

Yorkshire and Humber  
Assembly

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**Evaluating the  
Contribution that Key  
Regional Strategies  
Make Towards  
Addressing Climate  
Change**

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Executive Summary

ARUP



Cambridge Econometrics

Yorkshire and Humber  
Assembly

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May 2007

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### The Challenge

The Yorkshire and Humber region will be affected by climate change and it will impact across all aspects of life. There is a need to adapt to a changing climate and a need to continue to reduce greenhouse gas emissions in order to reduce future climate change effects.

Regional strategies collectively have a role to guide the progress of the region. Regional policy making to date has focussed on tackling visible issues and delivering against short to medium term goals. Dealing with climate change challenges this approach as its full effects are not yet visible will manifest themselves more greatly in the medium to long term. In order to reduce the scale and magnitude of this impact, action is required now. The challenge for regional policy making is to deliver a consistent and co-ordinated approach to addressing climate change now, that will yield results in the longer term.

Reductions in greenhouse gas emissions are usually sought and measured at source, from production processes or power generation. This report takes an innovative approach and evaluates the impact of current regional strategies in tackling both production and consumption related greenhouse emissions. From this analysis, it is possible to understand the strengths and weaknesses of the current regional approach to reducing greenhouse gas emissions. The report also evaluates the approach that current regional strategies take towards the need to adapt to a changing climate.

The findings of this report are intended to inform how the emerging Integrated Regional Framework can tackle climate change as one of seven regional 'landmark' issues.

### Understanding the Risks Associated with Climate Change

Regional strategies should demonstrate understanding of the risks and opportunities associated with climate change to ensure the development, scrutiny and monitoring of effective policy and the implementation of that policy at sub-regional and local level.

Climate change is acknowledged as an issue for the region in most regional strategies. However, few regional strategies have translated this risk to a greater understanding of what it could mean for the pursuit of other policy areas. Implementation of policy in current regional strategies could either be enhanced or diminished by the positive and negative impacts of climate change. Therefore, there is a need for the full risks of climate change to be understood as an inherent part of policy making.

### Meeting the Regional Greenhouse Gas Emissions Target

#### Regional Target

In order to make an assessment of whether regional strategies are contributing towards reducing greenhouse gas emissions, it is important to have a certain and definitive target to assess progress.

In the Yorkshire and Humber region there is no definitive regional greenhouse gas emissions reduction target. Targets have been introduced, emulated and evolved over the respective review cycles of superseded and current regional strategies, but there has been no overall consistent target across all regional strategies. This makes measuring the contribution of all regional strategies towards reducing greenhouse gas emissions more difficult.

A target seeking to reduce greenhouse gas emissions was introduced in the 2003 Regional Economic Strategy. This was mirrored in other regional strategies, but not always consistently, as some strategies include interim or longer term milestones to the target. The 2006 Regional Economic Strategy revised the original target. This new target differs from those included in other regional strategies as it seeks to reduce greenhouse gas emissions "*based on modelling of energy/resources consumption attributable to Y&H*". This means that the factors that should be taken into consideration when measuring the 2003 and 2006 targets are very different. The 2003

target is understood to be based on measuring emissions by source<sup>1</sup> whilst the 2006 Regional Economic Strategy target will be measured by modelling consumption related emissions.

