Tackling Climate Change in the East Midlands

Regional Programme of Action, 2009 – 2011

East Midlands Regional Climate Change Partnership

Contents

A joint publication between:

- *East Midlands Development Agency*
- *East Midlands Regional Assembly*
- *Government Office for the East Midlands*
- *The Environment Agency*

in association with:

- *East Midlands Regional Climate Change Partnership*

February 2009

Cover photographs by Miles Storey (top) and Pete Carr (bottom)

Foreword

I am in no doubt that the climate is changing and that human activity, mainly through the burning of fossil fuels for energy, is the principal cause. Climate change is a global problem, but it has local and regional causes and consequences. Here in the East Midlands, we are particularly at risk from flooding and sea level rise on the Lincolnshire coast but also face other threats to our habitats and water supplies.

Climate change can only be tackled effectively by international action but we can be part of a global solution and this document provides a framework for the East Midlands' regional contribution to tackling climate change. It has to be a priority for all of us.

This Programme of Action is timely. The new Climate Change Act has just received Royal assent and as a result, the UK has become the first country in the world to have a legally binding carbon reduction target (of an 80% cut in Greenhouse Gas emissions from 1990 levels by 2050) and a trajectory to meet that target. Under the provisions of the Act, Government is now required to set binding carbon budgets for five-yearly periods, and to assess the risks to the UK from the impact of Climate Change. In doing this it will act on the advice of the new independent Committee on Climate Change and be held to account by Parliament.

Within the UK, national targets will only be met through a combination of national, regional and local measures. Everyone has a part to play. This Programme of Action sets out the actions that will be taken by East Midlands regional bodies over the next three years to address climate change. A revised Regional Energy Strategy will follow shortly which will detail many more measures that will help to reduce carbon dioxide emissions through reducing energy demand, increasing energy efficiency and installing more renewable energy capacity in the region.

This Programme of Action builds upon an East Midlands tradition of delivering national exemplar projects addressing climate change. We were the first English region to achieve 100% sign-up by local authorities to the Nottingham Declaration on Climate Change . We are also undertaking the UK's first region-wide Local Climate Impacts Profiles project, completing the first major regional study into the Economic Impacts of Climate Change and piloting regional approaches to climate change adaptation with businesses. These initiatives have helped build significant capability within the region and provide a good basis for taking further action to address both the causes and effects of climate change as we go forward.

I wish all involved in delivering this Programme of Action good fortune. I shall be watching progress with interest and looking to support your efforts where I can.

Phil Hope

Minister of State for Care Services in the Department of Health

Regional Minister for the East Midlands

MP for Corby and East Northamptonshire

1. Executive Summary

This regional Programme of Action **(PoA)** for the East Midlands is a response to the growing requirements on regional bodies and local government to take action on climate change. It recognises increasing expectations from the wider public as the scale of the challenge becomes more evident. The PoA covers the following main areas:

1. the national and regional **context** for action
2. the **current situation** in the region and key issues
3. **targets**
4. **actions** in priority areas.

The PoA is a **public statement of commitment** by the main regional bodies (EMRA, *emda*, GOEM in association with the EA) to act in support of national and local government policy and commitment to address the causes and consequences of climate change. The PoA has been developed following a **public consultation** on the *Towards an East Midlands Climate Change Programme of Action' published in late 2007.*

It is a **three year plan** that brings together existing regional climate change commitments embodied in statutory documents like the Regional Spatial Strategy (RSS), the Regional Economic Strategy (RES) and non-statutory plans such as the Regional Energy Strategy (which will shortly be re-published in revised form as a companion document to the PoA), Regional Transport Strategy, and Regional Biodiversity Strategy. This helps illustrate how much climate change affects all aspects of life in the East Midlands; social, economic and environmental.

The PoA summarises the **key climate change issues** for the region. On the one hand this is about reducing the **49 million tonnes** of Greenhouse Gas emissions produced annually in the region and on the other it describes the **key regional risks and opportunities** associated with a changing climate.

Climate projections produced for the UK Climate Impacts Programme (UKCIP) indicate that temperatures and average wind speeds are likely to rise. Winters are expected to be wetter, summers drier, and extreme weather events increasing in frequency and severity over forthcoming decades. Sea levels will rise as a result of thermal expansion and ice melt and flooding and erosion along the Lincolnshire coast will become an increasing concern, presenting risks for coastal communities, businesses and farmland.

The East Midlands is already **one of the driest regions** in England and the expected warmer summers may mean less rainfall; at the same time, demands for water are expected to rise particularly from new housing to meet our growing population. .

The PoA describes actions to be taken by regional bodies and their partners to tackle the complex interrelated challenges of reducing emissions and responding to existing vulnerabilities and longer term climate related risks. Actions are presented in the context of **8 Priority Action Areas**, identified through discussions with stakeholders. These have been developed to reflect the new **Local Government Performance Framework** and the introduction of climate change indicators in **Local Area Agreements**; the introduction of the Government's **Adaptation Policy Framework** and key elements of the **Climate Change Act**. The 8 priority action areas demonstrate the different ways in which climate change will affect our region and variety of ways regional and local stakeholders are responding.

Headline targets are included for both the causes and the consequences of climate change. These are aggregated from the Local Area Agreement targets already agreed between local and national government in 2008.

1. Executive Summary

The regional **mitigation target** (to tackle the cause of climate change) is to reduce carbon dioxide emissions across the region, over three years, by an average of **10% per capita**, from a 2005 baseline.

The regional **adaptation target** (to respond to the consequences of a changing climate) is to achieve an average of **Level 3** across the region, over three years in the context of National Indicator 188 'Planning to Adapt to Climate Change' (see right)

The need to work in partnership to tackle climate change effectively is emphasised throughout the PoA. Central Government recognises the evolving **Regional Climate Change Partnership (RCCP)** as the main focus for such joint working in the East Midlands. Its structure and terms of reference are included, to clarify how the regional partners envisage implementing the PoA in association with a range of stakeholders. This is intended to build a shared understanding and common position amongst regional stakeholders and ensure a well coordinated and well informed regional approach.

Whilst this is a short term plan, there are a number of references to the longer term and the need to embed climate change into key statutory documents like the forthcoming **Regional Strategy**. Being developed by *emda* and a new Local Authority Leaders' Board, the Regional Strategy will replace the Regional Economic Strategy and Regional Spatial Strategy, providing a streamlined framework for sustainable economic growth.

The regional partners recognise that in order to engage people effectively, they need to establish their own **credentials** on climate change. This is partly about how each organisation can show it is doing the right thing in terms of its own policies and performance. It is also about developing the regional evidence base for action on climate change, in order to provide clear justification for why particular actions are needed.

Endnote

During the development of this regional Programme of Action (PoA) the outcome of the National Review of Sub National Economic Development and Regeneration (the SNR) was announced. SNR will lead to changes in regional governance and strategy development arrangements. These are likely to impact on the focus and delivery of regional climate change priorities in the future; as such regional partners will update this PoA as new arrangements are agreed.

Jargon and Acronyms

Climate change policy is laden with jargon, acronyms and technical concepts. There is a guide to the acronyms on the back page and we have tried to explain the jargon and concepts within the text and by the use of diagrams, graphs and photographs.

NI 188, Planning to Adapt to Climate Change

The aim of the indicator, which is included within 7 out of 9 of the region's Local Area Agreements, is to embed the management of climate risks and opportunities across the local authority and partners services, plans and estates and to take appropriate adaptive actions where required.

Level 0	Getting started
Level 1	Public commitment and impacts assessment
Level 2	Comprehensive risk assessment
Level 3	Comprehensive action plan **(average level for the East Midlands by end 2010/11)**
Level 4	Implementation, monitoring and continuous review

Source: Local and Regional Adaptation Partnership Board guidance notes, December 2008

Example of Adaptation: Environment Agency raising flood defences alongside the River Trent (photo by Martine Hamilton-Knight)

2. Introduction

2.1 Audience

This document is primarily aimed at regional bodies, their delivery partners, local government and stakeholders in the region's key economic sectors. Along with other material that is being developed, this is also designed as an introduction to climate change in the East Midlands, a snapshot of the evidence base, a signpost to who's doing what and a resource for sharing knowledge and stimulating action.

The PoA will act as the 'gateway' to the forthcoming RCCP website, an information-rich resource that will be available to everyone in the region and designed to help ensure that households, businesses and individuals understand what climate change means for them, what they can do to reduce greenhouse gas emissions, how to adapt to unavoidable changes in the climate and what support is available.

2.2 Aims

This Programme of Action details what the region is doing to meet the twin long term challenges of achieving cuts in carbon emissions (mitigation) and becoming more resilient to the inevitable impacts of a changing climate (adaptation). Climate change is driven by our daily activities (heating, lighting, travel, etc) and we are also vulnerable to the effects of climatic changes (weather events etc). Given its pervasive nature, climate change can't be addressed through a single tool or mechanism but needs to be addressed on a number of fronts using a range of different tools.

Because of this, the PoA brings together and represents the collective commitments by regional bodies over energy, waste, transport, housing and the economy. Continuing the mitigation and adaptation themes, the PoA will be supported by a refreshed Regional Energy Strategy representing the region's primary mitigation strategy – this is due to be published in spring 2009.

2.3 Scope and Mandate

This is a short term (three year) plan designed to highlight the issues, stimulate and improve delivery of actions. The PoA has been developed through public consultation and stakeholder dialogue to help build consensus and establish a mandate for action. It will need to be updated and rolled forward to take account of changes resulting from the Sub National Review and national policy developments such as the Climate Change Act.

