	Government, Energy suppliers.	High – There is significant uncertainty around the implementation of large scale renewables and nuclear power by 2020.	-17,941
DE9 Increase the uptake of micro renewables by households	The Government's Household Energy Management Strategy; *Warm Homes, Greener Homes* aims to have 7 million homes equipped with eco upgrades that include the installation of renewable energy technology. The Feed in Tariffs (FITs) is included in this strategy.	Middlesbrough Council, Registered Social Landlords, EAGA, Go Warm, Energy Saving Trust, Middlesbrough Environment City	Medium – Due to the timescale, funding may not be continued to support installation up to 2020.	-124 tonnes of CO_2 saved from planned Erimus installation of solar PV in 115 homes in Middlesbrough from 2010.
Total savings/increases		**-93,446**		

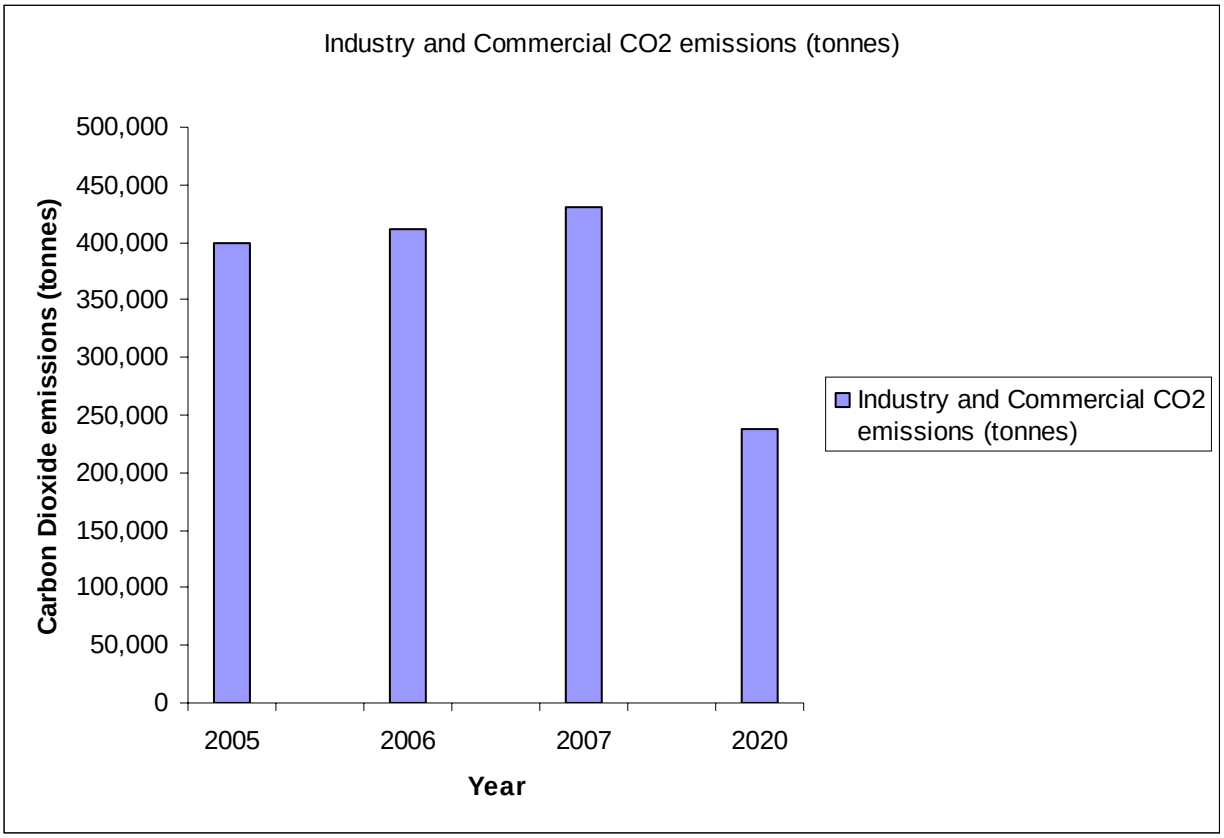
1 http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx

Industrial and commercial energy use

This section covers the CO_2 emissions arising from Industry and Commerce as defined by National Indicator 186. Total emissions from industry and commerce increased by 7.7% from 2005 to 2007. It is not known how this increase came about, although a reduction in CO_2 emissions is anticipated from 2008 to 2010 due to the economic downturn. Concern has been raised with DECC as to the reliability of the data.