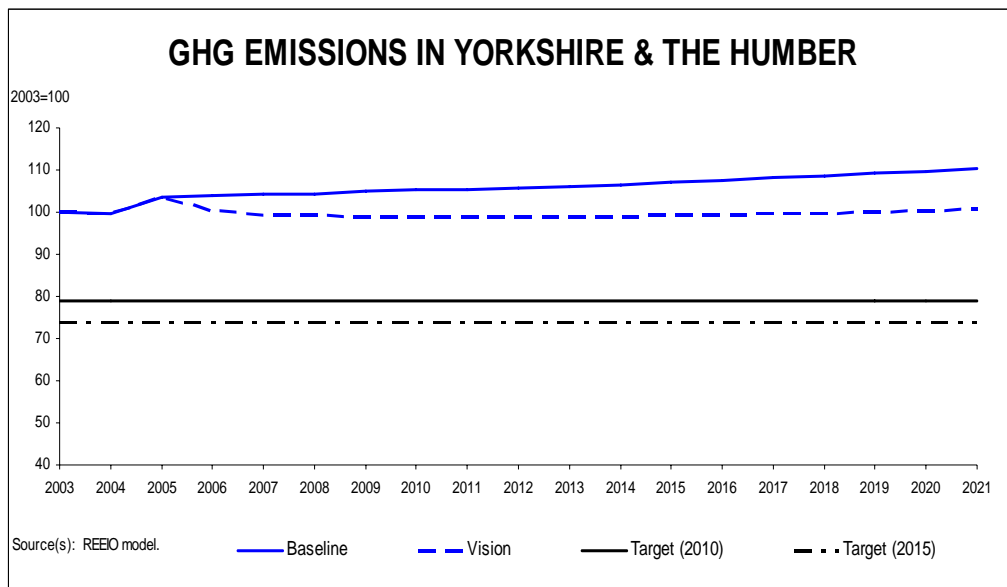
Production and Consumption Related Greenhouse Gas Emissions Modelling

This report has examined the impact that current regional strategies will have on reducing both production and consumption related emissions up to 2021.<sup>2</sup> The impact on greenhouse gas emissions from production and delivery of goods and services in the region (which are either consumed in the region or outwith the region) are modelled using REEIO<sup>3</sup> and referred to as production related emissions. The level of greenhouse gas emissions associated with goods and services consumed in the region (including goods imported to the region) are modelled using REAP<sup>4</sup> and referred to as consumption related emissions.

Modelling the impact of current regional strategies on both production and consumption related emissions allows progress towards a purely consumption orientated target to be understood. The modelling of emissions has considered a Baseline Scenario (i.e. what would happen in the absence of regional strategies) and a Vision Scenario (i.e. the desired impact of current regional strategies). For consistency the following regional greenhouse gas emissions targets have been used to show whether the desired reduction of emissions is likely to be achieved:

- 20% reduction in 1990 levels of greenhouse gases by 2010<sup>5</sup>
- 25% reduction in 1990 levels of greenhouse gases by 2015<sup>6</sup>

This report has found that current regional strategies will be able to achieve stability of production related greenhouse gas emissions up to 2021, but this will not be enough to meet a 20% reduction in overall greenhouse gas emissions by 2010 and 25% by 2015.



<sup>1</sup> Progress in the Region 2006 (Page 102) sets out the sources of data used to monitor greenhouse gas emissions in the region.

<sup>2</sup> The Draft Regional Spatial Strategy has the longest lifespan of all current regional strategies and looks forward to 2021.