2.4 Principles

The following principles were used to help shape the Programme of Action and frame the priorities:

1. The priority areas and actions are supported by an evidence base (quantitative and qualitative)
2. Each is within the scope and/or mandate of one or more of the regional partners/local authorities to influence
3. Each priority area is concerned with achieving cuts in emissions, undertaking adaptation measures where they are most needed, or a combination of the two
4. The priority areas reflect existing commitments within other regional strategies and plans (such as the regional Spatial, Economic, Energy and Environment strategies) demonstrating that regional partners are already doing a lot to respond to climate change issues
5. The priority areas will be dependent on partnership approaches to delivering activity – recognising the need for collaborative approaches in addressing the challenges of climate change

2. Introduction

2.5 Authors

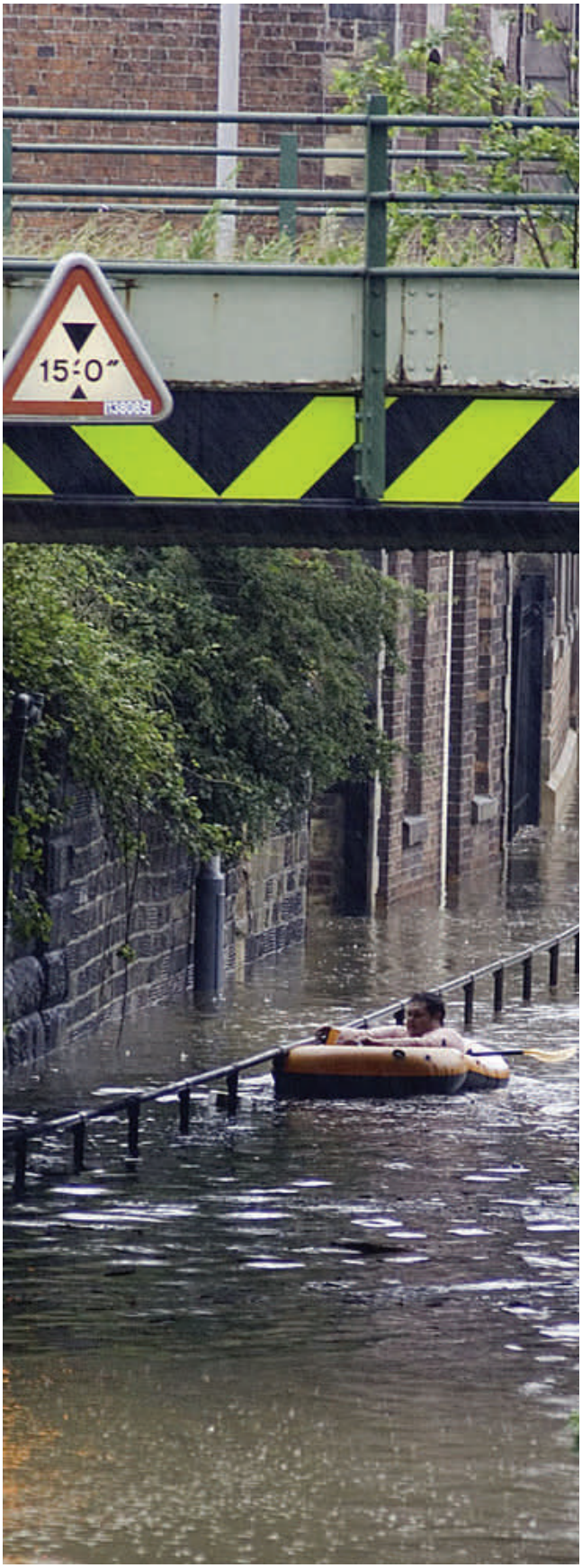
This Programme of Action (**PoA**) is a public statement of commitment by the following partners to address the causes and consequences of climate change, and captures our collective actions for the next three years:

- East Midlands Regional Assembly (**EMRA**, until closure in March 2010*)
- East Midlands Development Agency (***emda***)
- Government Office for the East Midlands (**GOEM**)
- Environment Agency (**EA**) Midlands and Anglian Regions

The four public bodies (described subsequently as 'the regional partners') working in partnership have resourced and developed this programme in conjunction with the East Midlands Climate Change Partnership and other stakeholders. The Programme outlined here will be delivered in partnership with a wide range of bodies, including the public and private sectors.

The PoA should be seen as a transitional document which will inform the development of the forthcoming Regional Strategy. This will become the overarching statutory policy framework for the East Midlands, as described further over the page.

* EMRA is closing in March 2010 as a result of Sub-National Review (detailed over the page)



An example of present day vulnerability to extreme weather—flooding in Chesterfield, June 2007

(Photo by Jon Bradbury)

3. The context for regional action on climate change

3.1 Sustainable Development

The 2005 UK Sustainable Development Strategy set out four priorities for immediate action at national, regional and local level. These are:

- **Climate change and energy**
- Sustainable consumption and production
- Natural resource protection and environmental enhancement
- Sustainable communities

Taken together, the adaptation and mitigation actions represented within the PoA and other regional strategies provide a comprehensive regional contribution to the climate change and energy priority of the UK SD Strategy.

3.2 Sub National Review (SNR)

Prosperous Places: Taking Forward the Review of Sub National Economic Development and Regeneration, published by Government in November 2008 confirmed a new framework for the English regions designed to maximise prosperity and tackle deprivation and inequality. These reforms will put in place a legal and policy framework to assist regions, sub-regions and local areas in responding to current economic difficulties, preparing for the upturn and strengthening jobs and business growth in all areas into the longer term.

Key elements of the Government's proposals are:

- A new **Regional Strategy** prepared and agreed jointly by local authorities and the Regional Development Agency, setting out how the region will grow economically, spatially and sustainably
- The current Regional Assemblies to be replaced by streamlined and strategic **Local Authority Leaders' Boards** and new arrangements for involving stakeholders in decision making
- Each local authority will carry out **Local Economic Assessments** to inform priorities in the Single Regional Strategy and local level plans, with closer involvement of the RDA in how those plans can be realised
- **Better integration** of economic, social and environmental goals and **closer working** between local authorities and partners strengthen economic development at local level

3.3 The new Regional Strategy

Guidance prepared in support of the **Local Democracy, Economic Development and Construction Bill** (January 2009) which will provide the legislative basis for SNR, states that: *climate change should be one of three high priority issues* covered by the Regional Strategy. This builds upon existing Government policy about the role of regional bodies and local government in tackling climate change.

3.4 The evidence for climate change

The scientific evidence for climate change taking place and the causal link with human activity is not covered here. This is explained in detail on the website and in the reports of the Inter Governmental Panel on Climate Change. The IPCC is the world's leading scientific body and was set up by the United Nations Environment Programme and World Meteorological Organisation in 1988 to provide advice to policy makers. **www.ipcc.ch**

3.5 The regional evidence on climate change

The following section considers the evidence that is available regarding the sources, quantities and types of Greenhouse Gas emissions that occur within the East Midlands. It also looks at the potential risks and opportunities for the region as the climate continues to change over the 21st century. Following discussion of the key issues, conclusions are drawn about the most appropriate regional targets (for both mitigation and adaptation) and the types of regional interventions that will be pursued.

3.6 The regional response

This analysis of the causes and effects of climate change within the East Midlands and the most appropriate public policy responses will be kept under constant review by the regional partners and the RCCP, in the light of new research, implementation of the actions in the PoA and rapidly evolving Government policy.

4. Regional Greenhouse Gas Emissions

4.1 Regional Research into GHG emissions

emda, on behalf of the regional partners, commissioned research into the Greenhouse Gas (GHG) emissions from the East Midlands in order to establish the scale of the challenge and the sources of CO_2 and other GHGs. The research also considered how longer term emissions cuts up to 2020 might be achieved and what combination of mitigation measures might be needed.

4.2 Emissions data

At the UK level, emissions of the six GHGs covered by the Kyoto Protocol (CO_2, CH_4, N_2O, HFCs, PFCs and SF_6) are compiled annually and submitted to both the European Union and the United Nations Framework Convention on Climate Change (UNFCCC). UNFCCC inventories are used to track each country's progress against its Kyoto Protocol reduction target. They are currently available for the period 1990 to 2007. To help calculate the combined effect of GHGs on the climate, their relative intensities have all been standardised against carbon dioxide, and are expressed as '**Carbon dioxide equivalent**' or '**CO_2e**'.

4.3 Development of a regional inventory

At the regional level, there is currently no 'official' GHG emission inventory that covers the six Kyoto GHGs However, there are various emission data sources available, which were used to estimate regional GHG emissions and the 1990 baseline.

4.4 Methodologies for measuring emissions

There are different ways of measuring, estimating and attributing GHGs; the research considered and compared three different methodologies. The most relevant for the PoA, in terms of regional influence, ongoing monitoring and consistency with local policy is the **'end user'** approach, which attributes emissions from electricity to the consumer.

4.5 Emission Source approach

This approach attributes regional emissions from electricity generation to the power station rather than the consumer and gives a significantly higher overall figure than the other approaches described below. Some **68 million tonnes CO_2e** are attributed to the region by this approach due to the presence of large coal fired power stations, which export energy to other regions to help meet their demand.

4.6 End User approach

According to the end user methodology, the East Midlands is responsible for **49 million tonnes CO_2e** of GHG emissions per year, or **8% of the UK's GHG emissions. This equates to 11.6 tonnes** of CO_2e per capita - slightly above the national average of 11.0 tonnes.

4.7 Consumption approach

This approach takes into account the impact of direct and indirect GHG emissions from goods and materials imported into the region from other parts of the UK and overseas. Although useful in showing the extended footprint of the region, this approach is to some extent more experimental, with more uncertainty in the figures. This attributes **50.5 million tonnes CO_2e GHGs** to the region.

Figure 1. Comparison of different inventory approaches, 2005 data, URS report for *emda*

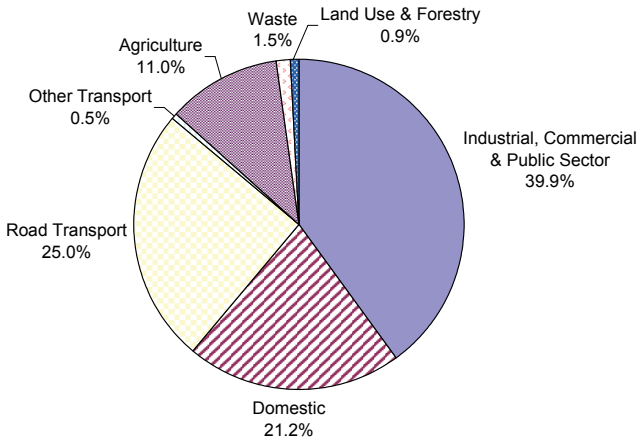
Inventory approach	Total regional GHG emissions (kt CO_2 equiv.)	Top Three impact areas	EM share of UK emissions	GHG emissions per capita (t CO_2 equiv./cap.)	
				EM	UK average
1. Emission Source approach	~ 68,000	Industrial, Commercial & Public Sector (63%, with 46% for fuel and power production only) Road transport (18%) Domestic (9%)	10%	16.0	11.0
2. End User approach	~ 49,000	Industrial, Commercial & Public Sector (40%) Road transport (25%) Domestic energy use (21%)	8%	11.6	11.0
3. Consumption approach	~ 50,500	Home & energy (26%) Government & fixed capital (26%) Travel (21% with 16% for car use only)	8%	11.8	11.8

4. Regional Greenhouse Gas Emissions

Cottam Power Station, Nottinghamshire. (Photo by Ian Bramham)

4.8 Sources of regional GHG emissions and comparisons with other regions

The pie charts (right) show the sources of emissions by sector for GHGs (top) and CO_2 (bottom). The most striking difference between the two is the relative impact of agriculture, which is associated with the GHGs methane and nitrous oxide. When the CO_2 only figures are compared with other regions (**Figure 2 below**), the East Midlands' Industrial and Commercial emissions as well as Road Transport emissions (per head) are slightly higher than the English average, while domestic emissions are close to the English average. This is thought to be due to the influence of the power production and minerals sectors and the fact that the East Midlands is a large predominantly rural region with greater car dependency.