The Action Plan has identified industry and commerce as an area that requires increased effort to encourage energy efficiency action and effort. Energy use from industry and commerce represents 41% of Middlesbrough's emissions in 2005. Due to issues around confidentiality it has not been possible to identify which organisations are the most intensive electricity users. This is an area the MCCP will be working on to explore methods of identifying key energy users and ensure that actions are put in place to limit and reduce the growth and industry and commercial emissions.

Projects under this theme will focus on energy efficiency as well as any projects related to installation of renewable or clean energy.



Graph 3 Industry and commercial carbon dioxide emissions in Middlesbrough forecasted to 2020.

Aspirational goal	**Explanation of measure/assumptions.**	**Who can deliver the actions?**	**What are the risks?**	**Estimated CO_2 saving (tonnes) or measure of succes**
IC1 – All organisations affected by the CRC to adopt aspirational CO_2 targets.	The CRC (Carbon Reduction Commitment energy efficiency scheme) affects all organizations with an energy use of at least 6,000MWh per year.	Middlesbrough Council to reduce CO_2 by a minimum of 30% by 2020**.** Teesside University has a commitment to reduce emissions by 34% by 2020. All organizations that are affected by the CRC	Low – The CRC or a similar cap and trade scheme is likely to continue in the medium term.	**-79,800** (based on a saving of 20% of industry and commercial CO_2 based on a 2005 baseline)
IC2 – Increase membership and activities of Middlesbrough's Green Business Project	The project promotes energy saving in Small and Medium sized Enterprises (SMEs) in Middlesbrough.	University of Teesside CLEMANCE team, Middlesbrough Council's Economic Development team, Tees Valley Green Business Network.	Low - Membership is not costly	An increase in the number of organisations that are members of the Green Business Network.
IC3 - Introduction of new renewables to grid electricity	The Government aims to see 30% of the UK's Industrial and Commerical electricity generated by renewable or green electricity by 2020[1]. To ensure Middlesbrough is not over reliant on decarbonisation of the grid, only a 15% saving will be claimed in this scenario.	The Government aims to see 30% of the UK's electricity generated by renewable or green electricity by 2020[1]. The estimated saving is from industry and commercial electricity only and represents an annual CO_2 saving. The saving may only apply to the year 2020 due to the ambitious nature of the scheme.	High – There is a significant risk around the implementation of large scale renewables and nuclear power by 2020.	**-43.423** The estimated saving is from Industry and Commercial electricity data only

IC4 -Investigate the potential for renewable energy and heating schemes within Middlesbrough	An assessment of potential district heating schemes in the Tees Valley has identified the Middlehaven and town centre areas of Middlesbrough as suitable for the installation of such a scheme.	RENEW @ CPI, CLEMANCE, Middlesbrough Council.	High – An initial assessment has suggested a district heating scheme with an output of 6MWh per annum would cost in the region of £9-12 million. European Investment Bank funding is being sort for the project.	**-6,000** An initial scheme serving Middlesbrough town centre including Teesside university.
Total estimated savings from this section (tonnes of CO_2)			**-129,223**	

