

## Climate Change Impacts on the Lancashire Economy

Summary Report

Lancashire Economic Partnership

2009



## Introduction

*The global economy is almost five times the size it was half a century ago. If it continues to grow at the same rate the economy will be 80 times that size by the year 2100. This extraordinary ramping up of global economic activity has no historical precedent. It is totally at odds with our scientific knowledge of the finite resource base and the fragile ecology on which we depend for survival. It has already been accompanied by the degradation of an estimated 60% of the world's ecosystems.*

Prosperity Without Growth, Sustainable Development Commission, March 2009

We now live in an era in which the future prosperity of our society is threatened by the approaching storm of climate change. We are already experiencing the preliminary squalls in the shape of recent heat waves and flooding and there is more to come.

The Stern Report tells us that we need to act now, and act decisively. Burying our heads in the sand is not an option and will cost our economy, our society and our environment dearly. Taking action now not only keeps the economic cost down, it is our only real hope of avoiding the worst impacts of climate change, predicted by the national and international climate modelling scenarios.

Lancashire Economic Partnership recognises that climate change, and our efforts to mitigate and adapt to it, will have a fundamental impact on the sub-region's economic aspirations. We need to create a new model of economic development that breaks the link between economic growth and CO<sub>2</sub> emissions (or at least weakens it considerably). Our desire to develop an economy which is thriving, competitive and sustainable and which will improve the quality of life for all Lancashire residents, requires this.

### **Climate Proofing the Lancashire Economic Strategy**

The Lancashire Economic Strategy sets out our priorities for moving the Lancashire economy up the value chain. We are now looking at how we can do this while minimising the impact of achieving it on our CO<sub>2</sub> emissions. This report is a summary assessment of the potential positive and negative impacts of climate change on the strategic drivers and programmes of activity outlined in the Lancashire Economic Strategy. The full report can be downloaded from [www.lancashire-ep.org.uk](http://www.lancashire-ep.org.uk)

The report will inform the development of an integrated Lancashire strategy and will enable LEP to take a strategic, pro-active approach to tackling climate change, rather than a reactive one. The processes of adapting to and mitigating climate change will provide new business opportunities or the chance for existing businesses to grow. Identifying these prospects will help the Lancashire economy to develop positively to the impacts of climate change.



**John Collins**  
**LEP Board Member and**  
**Chair, Lancashire Economic**  
**Partnership Climate Change Group**

## Climate Change Challenges & Opportunities for the Lancashire Economy

This report evaluates the key economic drivers in Lancashire in relation to the known and likely impacts of climate change on the economy. LEP recognises that the Lancashire economy must accord with national and regional climate change objectives in order to cope with the impacts of climate change (adaptation) as well as reducing its contribution to further climate change (mitigation). This will enable the Lancashire economy to behave in a strategic, rather than reactive manner with respect to climate change.

This work is to evaluate the economic programmes outlined in the Lancashire Economic Strategy (LES) in order to identify:

- the potentially negative impacts that proposals in the LES may have upon the environment, and how this may add to the causes of climate change;
- the areas where the unavoidable effects of climate change may impact most upon activities and priorities for economic growth in Lancashire;
- recommendations for alleviating and minimising the primary areas of concern;
- opportunities for business growth as a result of the need to adapt to or mitigate the causes of climate change.

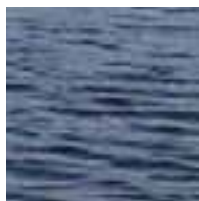


### Climate Change and Lancashire's Economy

The economic activities in the sub-region are currently co-ordinated through the Lancashire Economic Strategy which identifies those programmes that are of at least sub-regional significance and are therefore of a high priority to Lancashire. The Lancashire sub-region is characterised by a number of unique economic features such as a strong manufacturing base, with particular strengths in the aerospace industry. The sub-region has a large and diverse economic base and is home to BAE Systems, BaxiHeating, Leyland Trucks, Rolls Royce, AMEC, Matalan, and Fox's Biscuits among others. One in five people are employed in 'high technology' production and there is generally a low unemployment rate.