Figures 3 and 4 Regional **GHG emissions** (top) and **CO_2 emissions** (below) attributed to key sectors, with energy emissions re-allocated to end-users (2005 data), URS on behalf of *emda*

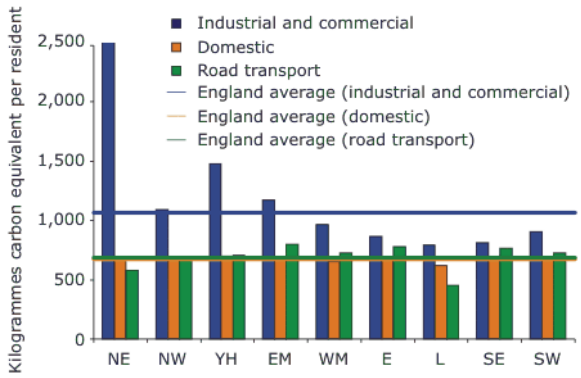
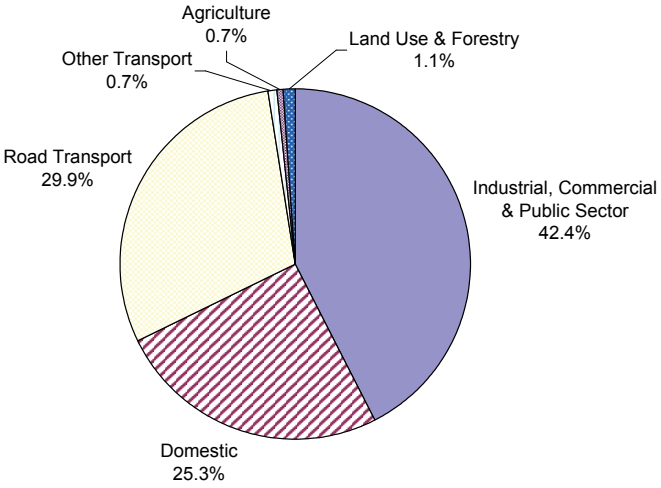


Figure 2: CO2 emissions of English regions, by end users, per capita (2005 data) Source: Defra



4.9 Contribution to UK targets

Whilst there is presently no requirement or expectation in Government policy about the disaggregation of national emissions mitigation targets down to a regional or local level, this may change over time. Hence it was considered prudent to explore what the implications might be, if this did come about. The research for *emda* therefore considered whether a 26% - 32% reduction in CO_2 emissions could be achieved in the East Midlands by 2020, matching the national 2020 target (about to be updated when confirmed carbon budgets are published in spring 2009, in response to the Committee on Climate Change recommendations).

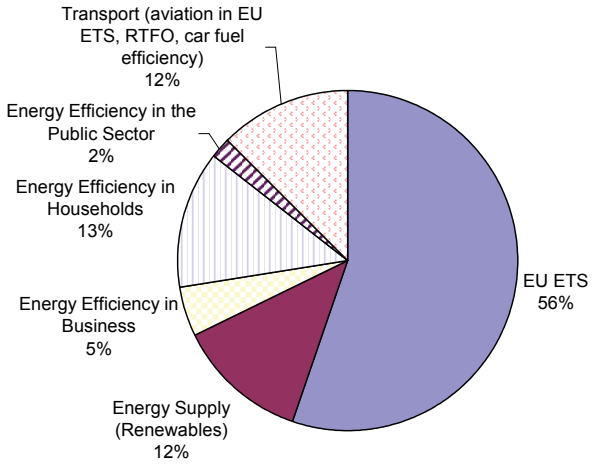


Figure 5 The relative impact on emissions reduction, by national measure (from 2007 Energy White Paper)

4.10 Regional influence

The **2007 Energy White Paper** listed the combination of national measures that were being introduced to reduce CO_2 emissions in order to help the UK achieve its 2020 target. This is illustrated in the pie chart opposite, with the EU Emissions Trading Scheme being by far the most influential measure. The measures directly under the control of regional and local public sector bodies are very small (within the 2% of the public sector energy efficiency slice). However, regional and local bodies have a much wider indirect influence over the implementation of national measures and the research estimated this to be as much as 25% of the overall savings in the region expected by 2020.

The research also considered the potential impact of additional measures provided for within national policy frameworks and regional planning policy in the period up to 2020. From the information available, it does appear that the region could match the 26% - 32% national target at a stretch, but that this would require the full implementation of all national measures across the East Midlands, together with an additional contribution of regional and local measures.

Although there are lots of uncertainties here, the information is included to stimulate further discussion amongst stakeholders about where regional and local bodies should focus their mitigation efforts in the medium term.

4.11 Towards a regional carbon trajectory

The figures presented are regarded as broad estimates of the potential range of carbon savings that can be achieved and they are only meant to give an indication of the level of effort required to reduce emissions by a certain percentage by 2020, and to allow for a comparison between different types of measures. The graph on the next page shows the potential effect of implementing different combinations of measures on the region's emissions over the next 11 years. The significant variation between the different trajectories illustrates that to achieve the deepest cuts, the region will need to maximise the impact of national measures and apply/support a range of additional regional and local measures.

The 25% difference that regional influence can make is more apparent in the trajectory illustrated over the page. The high impact scenario is where there has been full implementation of national measures (with regional support). The low impact scenario is where implementation in the region has been more limited. The combination of existing and potential regional and local targets and measures that were used in this illustration are also described over the page.

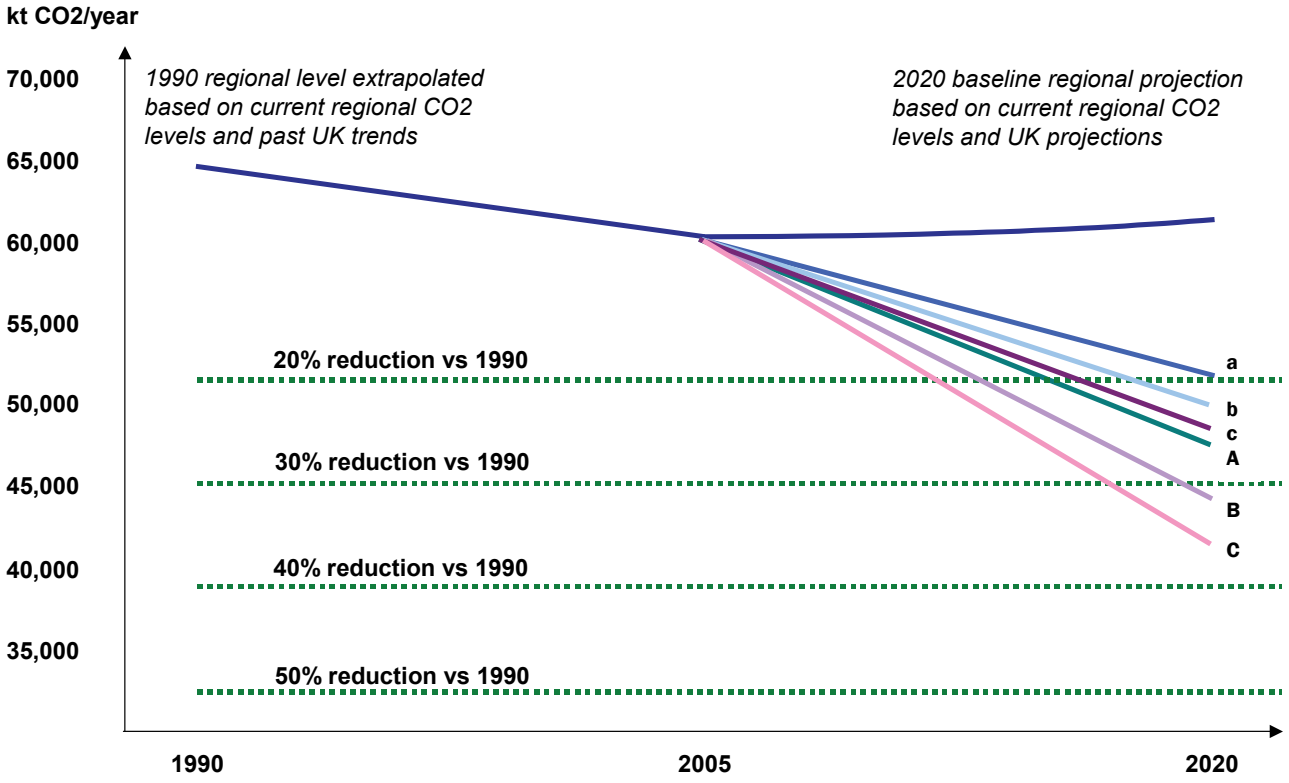


Figure 6. Towards a regional carbon trajectory: schematic representation of projected regional CO_2 emissions and potential impact of existing and additional carbon reduction measures

a Low impact of national policy measures (EWP 2007)

A High impact of national policy measures (EWP 2007)

b Low impact of national policy measures and existing regional measures

B High impact of national policy measures and existing regional measures

c Low impact of national policy measures, existing regional measures and additional measures

C High impact of national policy measures, existing regional measures and additional measures

Notes The 2020 baseline projections are based on current economic trends, future energy prices and the predicted impact of existing policies. The above emission levels were estimated based upon an emission source approach. The increase in the baseline is due to several policies coming to an end prior to 2020.

Existing and planned regional targets and measures considered were:

- Local Area Agreement targets (LAA) - NI 186
- Local Authority Carbon Management Plans and targets
- Regional Combined Heat and Power target (from RSS)
- Regional Coal Mine Methane target *(Chasing the Low Carbon Economy* report for *emda*)
- Peak District moors restoration target *(from Moors for the Future project)*

Additional measures provided for within national and regional policy frameworks:

- Possible congestion charging schemes and public transport improvements
- "Smarter Choices" (soft measures to reduce road traffic and travel needs)
- Eco-driving
- Road freight carbon reduction measures
- Low carbon bus fleets
- Microgeneration in new homes

5. Regional climate impacts

5.1 Observed and projected climatic changes

Average temperatures across central England have increased by 1°C since 1980 with 2006 being the warmest on record (Met Office Hadley Centre/ UKCIP, 2008) and it is anticipated that this will continue to rise according to the increasing level of GHGs in the atmosphere.

The UKCIP02 climate scenarios indicate that the region will experience some of the most substantial climate changes in England (in terms of temperature and precipitation), with daily average temperatures increasing by up to 5°C by the 2080s (under a high emissions scenario) and summer rainfall decreasing by up to 60% in the southern parts of the region, as shown in the maps below.