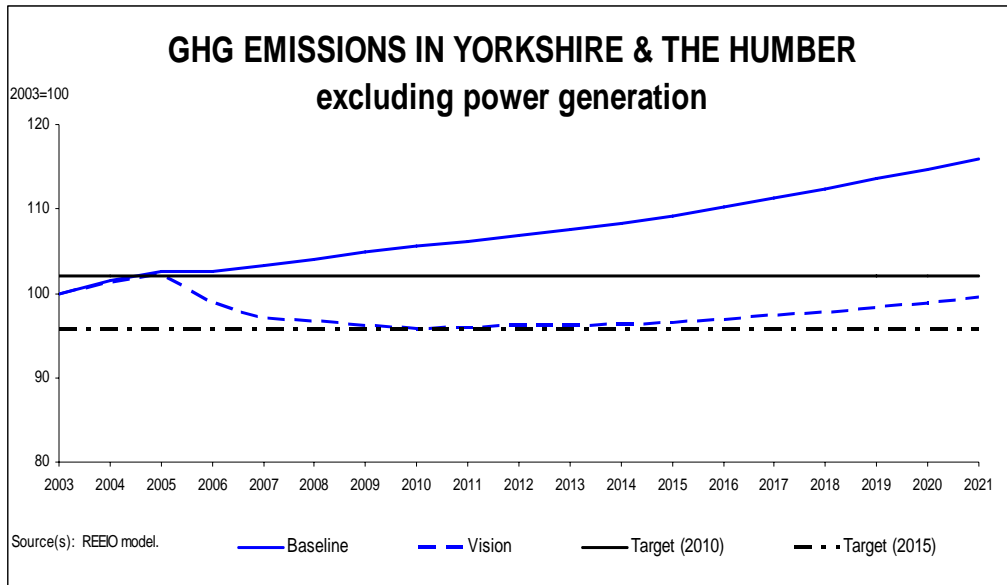
<sup>3</sup> REEIO – Regional Economy Environment Input Output Model, developed by Cambridge Econometrics

<sup>4</sup> REAP – Resource and Energy Analysis Programme, developed by the Stockholm Environment Institute with Centre for Urban and Regional Ecology and World Wildlife Fund.

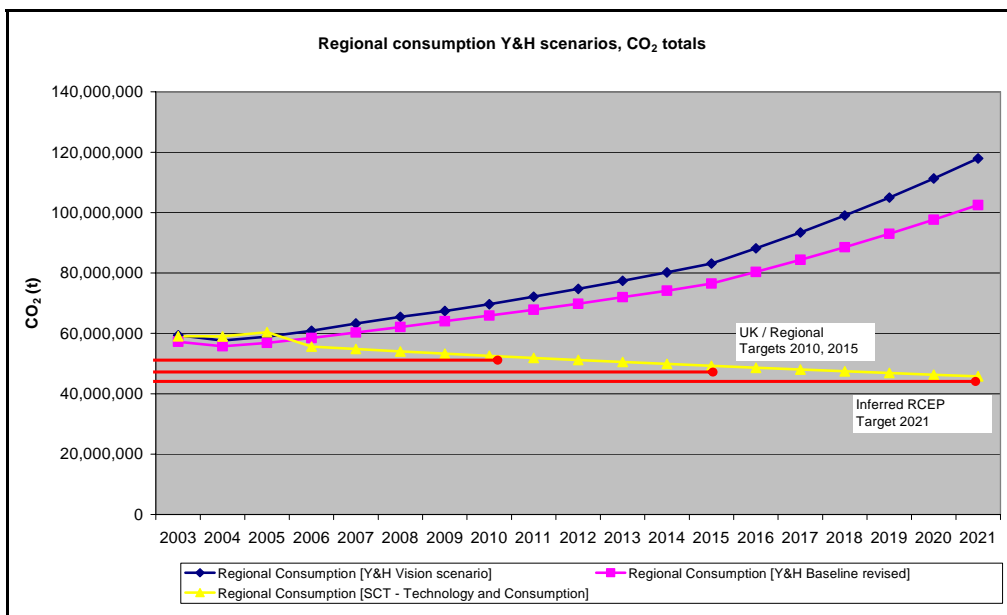
<sup>5</sup> First set out in the 2003 Regional Economic Strategy and consequently mirrored in other strategies which remain current.

<sup>6</sup> First set out in the Regional Spatial Strategy for Yorkshire and the Humber to 2016 based on selective review of RPG12, 2004 and taken forward in the Draft Regional Spatial Strategy, draft for public consultation, 2005 and the Yorkshire and Humber Climate Change Action Plan, 2005.

This region provides 18% of the UK’s electricity generating capacity and emissions from this region’s power stations are a significant component of overall regional greenhouse gas emissions. If power generation is excluded from Yorkshire and Humber’s production related greenhouse emissions then current regional strategies can almost meet a target to reduce greenhouse gas emissions by 25% below 1990 levels by 2015, but only for a short time period before emissions are likely rise again.