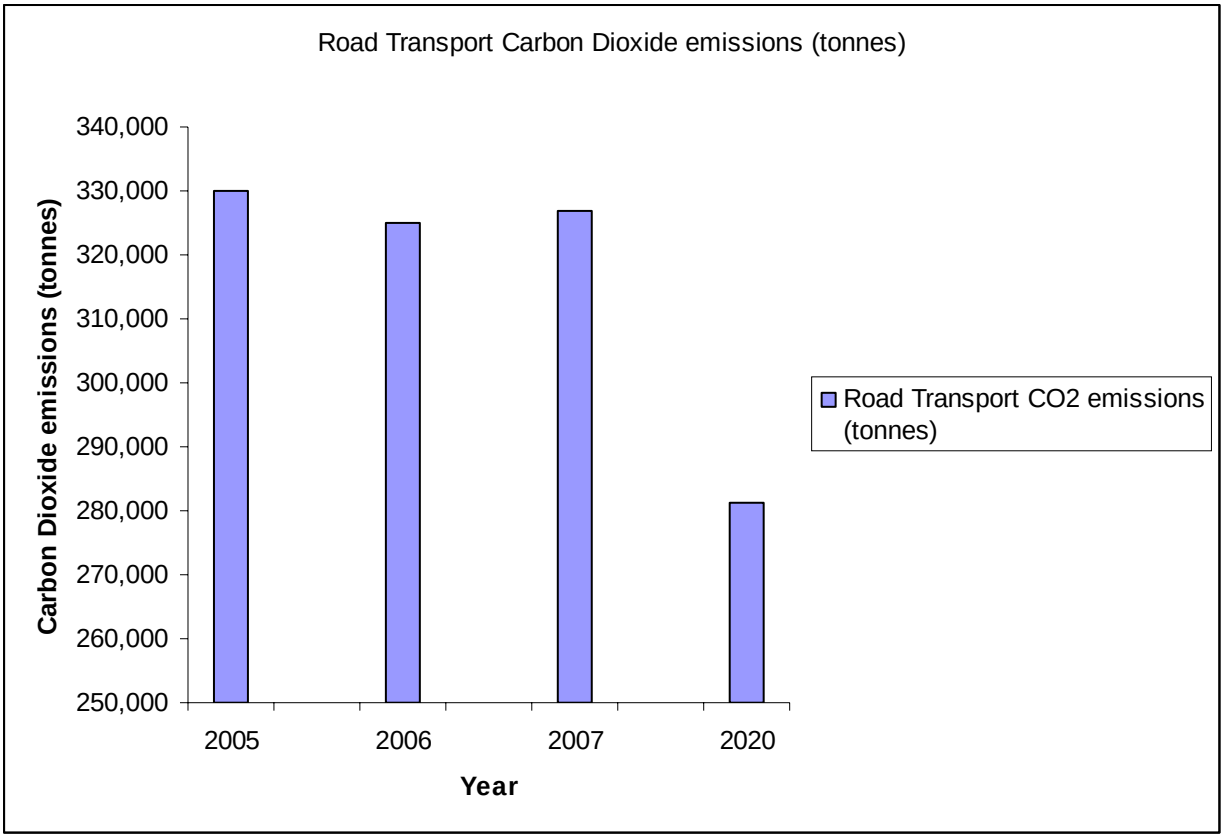
1 http://decc.gov.uk/en/content/cms/statistics/regional/electricity/electricity.aspx

2 http://www.decc.gov.uk/en/content/cms/publications/lc_trans_plan/lc_trans_plan.aspx

Transport

Emissions from transport across Middlesbrough decreased by 1% between 2005 to 2007[1]. These savings can be attributed to the increased efficiency of vehicles, and not a reduction in vehicle use as the number of Kilometers driven has increased year on year. By 2020, the increased efficiency in vehicles is expected to contribute to a 17% reduction in transport CO_2 emissions based on 2005 figures.

Middlesbrough Healthy Town scheme which has been running since January 2009, includes many projects that promote the use of public transport, and increased use of cycling and walking. There are many benefits of these modes of transport over the car in terms of healthier living, reduced costs and lower CO_2 emissions.



Graph 4 Transport carbon dioxide emissions in Middlesbrough forecasted to 2020.