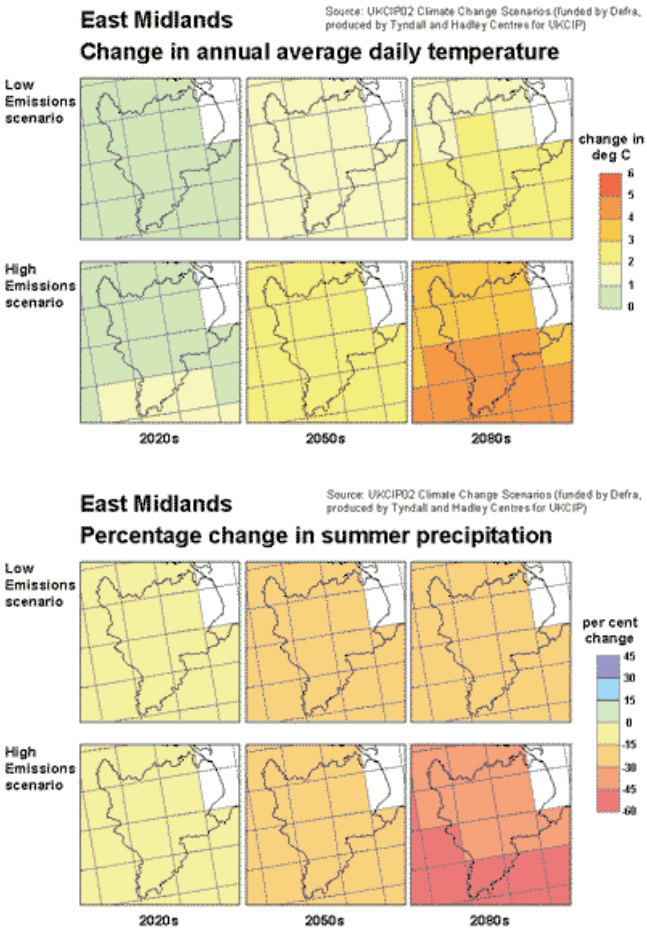


Figure 7. UKCIP maps of temperature (top) and precipitation (below) in 2020s, 2050s and 2080s, according to high and low emissions scenarios

5.2 Regional Climate Impacts Study

The East Midlands was one of the first English regions to conduct a **climate change impacts study** in 2000. This was based upon the IPCC low, medium and high emission scenarios for 2020, 2050 and 2080 prepared for the UK Climate Impacts Programme by the Tyndall and Hadley Centres. The report was updated in 2004, based upon the UKCIP02 scenarios.

5.3 New UK Climate Projections

The Impacts Study is a key piece of regional evidence for climate change adaptation, which will be updated in 2009, following the release of new UKCIP scenarios: now called the **UK Climate Projections.** These have been developed following the introduction and use of more sophisticated climate modelling by the Hadley Centre. They will provide a **finer grain of detail** than previously (25km grid squares rather than 50km) and present information in a **probabilistic format**. This will enable stakeholders to explore the probability of future weather events under different emissions scenarios, based on the results of the recent climate modelling.

Although there are still uncertainties inherent in attempting to estimate the future climate, it is claimed that the new projections and the new range of tools that will accompany them, will make the **uncertainties more transparent**. Training in the use of the projections and the tools will be provided in the region by UKCIP following the launch.

5.4 Current knowledge of risks to the East Midlands

It is clear from the Regional Impacts Study that climate change will have significant effects on the East Midlands. Already one of the driest English regions (in terms of rainfall), we also have areas that are particularly prone to flooding and coastal erosion. The changing climate will pose direct risks to sectors which are weather dependent, like **agriculture**, **food and drink** and **tourism** and it will affect the scale and location of business and housing growth throughout the East Midlands. The Regional Impacts Study will be updated in the light of the new UK Climate Projections and other more recent research.

5.5 Key impacts on the region

The impacts resulting from such changes over time are likely to include a mix of risks and benefits:

- **Fewer cold related deaths** in winter, but a possible increase in heat related deaths in hot summers (as seen in France in summer 2003)
- Less summer rainfall will mean **less water availability** for domestic, industrial and agricultural purposes, but **greater demand** from the planned new housing and irrigation for horticultural produce
- Changes in the **types of crops** that can be grown, including the possibility of more vineyards, lavender and sweetcorn
- Higher temperatures could lead to **deterioration in the working conditions** for employees
- An **increase in tourism** to popular destinations like the Peak District National Park and Lincolnshire Coast
- More **frequent extreme weather events** like the hot summer of 2003 and the floods of summer 2007, with the associated challenges that each different weather event brings
- Damage to buildings through **subsidence**, as soils dry out due to higher temperatures and lack of water
- **Changes in the types of plant and animal species** found in the Region, where biodiversity is already under pressure
- **Damage to historic buildings**, archaeological sites, historic and designed landscapes
- Warmer temperatures could encourage **more walking and cycling**
- **Changing energy demand**, with reduced demand for heating in winter, but more demand for air conditioning in summer
- **Flood Risk** is a particular concern for the region, as the following extract from the Evidence Base for the Regional Economic Strategy (which draws from several sources) makes clear.

'In the East Midlands flood risk is a major economic and social issue in low-lying areas developed on broad floodplains, such as the River Trent valley. The region also contains some of the most extensive flood-prone coastal areas in the UK. It is estimated that approximately 17% of the land area in the East Midlands is at risk of flooding, affecting over 350,000 people in 143,000 homes and significant numbers of businesses. Importantly, 20% of the region is low lying and protected by drainage and flood defences and over half of the best and most versatile agricultural land is situated less than five metres above sea level.

Extrapolations over the next 50 or so years suggest that the social, economic and environmental consequences of climate change could be severe. Global-scale climatic simulations conclude that sea-levels will rise, placing coastal regions at greater risk from marine inundation.'

The response by regional bodies to the growing problem of flood risk is detailed further within following sections, but one example is the current **Lincolnshire Coastal Strategy Study**, which is exploring options for sustainable ways of living and adapting to climate change in the communities along the Lincolnshire coast, including East Lindsey, Boston and South Holland.

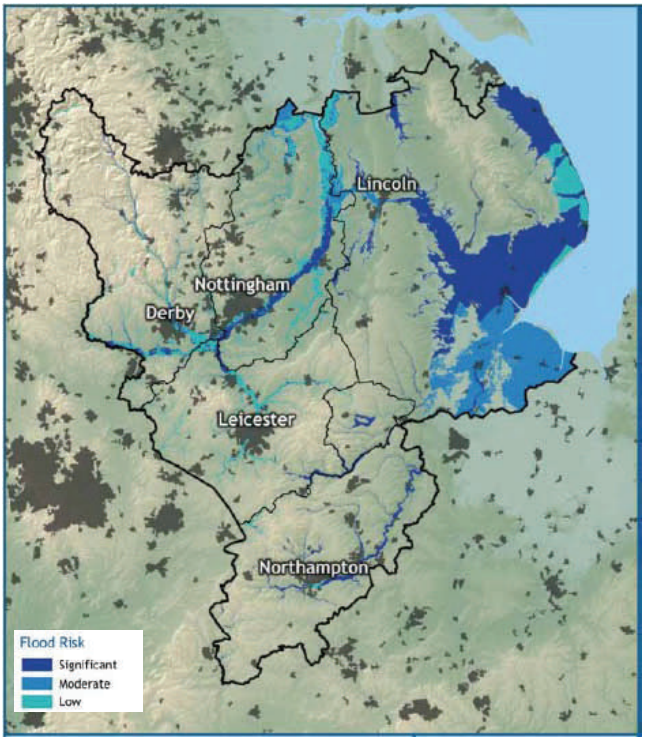


Figure 8. Indicative flood risk map, which zones the likelihood of flooding on the basis of topography, hydrology and documentary evidence of historic events. Source: Environment Agency

6. Regional mitigation response

6.1 Implications of the new Carbon Budgets

Following the recent enactment of the Climate Change Bill, the Government is now required to publish five yearly carbon budgets, setting out the maximum quantity of emissions (in $MtCO_2e$) allowed over that period. The recommendations from the independent Committee on Climate Change are for two sets of budgets, an 'interim' set that apply up to the agreement of a post Kyoto global deal and another 'intended' set that apply after 2012.

All figures in $MtCO_2e$	**Budget 1** 2008 - 12	**Budget 2** 2012 - 17	**Budget 3** 2017 - 22
Interim Budget	3018	2819	2570
Intended Budget	3018	2679	2245

Figure 9. The first three recommended GHG budgets, Committee on Climate Change

The intended budget requires an emissions reduction equivalent to 42% by 2020 relative to 1990, whereas the interim budget requires a 34% emissions reduction by 2020. The implication for the East Midlands is that to match this more stretching 'intended' target would be even more challenging—although the Committee on Climate Change recommends that some national policies need to be strengthened to ensure that the 2020 national target can be met.

6.2 The region's approach

Whilst there is potential merit in a region wide mitigation target for 2020, expressed as an absolute reduction figure, there are lots of uncertainties involved in setting a figure and then measuring progress towards it over time. There is no requirement or expectation for this within Government policy at present. If national targets were to be spatially disaggregated, these would be different for each region, according to its circumstances. If this does emerge, then it will be taken into account in the forthcoming Single Regional Strategy. The following 'bottom up' approach will be taken in the meantime.

6.3 PoA Regional Mitigation Target

By aggregating the sub-regional targets that have been adopted within the region's nine Local Area Agreements, where 7 out of the 9 have adopted targets for NI186 (per capita CO_2 emissions in the Local Authority area) and 2 have adopted NI185 (percentage CO_2 reduction from Local Authority operations):

- By end of 2010/11, there will have been an average reduction in per capita CO_2 emissions of 10%. This is an average figure (9.8%) for the 7 LAAs that have adopted NI186, rounded up to 10% on the basis that the two other LAAs have targets to reduce corporate emissions from local government.

6.4 Regional support for local action to meet the targets will include:

- *Support for councils and other local public sector bodies to develop and implement mitigation plans will be brought forwards in agreement with service providers like Carbon Trust and Energy Saving Trust*
- *Local authority mitigation action will be further supported by a new regional Climate Change Best Practice programme coordinated by East Midlands Improvement and Efficiency Partnership and funded by Defra/CLG*
- *A new local authority reporting framework will be piloted in the region in conjunction with East Midlands councils and the Nottingham Declaration Partnership*
- *Region wide approaches to mitigation-based Behavioural Change will be developed in conjunction with local authorities and their local partners*
- *Mitigation action by businesses will be supported by Business Link, through its emda-supported resource efficiency programme*
- *Mitigation action within the wider community will be supported by the new regional Energy Saving Trust Advice Centre, offering improved and enhanced services to householders and others and funded with an increased investment from EST*

7. Regional adaptation response

7.1 National adaptation policy

Government policy has developed rapidly in recent times, with the launch of the national **Adaptation Policy Framework** and Adaptation to Climate Change Programme in summer 2008 and the incorporation of new statutory requirements in the Climate Change Act (November 2008). Government now has to report to Parliament at least every five years on the risks to the UK and how these are being tackled. To ensure action is taken by the public sector, **a new reporting power** can be used by Government to require public bodies (and statutory undertakers) to report on their risk assessments and adaptation plans. The earlier **Planning and Climate Change supplement to PPS1** set out how the planning system (through Regional Spatial Strategies and Local Development Frameworks) should take mitigation and adaptation into account.