Current regional strategies are long way off from both stabilising consumption related emissions and achieving a 20% reduction in consumption related emissions by 2010 and 25% by 2015. In fact consumption related emissions are projected to almost double between 2003 and 2021 in the Vision Scenario, which models the impact of current regional strategies.



### Delivering Reductions in Greenhouse Gas Emissions

It will be a challenge for this region to deliver a 25% reduction in greenhouse gas emissions by 2015, particularly if this reduction is sought from consumption related emissions.

From a consumption perspective, this report has modelled an additional scenario which examines stabilised consumption related greenhouse gas emissions. The purpose of this scenario is to

indicate the scale of change that may be required in the current regional policy landscape and to highlight the types of measure that will be most effective in delivering reduced emissions. This scenario aligns with the recommendations of the Royal Commission for Environmental Pollution which seeks to reduce greenhouse gas emissions by 80% of 1990 levels by 2050, in order to achieve a stabilisation of concentrations of greenhouse gases in the atmosphere.

Consumption related emissions from housing, transport and food are set to increase up to 2021, despite the efforts of current regional strategies. To achieve anything in the region of an 80% reduction in current emissions by 2050, significant reductions are required in the housing, transport and food sectors. In terms of the housing sector, retrofitting at least 75% of pre 2001 stock over the next 20 years is the most effective measure for reducing greenhouse gas emissions followed by ensuring that 30% of household energy demand is met from renewable energy sources. In terms of the transport sector, increasing vehicle occupancy rates is the most effective measure for reducing greenhouse gas emissions, followed by reducing the distance travelled per person and achieving modal shift, transferring passengers from private car to public transport.

Achieving these kinds of measures will require a very different policy landscape to that which exists in and around current regional strategies. For example, the 'Stabilising Carbon Trends' Scenario assumes that there would be no additional growth in aviation or consumption of consumables, which is very challenging and runs counter to the national agenda rather than being within the sphere of direct regional influence. If such changes are not considered realistic at the current time, this only puts more emphasis on the need to put in place mechanisms to reduce emissions in other sectors.

### Adapting to a Changing Climate

The likely impacts of a changing climate on Yorkshire and the Humber were researched in 2002<sup>7</sup>. The region will be between 1.6 and 3.9°C warmer by 2080, winters will be wetter, but summers will be drier and annual average rainfall will reduce between 10% and 20%. The region will need to adapt to sea level rise and increased risk of flooding. Water resources and agriculture and biodiversity will be affected by the changing climate. Buildings and construction, industry and transport will need to adapt to the changing climate.

Despite this research, current regional strategies have a fairly fragmented approach to addressing the need to adapt to the impacts of climate change, particularly over the longer term. The link between other policy objectives and the need to adapt to climate change is not always made. The focus has been on building capacity. The region is cautious about moving forward towards implementing adaptive action without a stronger national steer and more secure resources.

### Factors which Inhibit the Ability of Regional Strategies to Address Climate Change

Current regional strategies do not fully understand the risks and opportunities associated with climate change, particularly in term of what it could mean for pursuit of wider environmental, economic and social policy objectives.

There is no definitive regional greenhouse gas emissions target. Although the level of reduction in greenhouse gas emissions sought is comparable, regional strategies are currently working to different target timescales and a consumption related target has just been introduced. This makes measuring the contribution of all regional strategies more difficult. Crucially, it limits understanding of a 'feedback loop' to know what affects the implementation of the strategies.

Where current regional strategies have sought to address climate change, this has resulted in a strong policy direction but to only to a limited number of sectors, for example energy generation. This is not enough to reduce either production or consumption related greenhouse gas emissions to desired levels or for the region to successfully adapt to a changing climate. To deliver a step change, a similar level of emphasis is required to tackle other sectors such as housing, transport,

<sup>7</sup> Warming up the Region, WS Atkins and SEI, 2002

sea level rise and use of water resources. The emphasis of climate change related policy needs to be broader.