Aspirational goal	Explanation of measure/assumptions.	Who can deliver the actions?	What are the risks?	Estimated annual CO_2 saving (tonnes) or measure of success
T1 - Improvements in vehicle efficiency	Although private journeys continue to increase, efficiency improvements will reduce emissions from vehicles by 13% by 2020 compared to 2005.	Middlesbrough Council Transport Service, Department of Transport, car manufacturers	Low – The price of fuel is expected to continue increasing. Car models are becoming more efficient to meet the demand for lower cost motoring.	**-32,300** Figure is based on a study carried out by Newcastle City Council to estimate the emissions from transport in 2020.
T2 - Promotion of travel plans for businesses and organisations across Middlesbrough.	Travel plans encourage more people to use public transport and alternatives to the car.	Middlesbrough Council Environment Department, Individual organizations, Energy Saving Trust	Low – The expected increase in the cost of motoring, and promotion of alternative forms of transport should see an increase in travel plans	The number of travel plans increases.
T3 - Increase the uptake of cycling and walking in Middlesbrough	Middlesbrough's Healthy Town scheme is leading on projects focusing on encouraging walking and cycling	Healthy Town Steering group.	Low – The Healthy Town programme is supported by organisations across Middlesbrough. The programme success need to be maintained to 2020.	The number of people walking and cycling in Middlesbrough increases.
T4 - Proportion of road transport fuels replaced by increase in electric vehicle use.	Includes the establishment of electric car charging points in Middlesbrough.	Middlesbrough Council Transport Service, Department of Transport, car manufacturers . Energy Saving Trust		**-4,650** Based on a One North East study into electric vehicle potential, the percentage of fuel displaced by electric vehicles is assumed to be 3%.
T5 - Smarter and greener driving	Promoted through	Energy Saving Trust,		**-9963.**

	employers and the Energy Saving Trust. Based on a 5% improvement in driver efficiency.	Middlesbrough Council Environment Department.		This is a conservative estimate based on the CO_2 savings from Darlington's Local Motion programme.
T6 - Traditional road transport fuels replaced with biofuels	Based on EU biofuels policy, it is estimated that 10% of fuel used in 2020 will come from biofuels.	Government, Fuel suppliers, car manufacturer's , Energy Saving Trust.		**-1,787** Based upon the EU DIRECTIVE 2009/28/EC of 23 April 2009. This sets mandatory national targets for a 10 % share of energy from renewable sources in transport by 2020.
T7 - Increase in public transport use			Low – There is support for improving the public transport across the Tees Valley	An increase in the number of people using public transport
Total estimated savings (tonnes of CO_2)			**-48,700**	

1 Source: National Indicator 186: per capita emissions in the LA area. 2005-2007.

Waste section

Waste, be it from households or industry, contributes significantly to climate change, and although an obvious connection is the production of emissions that arise from waste in landfill sites, the things we throw away require energy to make them in the first place. This is not included in our CO_2 figures

Methane is a powerful greenhouse gas that is produced during the breakdown of waste and unless it is trapped within the landfill site, it makes its way up into the atmosphere. Methane from landfill sites contributes to 41% of the UK's methane emissions[1]. Cutting down the amount of waste we throw away is the most important action we can take to reduce the contribution of waste to climate change. Due to the presence of an Energy from Waste plant at Haverton Hill, only a small amount of waste actually goes to landfill from Middlesbrough.

Since April 2006, the amount of waste sent to landfill from Middlesbrough has reduced by 6%[2]. During the same period, the amount of waste generated by households fell by 16% and the amount of waste sent for recycling or composting increased by 9.3%[3]. These figures show an encouraging trend in reducing the contribution of waste to Middlesbrough's greenhouse gas emissions.

Although waste from households in Middlesbrough is reducing, the amount of waste generated from industry and commercial organisations is continuing to increase. A report from the Government's Environment, Food and Rural Affairs Committee[3] identifies how little is known about the waste produced by the non municipal sector and no targets currently exist to monitor progress on reducing waste.

Middlesbrough has benefited from the existence of a National Industrial Symbiosis Programme (NISP) team in the town and their contributions to the Climate Change Partnership. The aim of this section of the revised Climate Change Community Action Plan should focus on increasing recycling and decreasing waste from the industrial and commercial sector.