7.2 Planning to adapt to climate change

Given that the impacts of a changing climate will be felt regionally and locally the incorporation of a new National Indicator 188 into Local Area Agreements is significant, particularly as this indicator has now been adopted by 7 out of the 9 LAAs in the region. This will help to stimulate action to adapt to climate risks through anticipating potential damages, capitalising on opportunities and minimizing threats to the environment, public health, economy, property and infrastructure and will all help to avoid more expensive adaptation at a later date.

7.3 The region's approach

As with mitigation, there is no formal requirement or expectation for regional adaptation targets as yet and so a similar approach has been adopted, for a 'bottom up' target for the PoA. National Indicator NI188 'Planning to Adapt to Climate Change' is process rather than outcome based. Adaptation is about assessing our vulnerabilities to a changing climate (in terms of our economy, society and physical environments) and taking action to adapt. Unlike climate change mitigation measures (which are concerned with absolute reductions in GHG emissions) it is difficult to apply quantitative analysis to adaptation. However, regional partners will ensure that any future developments are fully reflected in regional and local plans.

7.4 PoA Regional Adaptation Target

By aggregating the sub-regional targets within Local Area Agreements by the end 2010/11:

- All councils and their partners with LAA targets on NI188 will have achieved an average of Level 3 in the indicator definition and guidance. (By achieving Level 3, the LAA should have embedded adaptation in its decision making processes and across all its service areas)

7.5 Regional support for local action

In order to enable delivery of these sub-regional targets, regional partners will continue to support action as follows:

- GOEM will launch a collection of adaptation case studies in 2009 and facilitate learning exchanges
- The Defra/CLG funded Climate Change Best Practice programme organised by East Midlands Improvement and Efficiency Partnership will also support councils in meeting their adaptation commitments
- EMRA, GOEM, the Environment Agency and Defra are supporting councils and other public sector bodies across the East Midlands to conduct Local Climate Impact Profiles in order to assess their vulnerability to extreme weather and inform their adaptation planning
- *emda* is supporting businesses to understand and respond to their climate risks through a pilot climate change adaptation project.
- English Heritage will facilitate dialogue between policy makers and historic environment professionals about climate change and the historic environment
- The Potential Impacts of Climate Change on the East Midlands report will be updated in the light of new knowledge in 2009
- UKCIP will provide regional training on the new UK Climate Projections and on NI188
- Defra will provide financial support for adaptation via the Regional Climate Change Partnership 2008-11, with the Environment Agency acting as the accountable body

8. Taking action

8.1 Regional action

The following section further details how action will be taken on both mitigation and adaptation by regional bodies and their partners and places these actions in the context of the 8 priority action areas (shown below, along with the broad aims of each), which have been developed in dialogue with stakeholders. The graphic below is repeated in each section with the relevant priority highlighted. As the cross cutting priority, *Leadership* is highlighted on every section and actions reflected accordingly.

8.2 Implementing actions in the PoA

These are high level actions which for the first time show the region's climate change commitments in one place. Lead partners are responsible for developing the detailed actions which underpin the priority areas. Some actions are already underway and others will follow, once agreement is reached. They will be finalised by the summer and brought together in a PoA implementation plan.

8.3 Coordinating delivery

To ensure a coordinated approach, implementation of the PoA will be led by the RCCP on which all regional partners and key stakeholders like local government are actively represented.

8.4 Laying the foundations

The actions reflect a combination of existing plans, developing proposals and new developments, which draw upon the analysis earlier in the document and the feedback from stakeholders. Reflecting the nature of the PoA as a transitional plan, many of the actions are about laying the foundations by engaging new groups of stakeholders and making the case for action; improving regional climate change communications and sharing existing knowledge more widely, in order to develop a greater shared understanding of the issues and the potential solutions.

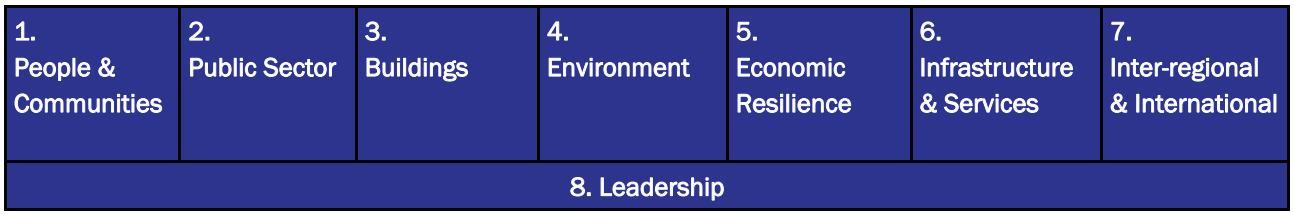


Figure 10. Priority Action Areas graphic above, and broad aims of each priority area below

1. **People and Communities** Engaging, informing and supporting people and communities to tackle climate change
2. **Public Sector** Developing, supporting and gearing up the role of the public sector in responding to the mitigation and adaptation challenges of climate change in the East Midlands
3. **Buildings** Enabling progress towards a low carbon future, resilient to the impacts of a changing climate, through planning, design and sustainable construction of new build and retrofit of existing buildings, including historic buildings
4. **Environment** Protecting and enhancing the capacity of the natural and historic environment to help mitigate carbon emissions and provide adaptation opportunities for people, wildlife populations and historic and cultural assets
5. **Economic Resilience** Achieving a low carbon, resilient regional economy
6. **Infrastructure and Services** Reducing the carbon impacts of energy, transport, water and waste and improving the resilience of its associated infrastructure and services
7. **Inter-regional and International Links** Facilitating partnerships within and beyond the region that facilitate knowledge transfer, sustainable trade, assistance to developing economies and which help reduce the impact of our externalised greenhouse gas liabilities
8. **Leadership** A cross cutting priority to drive action to tackle climate change by embedding policies, exemplifying practices and individual behaviours across regional partners. Also building more effective partnership arrangements to support the implementation, monitoring and reporting on the PoA

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.1 People and Communities

Aim *Engaging, informing and supporting people and communities to tackle climate change*

Individual and collective action

Climate change will affect and involve us all and we will require the necessary knowledge, skills and motivation to take action on climate change. Activities such as targeted communication, mentoring, showcasing good practice and providing the tools and opportunities for stakeholders to take an active role can add value and boost action on climate change across the region.

Networking

Regional activity can also help link together similar activities in different parts of the region, where groups in different counties across the East Midlands share some common aspirations and can learn from one another's experiences. This will continue to be facilitated by EMRA, in order to assist those 'early adopting' communities who want to do more on climate change more quickly than others.

Showcasing

Regional consultations identified that the East Midlands has a significant number of projects and initiatives that can act as a showcase and a stimulus to others. The regional partners will continue to develop showcasing opportunities in conjunction with local partners in order to improve the interpretation and promotion of the many low carbon and sustainable assets within the region.

Behavioural Change

The importance of attitudinal and behavioural change has already been recognised within the region (eg. within other regional strategies) and a steering group was set up accordingly by the regional partners in 2005 to develop research, plans and actions that are encouraging behavioural change across a range of policy areas. A regional conference in 2008 identified opportunities for further action and the key priorities are being worked up into deliverable plans.

Engaging others

A new website and portal for climate change communications, action, research and networking within the region will be developed by the RCCP and launched in 2009 (**www.climate-em.org.uk**) as an important new resource that can inform stakeholders and help to engage a wider audience.

Health and Social Impacts

Climate change will affect people differently according to their age, social group, occupation and location. Extreme weather events like hotter summers and heatwaves will pose particular risks to the very young and the old, as was seen in central Europe in summer 2003. The severe flooding across England in summer 2007 illustrated a different series of health and social impacts. Regional partners will disseminate health and climate change research findings in order to inform a more comprehensive response to potential impacts, building on policy developments like the DH Annual Heatwave Plan and the Pitt Review of the Summer 2007 Floods.

Community Leadership

Regional partners will publish details of their own climate change commitments and achievements in order to encourage other organisations to follow suit. A new reporting tool for councils will be developed and piloted in conjunction with East Midlands local authorities and the Nottingham Declaration Partnership.

9. Priority Action Areas

Key Actions—People and Communities

1. **Networking** Provide secretariat and support for the network of early adopting communities, EMRA
2. **Showcasing** Actively showcase regional success stories and climate change materials, GOEM, RCCP
3. **Behavioural change** Build on and implement agreed Behavioural Change priorities, EMRA
4. **Engaging others** Develop new regional climate change website/portal, RCCP
5. **Education** Encourage all formal educational sectors (Schools, FE and HE) to address climate change through campus and curriculum activities, RCCP
6. **Health and Social Impacts** Disseminate research and knowledge about health and social impacts of climate change, EM PHO
7. **Community Leadership**: develop and launch new public reporting mechanisms for regional bodies and local authorities, RCCP, Nottingham Declaration Partnership

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.2 Public Sector

Aim *Developing, supporting and gearing up the role of the public sector in responding to the mitigation and adaptation challenges of climate change in the East Midlands*

Public sector responsibility

The UK Climate Change Programme 2006 estimated that the public sector estate was directly responsible for 5.7 million tonnes of carbon dioxide (on an end user basis) or about 5% of the national total. This includes regional bodies, local authorities, educational institutions and other services like the NHS, Police and Fire. It also includes central Government departments with offices and agencies in the region and publicly funded bodies that operate at a regional or local level, like Connexions, HM Revenue and Customs and the Homes and Communities Agency. Many have a direct interest in and/or responsibility for aspects of climate change, like the Environment Agency, Natural England, the Forestry Commission and English Heritage.

Rationale

Despite the relatively small direct contribution to overall emissions, the public sector has significant influence over the activities and therefore emissions of others. The large number of people employed within the sector could also have a positive impact on domestic and other emissions, with the support of their employers. By modelling appropriate climate policies and behaviours, the public sector can help to demonstrate what needs to be done to others, eg. through good energy management, travel planning and procurement. There was strong agreement in the consultation process that more could be achieved by closer regional and local working on climate change.

Public Sector Leadership

Regional partners want to improve leadership on climate change throughout the public sector in the East Midlands, starting with themselves. They will continue to develop their own leadership roles by taking practical action on climate change and by publishing the results. They will also publish any research material on the new RCCP website that helps to build the regional evidence base and therefore strengthen the case for action.

Extending commitment

Additionally they will agree specific contributions to the PoA with their key delivery partners and will work systematically across the public sector to extend engagement, commitment and develop support for practical action.