Many of the key economic sectors in Lancashire are expected to grow in the coming years in terms of higher Gross Value Added (GVA). In terms of employment, it is expected that there will be a decrease in the number of people employed in the manufacturing sector, but an increase in the movement toward the service sectors.

Projections of future climate change in the UK indicate that in general, it is expected that summers become hotter and drier, winters become milder and wetter, and sea levels continue to rise. Additionally, it is expected that weather extremes (such as very heavy rainfall, or



very hot days) become more extreme and occur more frequently.

As climate change becomes increasingly central to UK policy-making decisions, the need for economic development to be achieved in an environmentally sustainable way becomes even more critical. In particular, economic development programmes must be designed in such a way that they do not increase the pressure on the environment or increase Greenhouse Gas (GHG) emissions. Likewise, it is crucial that the trajectory of the sub-region’s plans for economic development does not place it at greater vulnerability to the impacts of climate change in future.

**MITIGATION**

Some of Lancashire’s economic programmes are potentially in conflict with the overarching climate change objectives for the sub-region. Others are

more closely aligned with clear synergies. Some will present business opportunities that could help the economic development of the sub-region. The table below indicates the level of conflict or synergy between Lancashire’s economic programmes and climate change objectives.

In relation to **commercial development** there is potential conflict in several areas; in particular increasing emissions may result from developments and their additional energy consumption. However, several of the commercial development projects are designed in such a way as to maintain the green space in the developments and encourage the use of green spaces in urban areas.

Many of Lancashire’s planned **housing developments** do very well overall at addressing home-work commute, which will reduce transport emissions. In some, there is potential that planned housing developments (new build

**Objectives from the Climate Change Strategy**

	Domestic Energy Efficiency	Transport	Spatial Planning and Energy Generation	Economic Development and Business	Natural Environment	Waste	Coping with CC (adapting)	Awareness Raising and Education
<b>Economic Programmes</b>								
Commercial Developments (some include housing & leisure)	Red	Yellow	Red	Red	Green	Yellow	Yellow	Grey
Housing Developments	Red	Green	Green	Grey	Green	Yellow	Yellow	Grey
Transportation Projects	Grey	Red	Grey	Yellow	Grey	Grey	Yellow	Grey
Advanced Manufacturing	Grey	Grey	Yellow	Yellow	Grey	Green	Grey	Grey
Visitor Economy & Leisure	Grey	Yellow	Yellow	Yellow	Green	Red	Yellow	Yellow
Skills & Education	Grey	Grey	Grey	Yellow	Grey	Grey	Grey	Yellow
Quality of Place	Grey	Green	Green	Yellow	Green	Yellow	Green	Yellow

Key:

- Obvious conflicts
- Some reason for concern
- Clear synergies
- No overlap



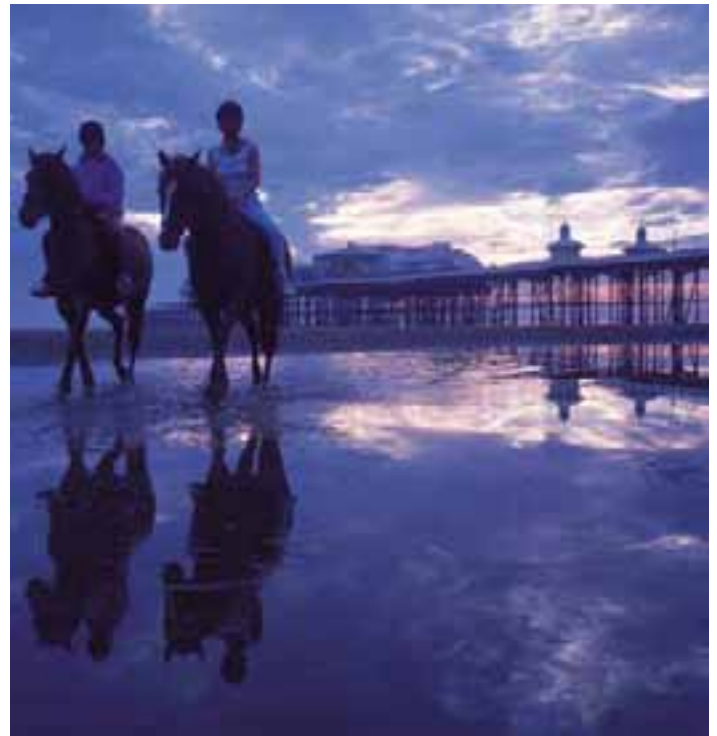
and refurbishments) do not address domestic energy efficiency issues or the need to adapt to climate change. In others, developments are designed in such a way as to preserve and encourage the use of green space.