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1 UK emissions of carbon dioxide, methane and nitrous oxide by national communication source category http://www.decc.gov.uk/en/content/cms/statistics/climate_change/co2_meth_n20/co2_meth_n20.aspx

2 BVPI 82d Percentage of Household Waste Arisings Landfilled. April 2006 (14.8%) -June 2009 (8%). Waste Data Flow

3 National Indicators 191, 192 and 193 (England, April 2006 - June 2009 onwards) http://www.wastedataflow.co.uk

3 **Environment, Food and Rural Affairs Committee, Waste Strategy for England 2007, Third report. http://www.publications.parliament.uk/pa/cm/cmenvfru.htm**

Aspirational goal	Explanation of measure/assumptions.	Who can deliver the actions?	What are the risks?	Estimated annual CO_2 saving (tonnes) or measure of success
W1 - Increase the number of business that put in place programmes to reduce the amount of waste produced.	Encourage organisations to reduce the amount of waste produced and thrown away whilst increasing recycling rates.	Middlesbrough Council, NISP, Green Business Network	Low- There is likely to be increasing pressure from the Government on Industry and Commercial organisations to reduce the amounts of waste sent to landfill and increase the amount of waste that is recycled.	**-7,000**
W2 - Increase the percentage of household waste that is recycled by 50% by 2020.	This is a national target set by the Government. A 50% recycling increase is based on 2007/2008 household waste recycling data. 8036 tonnes of CO_2 was estimated to have been saved in 2007/2008	Middlesbrough Council, Middlesbrough Environment City, WRAP	Low – There is national support to increase the range and quantity of material that can be recycled.	**-8,500–** Based on 50% of household waste being recycled.
W4 - Reduce the amount of household waste that is sent to landfill by 5% by 2020.	The amount of household waste sent to landfill in 2007/2008 was estimated to be 15,327 tonnes.	Middlesbrough Council, Middlesbrough Environment City,WRAP	Low – Recycling rates are expected to increase up to 2020. There is also pressure on manufacturers to reduce the amount of packaging.	**-345 -** Amount of waste sent to landfill is reduced by 5% by 2020.
Total estimated savings (tonnes of CO_2)		**-15,845**		

Education and communication

Delivering real progress in tackling climate change requires the support of the people of Middlesbrough. An Ipsos Mori national poll[1] commissioned in 2008, showed that a significant minority of people (23%) were still not concerned about climate change, it also revealed that only 38%, just over 1 in 3 people, felt the Government will take the necessary steps to tackle climate change.

Since 2004, the MCCP has supported a range of educational projects such as the Eco Schools award scheme, to encourage a better understanding of climate change. The majority of these schemes have been aimed at schools.

Communicating the need to tackle climate change will remain a priority, and importantly, its significance in delivery reductions in CO_2 will not be overlooked. For example, the scenario for reaching a 21% reduction in CO_2 emissions by 2020 relies on a 10% reduction in electricity and gas use. Changing attitudes to the way electricity and gas are used will be important in contributing to this target.

Aspirational goal	Explanation of measure/assumptions.	Who can deliver the actions?	What are the risks?	Estimated annual CO_2 saving (tonnes) or measure of success
EC1 - Achieve a 10% reduction in electricity and gas use by 2020 through behaviour change. Contributes to action **DE6**	Rising gas and electricity cost along with a change in attitudes to energy should encourage behavior change with regard to energy use.	Energy Saving Trust, Middlesbrough Environment City, Warm Front, Go Warm, Middlesbrough Council, Fabrick.	Medium – The decline in energy use due to price increases may be offset by an increase in energy demand from new appliances.	CO_2 savings identified in action **DE6**
EC2 - All schools in Middlesbrough to follow the Government's Sustainable School scheme.	The national Sustainable Schools programme, Eco Schools programme and Climate Change Lead Schools Programme, will play a key role in encouraging schools to integrate climate change into their everyday activities. CO_2 emissions from school	Middlesbrough Council's Children, Family and Learning Department. Teesside One World Centre, Middlesbrough Environment City, Climate Change Lead	Medium – This is a long term Government programme that requires local and national support to succeed to 2020.	All schools in Middlesbrough to be Sustainable Schools by 2020.