9. Priority Action Areas

Growing support
A new local authority climate change support programme, currently being established by East Midlands Improvement and Efficiency Partnership, will be launched in 2009 and provide financial support for engagement, knowledge sharing, human resources and innovative projects. A new regional NHS network is now being developed by the Department of Health in the region, to help Trusts respond to the new NHS Carbon Management Strategy.

Increasing take up
Regional partners will seek to maximise the regional take up of Carbon Trust and Energy Saving Trust programmes for local authorities, NHS and higher education, in order to accelerate the public sector's progress on carbon management, smarter travel and energy efficiency within the East Midlands.

Commitment Mechanisms – The Nottingham Declaration
The Government's response to the Environmental Audit Committee's inquiry into Climate Change and local regional and devolved government states that 'The Nottingham Declaration has been of tremendous value in raising the profile of climate change in local government . |We would encourage any development in the scheme which would result in more effective effort to combat climate change'. Regional partners welcome this acknowledgement and will continue to support the development of the Nottingham Declaration in order to assist local government in the East Midlands.

Adaptation in the public sector
Regional partners will continue to support the roll out of the Local Climate Impact Profiles in the East Midlands project, to help engage and inform public sector bodies about their vulnerability to extreme weather – as a first step towards climate change adaptation planning.

Key Actions— Public Sector

Leadership, Engagement and Commitment

1. Publish details of **own commitments** and achievements on climate change , all regional partners
2. Agree **natural environment commitments** on climate change, EA, NE, FC, GOEM (Defra family group)
3. Coordinate **wider public sector engagement** to identify opportunities for action on climate change, GOEM

Growing Support

4. Develop and launch **Local Authority Climate Change Support Programme**, RIEP
5. Develop **regional NHS network**, to support action on climate change, Department of Health
6. **Maximise uptake of support programmes** on mitigation (eg. the Carbon Trust's Carbon Management Programme) for public sector bodies across the region, GOEM
7. Continue to support the **roll out and development** of the Nottingham Declaration on Climate Change, EMRA
8. Continue to support the roll out and development of LCLIPem (Local Climate Impact Profiles across the East Midlands) to help **introduce and extend adaptation into the public sector**, EMRA, GOEM, EA

Building Knowledge

9. Publish and disseminate research findings that help to **build the regional evidence base** on climate change, all partners

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.3 Buildings

Aims

- *Enabling progress towards new low carbon and climate resilient buildings, through planning, design and sustainable construction*
- *Appropriate retrofit of existing (including sensitive approaches to historic) buildings*

The location, orientation, design, construction, use and management of every building has an influence on energy demand and subsequent carbon emissions. The location of buildings also has a long term influence on travel patterns and the emissions associated with them. Many of these factors can also affect how vulnerable buildings are to current severe weather and longer term climate impacts, eg. over 200,000 properties and over 400,000 people live in flood risk areas in the East Midlands.

Mitigation - New Build and Existing Stock

Despite the current downturn in the housing market, the East Midlands is anticipating higher population growth than any other English region and a corresponding demand for housing. The high levels of growth being focused on locations in Northamptonshire (as part of the Milton Keynes and South Midlands growth area) and in other parts of the region identified as suitable for urban expansion (Growth Points) present clear opportunities for early and sustained adoption of the Code for Sustainable Homes recommendations relating to (new) low carbon developments.

Public sector opportunities include robust application of existing policy levers, such as the Office for Government Commerce (OGC) Common Minimum Standards for the Built Environment (Public Sector), which require BREEAM 'Excellent' for all new and 'Very Good' ratings for refurbishment projects. The main mitigation elements of this priority area for new build and existing stock are being taken forward through the implementation of the Regional Spatial Strategy and the Regional Energy Strategy. The Energy Saving Trust's new programme of investment in regional work and the establishment of a new EST Advice Centre for the East Midlands will provide a further boost to this area, along with the new Green Homes service.

New Build - Adaptation

Policies that promote adaptation to climate change have been strengthened within the Regional Spatial Strategy, in the light of Planning Policy Statement Supplement (Planning and Climate Change) and include water efficiency, sustainable drainage, management of flood water, green infrastructure and biodiversity. Regional partners will promote existing guidance that demonstrates how to incorporate such measures in practice, such as the *Adapting to Climate Change: A checklist for development*, developed by the Three Regions Climate Group. Assistance will also be given to showcase developments within the East Midlands that incorporate good examples of adaptation.

Existing Stock – Adaptation

Some two-thirds of the built environment of 2050 is already in existence and will be subject to the climate of the time, with the projected warmer, wetter winters, hotter drier summers and more extreme weather events. The key impacts arising are likely to include flooding, water stress and heat stress. Adapting the existing building stock to cope better with future weather and climate is therefore a key regional challenge. Regional partners will promote guidance and good practice, such as the Three Regions follow up publication *Your Home in a Changing Climate (Retrofitting existing homes for climate change impacts).*

Climate Change and Historic Buildings

Approximately one in four existing homes was built more than 90 years ago. In the East Midlands there are nearly 30,000 listed buildings and 1,000 conservation areas. A further challenge for the region is to develop responses to climate change, both mitigation and adaptation, that are

appropriate to, and do not inadvertently damage such historical assets. Regional partners will promote English Heritage guidance and resources like the new *Climate Change and Your Home* website to advise householders living in older properties. They will also support a new project to facilitate dialogue between historic environment professionals and policy makers with responsibility for climate change.

Key Actions — Buildings

New Build

1. Ensure **local compliance** with climate change planning policies in the Regional Spatial Strategy, EMRA
2. Ensure delivery of ***Planning and Design*** priority of Regional Energy Strategy, EMRA
3. Work with construction industry stakeholders to **build capacity** and **accelerate progress** towards low carbon standards, *emda,* EMCBE
4. Provide **targeted adaptation guidance** to construction sector and build adaptation capacity of planners and development control officers, EMRA, EA, *emda*
5. Showcase **good adaptation and mitigation practice** within the built environment sector, RCCP
6. Promote the policy of **no inappropriate development** within the floodplain, EA

Existing Stock

7. Ensure implementation of ***Energy for Communities*** and ***Communicating the Challenge*** work strands of Regional Energy Strategy, revising in light of new EST programmes, EMRA and GOEM
8. Promote **adaptation guidance** to property owners, including householders, businesses and industry, EA, *emda*
9. Develop and implement **Historic Environment and Climate Change** project, English Heritage/RCCP

Leadership

10. Ensure that regional partners all **demonstrate good practice** in both mitigation and adaptation at their own main buildings, all partners

Inner city housing heated by Nottingham's district heating scheme, a high efficiency low carbon solution (Photo by Martine Hamilton-Knight)

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.4 Environment

Aims *Protecting and enhancing the capacity of the natural and historic environment to help mitigate carbon emissions and provide adaptation opportunities for people, wildlife populations and historic and cultural assets.*

Climate change directly threatens the natural systems upon which our society and economy rely upon to function. Our water resources, coastal regions and biodiversity are all vulnerable to climate change; at the same time our woodlands, soils and peat play an important role in keeping carbon out of the atmosphere (carbon sequestration). Furthermore, historic buildings, archaeological sites and designed landscapes are also at risk from the direct impacts of climate change.

The clear benefits of supporting biodiversity, integrated coastal management practices and better management of the region's important soils and water resources provides a strong rationale for investment in the social and economic services natural systems can provide, and which are threatened by the onset of climate change. Such an approach can also help to protect vulnerable historic assets from climate impacts.

Biodiversity

Stakeholders have also identified that minimising any damage to or loss of habitats due to climate change is important as an adaptation priority. Biodiversity has declined more in the East Midlands than in any other English region. And, since the area and quality of many priority habitats in the region already falls below minimum thresholds and that many habitats are fragmented, there is an additional need to link, buffer and extend certain habitats in order to allow species to move through the landscape as climatic conditions change. This is one of the priorities in the regional Biodiversity Strategy being implemented by the East Midlands Biodiversity Partnership.

Forestry

The low proportion of woodland in the region (5.1%, compared to the UK average of 11.8%) represents an opportunity for new habitat creation, carbon sequestration and to provide a source of woodfuel for the growing regional market for biomass.

Agriculture, Land Management and Soils

Agriculture is a key regional economic sector, with the fertile Lincolnshire soils representing a particularly valuable, but at risk resource, due to potential flooding impacts. Over 500,000 farmed hectares of land in Lincolnshire grow 28.6% of all English field vegetables and 11% of all wheat. Agricultural and land management practices also pose a mix of opportunities and challenges for reducing Greenhouse Gas emissions.

Landscape

Stakeholders have raised the importance of considering landscape alongside other identified natural environment features with climate change implications. An East Midlands 'Landscape Scoping Study' being undertaken on behalf of Natural England and EMRA will help to reveal the drivers for change on the region's landscapes, identify landscape's contribution to environmental capacity and its ability to accommodate change. Landscape scale conservation management, for instance, will help reduce habitat fragmentation and build more resilient natural systems and processes.

Flood Risk

Flood risk management isn't just confined to urban areas. Tackling the problem further up the water chain, within the wider landscape, can help reduce the flood risks to towns and cities. Improved flood management practices across the region will be needed, such as increasing river floodplain capacity, working with natural tidal processes to conserve coastal assets and avoiding inappropriate development in areas at risk of flooding.

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

Coastal Management
Integrated coastal management in Lincolnshire is seen as key in ensuring a planned future for the coast that considers the importance of its biodiversity , natural character, the built and historic environment, including archaeology and the landscape quality of the coast. Regional and local partners will develop a longer term strategy for the Lincolnshire Coast that reconciles the economic, social and environmental challenges exacerbated by climate change.

Key Actions - Environment

1. **Biodiversity** Continue implementation of Regional Biodiversity Strategy, EMBP
2. **Forestry** Revise Regional Forestry Framework and regional woodland target, FC
3. **Soils** Promotion of good land management and implementation of new Soil Strategy, EA
4. **Landscape** Complete Regional Landscape Scoping Study, NE, EMRA
5. **Coast** Complete Lincolnshire Coastal Study in association with stakeholders, GOEM, EMRA, EA, Lincs CC
6. **Farming (mitigation and adaptation)** Work with farmers and other land managers to help them calculate and reduce their carbon impacts, exploit energy potential and respond to climate risks and opportunities (water efficiency, flood risk and land management), EA, *emda*, GOEM
7. **Historic Environment** Develop and implement Historic Environment and Climate Change project, RCCP/English Heritage (also referenced under Buildings)
8. **Flood Risk** - identify opportunities for reducing flood risk through natural processes and by *Making space for water*, EA, EMRA

Lincolnshire coast (photo by JP Howley)

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.5 Economic Resilience

Aim *achieving a low carbon, resilient regional economy*

The environmental impact of a changing climate will have implications for our economy both in terms of new risks and new opportunities. Whilst climate change is often perceived as a moral or scientific issue, the impacts, legislation and costs associated with a changing climate are a key business issue. Managing climate impacts and responding to the threats and opportunities of a more carbon constrained economy are central to the region's long term sustainable economic prosperity.