Review cycles and time periods of regional strategies are not always aligned. In practice this makes delivering a consistent message across all regional strategies difficult to achieve. This also means that many regional strategies only look forward to the short to medium term and there can be a tendency for strategies to 'start again' with each review rather than build up layers of action over successive reviews. Regional strategies need to be more closely aligned with a view to the longer term.

The modelling of regional strategies targets policies, aims and objectives is based on the assumption that they are all successfully implemented. This is not always the case and barriers to implementation should be understood, with the learning that arises used in further strategy implementation. It is also more of a challenge to deliver strategies that are not supported by funding or where implementation is not a statutory duty. There is a significant risk that effective climate change related policy in such strategies is not delivered.

Climate change is a global issue and national government is introducing new legislation and policy relating to addressing climate change. Some of this policy will have greater implications for the Yorkshire and Humber region due to its particular economic, physical and social characteristics. There is therefore a need to influence and understand the wider implications of the national climate change agenda on the Yorkshire and Humber region.

## Addressing Climate Change More Effectively in the Future

This report sets out a number of recommendations to set a pathway to help the region address climate change more effectively. These are:

**Joined up leadership on climate change:** The organisations leading the delivery of regional policy (Yorkshire and Humber Assembly, Yorkshire Forward and Government Office for Yorkshire and the Humber) must provide the resources, leadership and influence to join up policy and delivery across a wider range of organisations and strategies to address climate change. This joined up leadership should seek to deliver a consistent message throughout their respective organisations and to the national arena and demonstrate commitment to addressing climate change through how regional bodies operate, procure service, provide funding and seek to influence the public, private and voluntary sectors.

**Develop a joined up and stronger regional evidence base on climate change:** There is a need to consolidate information already collected relating to how climate change will affect the region and its profile of greenhouse gas emissions and to understand as a whole what it means for the region. This will enable gaps in knowledge to be determined for further research and ensure that research undertaken is of benefit to a wider range of regional strategies. It will also provide a useful tool for debate around the implications of climate change for Yorkshire and the Humber region, which is an important element of the policy making process. The evidence base needs to cover both consumption and production related emissions and understand the linkages between the two.

**Wider communication and dissemination to policy makers and stakeholders about climate change:** There is a need to make climate change an inherent part of policy making both in terms of producing regional strategies and the culture of policy makers. Communication and discussion with a wide range of policy makers will help to make climate change a more manageable issue that can be related to other policy objectives. This also provides the opportunity to bring together 'Yorkshire and Humber's response to climate change' by sharing knowledge, experience and activities.

**Measuring and scrutiny of performance:** Measuring performance helps to identify issues that may impede policy implementation and consequently refine policy to ensure the desired outcome is achieved. There is an opportunity to align the respective monitoring frameworks of the emerging Integrated Regional Framework and the emerging Regional Spatial Strategy and make the region

smarter at monitoring issues which may impact on the ability to address climate change. Regular scrutiny of regional strategies is also important to ensure their delivery remains on track.

**Develop a long term pathway through a challenging policy landscape to address climate change:** A framework which sets out a programme of climate change related actions is required to ensure that all regional strategies take a consistent approach and deliver what they can towards addressing climate change. The framework should:

- Sets a consistent target for the reduction of greenhouse gas emissions in the region.
- Identify the tools that will be required to meet this target and set a programme of actions to ensure that the region develops these tools.
- Cover both mitigation and adaptation.
- Set climate change within a framework of other regional economic, social and environmental issues, and the different scenarios of the region's future more broadly.
- Ensure the region stays on track in meeting its target and can proactively react to new information about the impacts of climate change and the introduction of new national legislation and guidance.
- Be subject to regular review and scrutiny.