	building energy use accounted for 26& of Middlesbrough Council's total CO_2 emissions in 2008.	Schools Programme, Tees Valley Arts.		
EC3 - Promote the concept of low carbon communities in Middlesbrough	In line with One Planet Living principles, begin with a pilot zero carbon community in Easterside.	Middlesbrough Council, Registered Social Landlords,MEC, Energy Saving Trust, Eco Easterside Steering Group.	Low – Funding and resource have been secured for both Eco Easterside and One Planet Living.	CO_2 savings identified in DE7.
EC4 - Continue the development of sub regional and regional communication work	Recognising that communicating climate change is not restricted by boundaries.	Energy Saving Trust, Tees Valley Climate Change Partnership, Middlesbrough Council, Middlesbrough Environment City, Tees Valley Arts, Teesside One World Centre,	Low – Communicating climate change is undertaken by a number of organisations in Middlesbrough and linked to similar projects such as the Healthy Town programme.	Voiceover and Neighbourhood Survey questions show as increase in the public's awareness and understanding of climate change.

1Ipsos Mori poll ***Public attitudes to climate change, 2008: concerned but still unconvinced. http://www.ipsos-mori.com/Assets/Docs/Publications/sri-environment-public-attitudes-to-climate-change-2008-concerned-but-still-unconvinced.pdf***

Climate Change Adaptation

The Climate Change Adaptation Action Plan for Middlesbrough looks at the projected climate conditions for 2050 and considers the likely impacts of the changing climate on the town. The UK climate projections (UKCP09)[1] provide information on how the UK's climate is likely to change in the 21st century, as it responds to rising levels of greenhouse gases in the atmosphere. In general terms the projections for Middlesbrough are:

- Warmer and wetter winters
- Hotter and drier summers but with more extreme weather events.

By assessing the town's vulnerabilities, the aim is to use this information to guide the work of Middlesbrough Council, and partner organisations, over the next 40 years. Building climate change adaptation considerations into this work will help the town incorporate appropriate adaptations into routine maintenance work and capital projects. Not only will this help the community to cope with the negative impacts of climate change, but it will also put the town in an excellent position to grasp the numerous business opportunities that will arise.

The Adaptation Action Plan contains existing initiatives. In some areas, such as flood risk management, a great deal of work has already been undertaken. In other areas, such as engaging in adaptation-based business opportunities, there is much to be done to raise the profile across the business community. The aim of the action plan is to identify the current situation in 2009/2010 and to establish the priorities for further work. It will be essential that this initial work is monitored, developed, and built on over the next 40 years.

The full Climate Change Adaptation Action Plan can be viewed at
http://www.middlesbrough.gov.uk/ccm/navigation/environment/environmental-sustainability/

The Climate Change Adaptation Action Plan contains a wide variety of work that is currently underway or is planned for the near future that will begin the process of preparing for future climate change. The list is by no means exhaustive and one of the key objectives is to raise awareness of Climate Change adaptation across all of the town's users, whether residents, businesses or visitors, to ensure that full consideration is given to this increasingly important subject. A few examples of this work are given below:

[1] http://www.ukcip.org.uk/index.php

Selected key issues identified in the Climate Change Adaptation Action Plan

- The Environment Agency is producing the Tees Tidal Flood Risk Management Strategy to manage flood risk over the next 100 years. The flood risk from the Tees is tidal, rather than fluvial, and the strategy identifies work to be undertaken to hold the line on the current defences.

- The Heat Health Watch is an early warning system to help vulnerable people during a heat wave. Early warning systems are in place from the Met Office via the National Severe Weather Warnings Service (NSWWS) and the Heat Health Watch Service.