Sir Nicholas Stern *Climate change presents very serious global risks, and it demands an urgent global response. Climate change presents a unique challenge for economics: it is the greatest and widest-ranging market failure ever seen. Tackling climate change is the pro-growth strategy for the longer term*
Stern Review: The Economics of Climate Change, 2006

Low Carbon Economy

There is a strong economic rationale for a regional focus upon climate change. Both the Stern Review (2006) and the recently published Climate Change Act (2008) identify challenges that regional partners can help meet: ensuring that our businesses and economic sectors can mitigate the costs of and adapt to a changing climate. Stern clearly points to the enhanced productivity and competitiveness opportunities linked with responding to global demands for more environmentally sensitive goods, products and services. Traditionally, environmental markets have been associated with the provision of goods and services such as the decontamination of land, waste recycling, water treatment and the manufacture of renewable energy technologies. Whilst demand for these goods and services continues to grow a resilient, low carbon economy is one where environmental considerations permeate the whole of the economy.

Gordon Brown, Prime Minister, June 2008
"...by 2050 the overall added value of the low carbon energy sector could be as high as $3 trillion per year worldwide and it could employ more than 25 million people. So, my goal is simple: I want Britain to achieve a disproportionately large share of these new global jobs"

Shell Springboard '*A market in the UK could be worth over £30bn cumulatively over the next ten years. By 2010 the market will be double the current size; Concerted international action to avert climate change could create a global market worth $1 trillion in the first five years alone''*
The Business Opportunities for SMEs in tackling Climate Change, Vivid Economics, October 2006

A low carbon, resilient regional economy will not only capture the economic benefits of increased resource efficiency and environmentally sensitive markets, but will also enable the regional economy to diversify and better withstand external economic shocks.

Business support

For businesses already operating within the region, this means taking every opportunity to develop a reputation for resource efficiency and low carbon expertise. Through support from Business Links, increasing numbers of SMEs are already taking steps to improve their energy and resource efficiency, reduce their impact on the environment, cut their costs and improve their bottom line.

Business growth

Looking to the future, businesses will also need to better understand how changes in legislation (new national carbon reduction budgets) and demands from consumers and supply chains for climate sensitive goods and services, will affect their business model: their 'carbon risks'. Businesses will need support which helps them to understand these risks, to adapt and to flourish.

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

Insurance risks

Although new legislation to reduce carbon emissions will be felt across the economy, businesses will experience the impact in different ways, largely dependent upon their levels of carbon emissions. As well as the introduction of new emissions legislation, climate change issues are increasingly being integrated into other aspects of business life. For example, in response to changing weather patterns the insurance sector is increasingly looking for evidence that businesses have climate proofed their plans. As well as issues related to insurance, legal advice now increasingly considers climate change to be 'reasonably foreseeable' and, therefore, eligible for incorporation within corporate risk planning.

Resilient economic infrastructure

A resilient low carbon economy is not just reliant on businesses adapting to new environmental circumstances, but is also dependent on well functioning and resilient infrastructure. As such, our transport networks, utilities and the built environment need to be climate proofed and adaptable to changing circumstances; future developments will need to be able to support economic growth that is both low carbon and resilient to future climate changes. The scale of this transition will be significant and will require coordinated and concerted approaches amongst public policy makers, spatial planners and infrastructure investors (public and private).

Stimulating behavioural change

Ultimately, all economic activity is derived from consumer demand. As such, a successful response to the implications of climate change cannot focus solely on the producers of goods and services, but consumers as well. Consequently, stimulating behavioural change is a key theme throughout this Programme of Action. Regional partners will develop a common approach to stimulating workplace and domestic behavioural change. This will help reduce demand for carbon intensive goods and services and stimulate demand for more sustainable alternatives. The potential of public procurement is also critical in helping drive this shift in attitudes and behaviour and in providing market and investor confidence in future public investment requirements.

Key Actions - Economic Resilience

1. **Resource efficiency business support**: maintain and develop the resource efficiency portfolio to support regional businesses in mitigating their impact on climate change, *emda*, Business Link
2. **Adaptation support:** pilot a new business support approach focused on supporting businesses in adapting to a changing climate, *emda*
3. **Information support:** ensure that businesses have access to relevant climate change information and research, *emda*, RCCP
4. **Innovation support:** ensure businesses have access to the support they need to innovate and compete within new low carbon markets through technology deployment and supply chain development, *emda*
5. **Policy integration:** ensure better alignment of low carbon economic and infrastructure priorities through the development of the forthcoming Regional Strategy, *emda*, Local Authorities
6. **Energy strategy:** develop a refreshed Regional Energy Strategy detailing regional priorities associated with: energy skills provision; new energy technologies deployment; regional energy supply chain opportunities; and, energy efficiency, *emda*

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.6 Infrastructure and Services

Aims *Reducing the carbon impacts of energy, transport, water and waste services and improving the resilience of its associated infrastructure*

Energy, transport, waste, water and IT are all vital 'infrastructure and services' underpinning modern life, and all have significant carbon emissions associated with them. Much of the infrastructure and services are also vulnerable to extreme weather, as has been evident in this region and other areas affected by extreme weather events in recent years. Environmental Infrastructure is also an essential part of this regional network. This includes water supplies, drains, sewers, flood protection, ecosystems and the multi-functional networks of green corridors and spaces known as Green Infrastructure.

Vulnerability and risk to Infrastructure

Although the mitigation elements of energy and transport are directly addressed through two existing regional strategies (Regional Transport Strategy and Regional Energy Strategy), there are also significant associated adaptation challenges, arising particularly from extreme weather events:

- Very high summer temperatures can cause buckling of railway lines and melting of road surfaces.
- Storms and high winds can cause damage to power lines and loss of supply.
- Heavy rain and flooding can lead to major disruption of road and rail networks, difficulty for staff to get to work and physical damage to highway infrastructure.

There is an opportunity to strengthen policy objectives around adaptation and resilience of the transport network and the infrastructure for energy, water and waste to extreme weather events. Regional partners will disseminate recent research findings and offer targeted advice on adaptation to infrastructure providers.

Mitigation opportunities from infrastructure

Large infrastructure providers are likely to be included within statutory schemes like the EU Emissions Trading Scheme or the forthcoming Carbon Reduction Commitment, so regional influence is better directed at consumers rather than suppliers, for examples through the Regional Energy Strategy.

ICT

The widespread and growing use of Information Communications Technologies represents both a challenge and an opportunity. Whilst most organisations have ended up using more energy as a result of using more ICT, some exemplars have emerged which have successfully used ICT as a means to reduce their emissions. Regional partners will promote existing good practice and disseminate research findings in order to help raise awareness of the potential.

Environmental Infrastructure

The Environment Agency's 2007 report *Hidden Infrastructure: The pressures on environmental infrastructure* warns of the risk of failure of essential environmental services, such as water and sewerage infrastructure and flood protection unless sufficient planning and resources are provided at the outset of major new developments. Regional partners will promote the concept of environmental infrastructure and disseminate the key recommendations from this report.

Green Infrastructure

Green Infrastructure contributes to a high quality natural and built environment and helps enhance the quality of life for present and future communities, providing multiple benefits in the light of climate change predictions. GI can link existing green space and habitats, encourage walking and cycling opportunities, provide shade and enable certain kinds of species to move as the climate changes.

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

Regional partners have mapped the region's GI deficit and are developing a strategic approach to delivering GI within new developments and in other areas.

Flood Risk Management

Climate change is predicted to increase the frequency and severity of weather events and so the likelihood of flooding will increase over time. For new developments (including housing and associated infrastructure), the primary concern is to ensure that they are located outside flood risk areas and this is reflected in Regional Spatial Strategy policies accordingly.

Water Resources

In a dry year water resources are limited across much of the region already and this will be compounded by the forecasted high rates of population and housing growth, and the continuing climate changes. The EA, on behalf of EMRA, has recently updated a study on water quality and quantity to reflect the latest housing figures and a deficit on both counts is indicated. A much greater emphasis on water efficiency will be required in new developments and this is reflected in the Regional Spatial Strategy.

Key Actions - Infrastructure & Services

Transport

1. Promote good practice in transport related behavioural change and encourage uptake of support programmes, RCCP
2. Report on the anticipated carbon impacts arising from transport major schemes recommended within the East Midlands Regional Funding Allocation 2, EMRA

ICT

3. Promote existing good practice and disseminate research findings in order to help raise awareness of potential carbon savings through smart use of IT, RCCP

Infrastructure Resilience

4. Disseminate results of regional and sub-regional climate change adaptation research projects to infrastructure and other non-public sector service providers, RCCP
5. Disseminate advice on how people, properties and infrastructure can become more resilient to flooding, EA

Environmental Infrastructure

6. Gain acceptance for the Environmental Infrastructure concept within the East Midlands, Regional Environment Group
7. Disseminate recommendations from *Hidden Infrastructure* report, EA

Green Infrastructure

8. Maintain and develop regional EMGIN (East Midlands Green Infrastructure Network), EMRA and partners

Water quality and quantity

9. Maintain an overview of regional water resources to inform the regional and local planning process, EA, EMRA

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International
8. Leadership						

9.7 Inter-regional and International Links

Aim *Facilitating partnerships beyond the region that encourage knowledge transfer and sustainable trade*

The physical and economic consequences of climate change (both positive and negative) will not be contained within the East Midlands region. In an increasingly globalised and interconnected world, the region's economic activity has impacts that are cross-regional, national and international in scale. All of these contribute to global greenhouse gas emissions, even though they may not be easily accounted for in the East Midlands GHG inventory.

This flow of goods and services reveals the increasing dependence of our economy on consumption and production processes elsewhere, which transfers our regional greenhouse gas liabilities to neighbouring regions, nations and developing economies worldwide. Recognising that climate change is in part a consequence of unsustainable consumption and production, regional partners seek to identify and maximise collaborative cross-regional, national and international partnerships (where appropriate) to support activity in:

- Enhancing trade in sustainable technologies, goods and services
- Encouraging knowledge exchange partnerships amongst both exemplar and developing regions
- Building on areas of regional expertise and offering technical assistance to developing economies (low carbon transport, renewable energy)
- Developing a better understanding of the social and environmental impacts associated with the goods and services we consume (sustainable consumption and production)

Partnerships with other regions

The East Midlands will work with other regions (via UKIRCCG) to develop a collaborative work programme, identifying areas of joint interest where there is potential benefit to working with one or more regions to share the costs and benefits of new research, roll out good practice or pilot it on behalf of other regions.

Partnerships beyond the region: EU links

The UK has much to learn from (and contribute to) best practice in other parts of the EU, with countries like Sweden, Denmark, Netherlands, Germany and Austria being generally well advanced in the application of sustainable technologies. Regional partners will ensure that the East Midlands contributes and responds to the development of EU Climate Change policy via the East Midlands in Europe Office. They will also help to facilitate knowledge transfer between the East Midlands and leading municipalities and regions in Europe.

China links

In December 2007, the Chairs of emda and EMRA signed a Memorandum of Understanding between the East Midlands and Sichuan Province, China on climate change and renewable energy, to develop cooperation between key partners.

Key Actions - Inter-Regional & International Links

1. Continue to support UKIRCCG and help to develop a **UK wide programme of regional climate change activity**, RCCP
2. Contribute and respond to **UK and EU climate change policy development**, RCCP, EMEO
3. Develop **knowledge transfer project with Swedish municipalities**, RIEP, *emda*
4. Further develop international **low carbon trade and knowledge exchange** opportunties through existing agreement and networks, EM China Bureau, India Bureau and UKTI

9. Priority Action Areas

1. People & Communities	2. Public Sector	3. Buildings	4. Environment	5. Economic Resilience	6. Infrastructure & Services	7. Inter-regional & International Links
8. Leadership						

9.8 Leadership

Aims *Driving action to tackle climate change by embedding policies, exemplifying practices and individual behaviours across regional partner bodies; and building effective partnership arrangements to support the implementation, monitoring and reporting on the PoA*

Strong regional leadership on both climate change mitigation and adaptation was identified by stakeholders and consultees as vital. This was seen as a combination of personal leadership ('walking the talk') and institutional leadership. This is where large public (and private) organisations are seen embedding resource efficiency and climate risk management into their mainstream business plans, but also in making it easier for everyone else to do their bit by providing more climate friendly products and services. Leadership is represented within the PoA as a cross cutting priority to show how leadership actions are being incorporated into all aspects of the region's climate commitments.

Exemplifying leadership

To demonstrate leadership at a practical level, the regional partners will step up their efforts to exemplify the kinds of organisational practices and personal behaviours that are promoted to others in terms of environmental management, (including energy, carbon, water and waste management), sustainable travel, sustainable procurement and climate change adaptation. EMRA, for example, are testing a Low Carbon Challenge methodology with their staff to seek to demonstrate that the regional target of a 10% cut in CO_2 per person is achievable. More details of each partner's commitments will be published in separate supporting documents.

Monitoring and Reporting

The regional partners will work with Government and other regions to establish an appropriate process for monitoring the impact of mitigation actions on regional and local emissions inventories and also on adaptation actions on the region's risks to a changing climate. Regional partners will encourage large organisations and key sectors within the region to begin reporting publicly on their climate change commitments, their emissions, their risks, together with their plans, targets and achievements in order to encourage greater transparency and exchange of ideas and good practice.

Governance

A strengthened governance structure with appropriately high level input will be established in the region to ensure that the implementation and monitoring of this PoA is appropriately driven and that sub-regional and sectoral interests are properly represented and their constituencies engaged. It will also fit in with the changing landscape of regional governance in the light of the Sub National Review. The need to work in partnership to tackle climate change effectively is emphasised in the PoA and the Regional Climate Change Partnership (RCCP) for the East Midlands (illustrated right) is now being funded by Defra to boost regional action on adaptation.

Key Actions— Leadership

1. Develop and pilot **Low Carbon Challenge** methodology, EMRA
2. Develop appropriate regional **monitoring and reporting** arrangements for mitigation and adaptation, Regional partners with RCCP
3. Encourage **public reporting** on climate change by all stakeholders, RCCP
4. Develop and launch **East Midlands Climate Change Partnership**, all partners
5. Provide regional training on new UK **Climate Projections and tools**, UKCIP
6. Develop and deliver Defra-funded **regional adaptation programme**, RCCP

10. Partnership working to implement the PoA

The implementation of the PoA will be led and coordinated by regional bodies through the East Midlands Regional Climate Change Partnership (RCCP). An increasing amount of recognition and support for regional and local action on climate change is now being provided nationally and delivered through such regional partnership arrangements. The RCCP is evolving from the East Midlands Climate Change Steering Group that has existed since 2003 and which was instrumental in the national re-launch of the Nottingham Declaration and the sign up by all East Midlands councils. The **terms of reference** for the RCCP are:

1. To act as the public face of climate change action for the East Midlands
2. To be a source of trusted and authoritative information about climate change in the East Midlands
3. To help engage and mobilise individuals, communities and organisations throughout the region to take action on climate change
4. To drive the Programme of Action on Climate Change for the East Midlands
5. To represent and facilitate climate change action geographically
6. To represent and facilitate climate change action sectorally
7. To help coordinate climate change action across the region
8. To develop a shared understanding of climate change issues
9. To help the region understand its current vulnerability to extreme weather and improve its resilience, particularly in the light of risk to longer term climate change
10. To help the region understand the full nature of its Greenhouse Gas liabilities and what it needs to do to address these in the short and longer term
11. To help the region to exploit opportunities arising from a changing climate
12. To provide a collective regional voice for climate change to Government and Europe

Current partnership arrangements are illustrated below

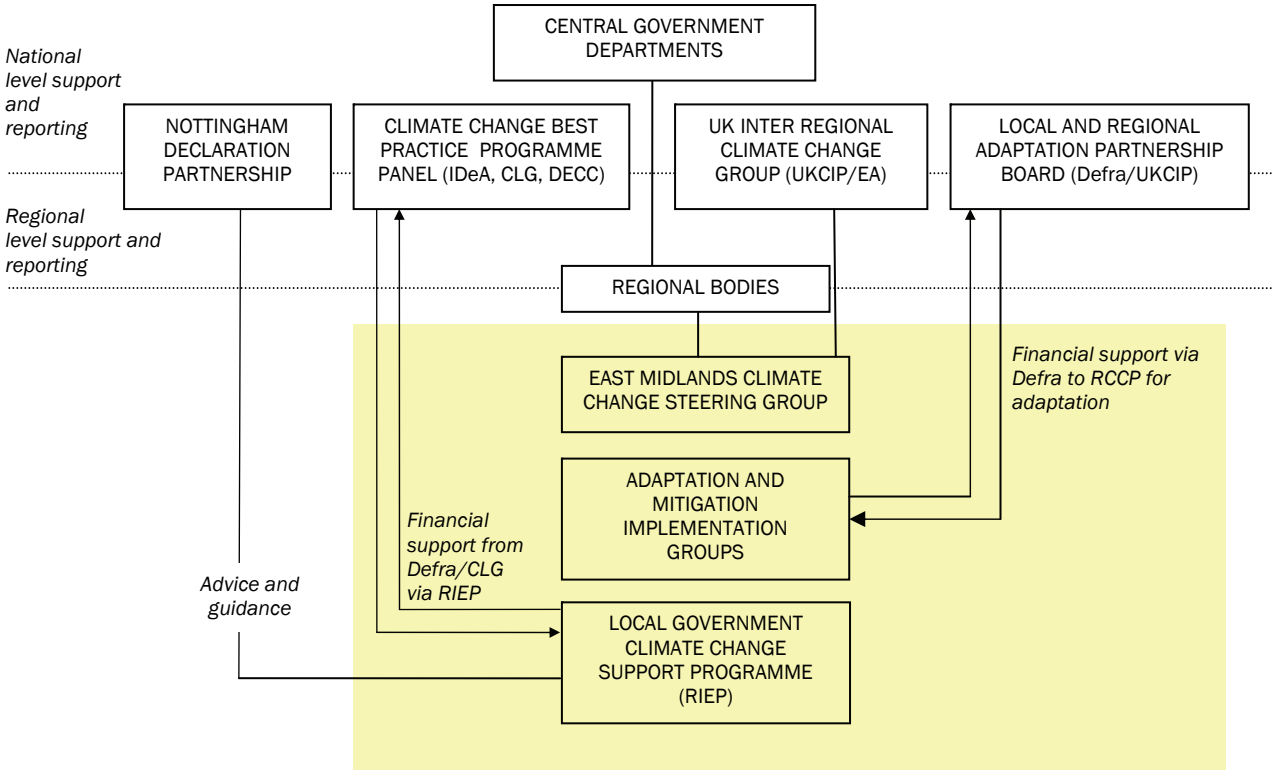


Figure 11. Diagram showing existing partnership arrangements that make up the evolving Regional Climate Change Partnership (the boxes shown in the shaded area) and key relationships with national climate change networks.
Note, these arrangements may be subject to change in light of Sub-National Review developments.

11. Next Steps, Acronym Guide and Further Information

Next Steps Following the launch of the PoA, more detailed implementation plans will be agreed between regional partners and stakeholders, including timescales, outputs and indicators. These plans will be taken forward by the lead organisations identified, working together to coordinate their efforts through the RCCP. The RCCP will be formally launched later in 2009 and further developed in the light of SNR.

A series of communication materials will be published to help disseminate key messages from the RCCP to identified audiences. A timetable of events will also be publicised to invite stakeholders to participate in specific project workshops and RCCP meetings. A review of the first year of implementation will be published in 2010, along with updated implementation plans.

Acronym Guide

BREEAM	Building Research Establishment Environmental Assessment Method
CLG	Communities and Local Government
CO_2	Carbon Dioxide
CO_2e	Carbon Dioxide equivalent
$KtCO_2e$	Thousand tonnes of Carbon Dioxide equivalent
$MtCO_2e$	Million tonnes of Carbon Dioxide equivalent
Defra	Department of Environment, Food & Rural Affairs
DH	Department of Health
EA	Environment Agency
EMBP	East Midlands Biodiversity Partnership
EMCBE	East Midlands centre for Constructing the Built Environment
EMDA	East Midlands Development Agency
EMGIN	East Midlands Green Infrastructure Network
EMPHO	East Midlands Public Health Observatory
EMRA	East Midlands Regional Assembly
EWP	Energy White Paper
FC	Forestry Commission
GHG	Greenhouse Gas Emissions
GOEM	Government Office for the East Midlands
IDeA	Improvement & Development Agency
IEM	Intelligence East Midlands
INETS	Innovation Networks
IPCC	Intergovernmental Panel on Climate Change
LAA	Local Area Agreement
LCLIP	Local Climate Impact Profile
NE	Natural England
NHS	National Health Service
NI	National Indicator
OGC	Office for Government Commerce
RCCP	Regional Climate Change Partnership
RIEP	Regional Improvement & Efficiency Partnership
PoA	Programme of Action
SD	Sustainable Development
SNR	Sub-National Review of Economic Development and Regeneration
UKCIP	UK Climate Impacts Programme
UKIRCCGUK	Inter Regional Climate Change Group

Further Information For more information about this Regional Programme of Action or the Regional Climate Change Partnership for the East Midlands and how to get involved, please visit: **www.climate-em.org** or contact the Regional Climate Change Coordinator: **mike.peverill@emra.gov.uk**

Government Office for the East Midlands · Environment Agency · east midlands development agency · East Midlands Regional Assembly