- Cancer Research UK promotes a SunSmart campaign to raise awareness of the risks associated with exposure to ultraviolet radiation

- In 2009 Middlesbrough Council established a *Surface Water Management Team* to look at Middlesbrough specific surface water management issues (becks, land water, surface water drains and sewerage).

- Middlesbrough's Building Schools for the Future (BSF) and Primary Strategy for Change programmes will overhaul secondary and primary schools in Middlesbrough. The new schools will include design features that will allow these schools to function in the changed climate of 2050.

- The Tees Valley Green Infrastructure Strategy was published in 2008. One of its principal aims is to *assist with climate change adaptations, actions and initiatives.*

Delivery Plan

Reducing Middlesbrough's CO_2 emissions by 21% by 2020 whilst communicating action on climate change and adapting the town, requires a partnership approach to ensure effective implementation.

Annual actions

- The action plan will be monitored on a 6 monthly basis by Middlesbrough's Climate Change Partnership, through the production of annual work programmes. These work programme will outline projects that are contributing to the aims of each section of the MCCCAP and also record CO_2 savings where possible.
- The Middlesbrough Climate Change Partnership will continue to meet at least twice a year.
- A year end report will be produced in April of each year. This will use the Government's National Indicator 186: per capita emissions in the Local Authority area, to monitor progress towards a minimum CO_2 reduction of 20% by 2020. Estimated savings from individual projects will still be calculated where possible.
- Projects and actions that have been identified as contributing to the 21% reduction in greenhouse gas emissions by 2020 will be reviewed every year to ensure the minimum 21% CO_2 reduction target can still be met. Individual project targets will also be refined on an annual basis. This should ensure that new actions are accounted for and contribute towards achieving the 21% and 31% targets, and any shortfalls in emission savings are recognised early on.

Partnership

A webpage will be created for the MCCP that will include profiles and contact details of partner organisations as well as the projects that are planned for the coming year. This page will also have the facility to upload information and requests. This should help encourage communication and the sharing of information and knowledge between the 6 monthly meetings.

Meeting long term targets

Meeting a minimum CO_2 reduction target of 21% by 2020 based on a 2005 baseline is dependent on both local and national projects delivering significant carbon savings. However, meeting this target will require significant changes in our approach and attitude to using and sourcing energy.

Based on the Government's Low Carbon Transition Plan, 30% of the nation's electricity needs will be met by renewables by 2020. The scenarios that have been developed to estimate how the 21% reduction in CO2 will be met are reliant on the national energy infrastructure making this change to renewables. The annual update of the MCCP plan will outline the progress of the switch to renewable forms of electricity and if required, new CO2 reduction scenarios will be produced to take into account any shortfalls.

Climate Change Partners

Glossary

Greenhouse gases (GHGs) - gases in the atmosphere, which absorb thermal infra-red radiation emitted by the Earth's surface, the atmosphere and clouds. GHGs include water vapour, carbon dioxide, methane and nitrous oxide.

Mitigation – taking action to reduce the causes of climate change by reducing the amount of greenhouse gases in the atmosphere.

Adaptation – taking action to cope with the consequences of climate change, such as an increased risk of flooding.

Carbon Dioxide - or CO_2 is a gas in Earth's atmosphere. It occurs naturally and is also a by-product of human activity such as burning fossil fuels and land-use change. It is the principal greenhouse gas linked to man made climate change.

Biofuel - A fuel derived from recently dead biological material and used to power vehicles (can be liquid or gas). Biofuels are commonly derived from cereal crops but can also be derived from dead animals, trees and even algae. Blended with petrol and diesel biofuels can be used in conventional vehicles.

Renewables - Energy is derived from natural processes that are replenished constantly. They include geothermal, solar, wind, tide, wave, hydropower, biomass and biofuels.

Smart meters - Advanced metering technology that allows suppliers to remotely record customers' gas and electricity use. Customers can be provided with real-time information that could encourage them to use less energy (e.g. through display units).

CRC energy efficiency scheme - The UK's first mandatory carbon trading scheme that covers all organisations that consume over 6000 MWh of electricity in a year.

Further information

For further information on climate change in Middlesbrough please contact:

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