Some **transport** projects, specifically the expansion of Blackpool Airport, are definitely in conflict with several of the climate change objectives. Projects such as this are likely to increase GHG emissions and discourage the use of public transportation. However, there are also a number of transport projects that are broadly in agreement with climate change objectives and work to improve public transportation links, reduce journey to work time, and reduce emissions from the transport sector.

The **Aerospace and other advanced manufacturing** sector generally performs well at working with climate change objectives, addressing waste issues, and reducing resource and energy consumption. Although manufacturing is usually an energy-intensive sector, the trend is toward more high-quality manufacturing which relies on less water and energy consumption.

**Visitor economy developments** and facilities present the dual issue of how they are designed and how they are used. There is potential for increased energy consumption in the actual buildings and facilities used by visitors; in addition, visitor behaviour is often not environmentally-friendly and can result in increased waste generation and energy consumption. Several planned developments are, however, the presentation of green space and making the most of Lancashire's green infrastructure.

**Skills & Education** can be an important part of the solution and should be used to raise awareness of climate change issues and develop the environmental education of Lancashire residents and businesses.

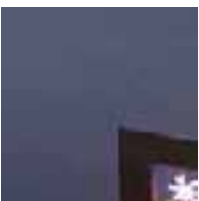


Projects that fall into the **Quality of Place** category do well at addressing climate change objectives. However, there are still areas where more could be done to address waste issues, energy consumption of buildings, and raise awareness of climate change issues.

#### ADAPTATION

In relation to climate change impacts some of Lancashire's economic programmes are at risk. Although the climate is changing already, many of the impacts of the economic programmes in Lancashire will not be felt for a number of decades. The table below summarises the level of impact likely to be felt by each economic programme against a series of likely climate change impacts.

The main risks for **commercial and housing developments** centre around impacts on the location and fabric of the building and the services (water,



energy) that they require. Developments located on or near flood plains or in the coastal zone face potential for increased flood risk in future. Developments in town centres and away from flood plains are also liable to flooding connected to intense rainfall, flash flooding and surface run-off as drainage capacity is exceeded. It will become increasingly difficult to maintain comfortable internal temperatures (for example for working, for living or for industrial processes). Wetter winters and more extreme weather could place strain on building structures and drainage systems.

Rapid expansion of development could place additional strain on water supplies during prolonged dry periods and droughts: water efficiency measures will be needed. If climate change leads to a tendency towards more outdoor lifestyles, commercial and leisure developments may need to take this into account including outdoor and green spaces in their design.

Benefits from climate change relate to the potential for reduced winter heating bills as winters are warmer, and for reduced levels of disruption, damage and maintenance related to cold-weather (frosts and snow).

In the **transport** sector the greatest risks are related to disruption and damage resulting from flooding and hot weather. Where transport projects are located close to the sea, potential impacts relating to sea-level rise will need to be considered. Warmer winters are likely to mean a reduction in the number of frost days, and therefore potential to reduce the costs of cold-weather maintenance on transport systems and networks.

There are knock-on implications of these risks for other sectors since much of the sub-region's economy is dependent upon transport, either in supply chains or for customers.

### Impacts of Climate Change

	Hotter, drier summers	More frequent, more intense summer heatwaves	Warmer winters	Wetter winters	Increased risk of flooding	Sea level rise & increased coastal risk from storm surges	Water: increased risk of supply & quality problems	Behaviour change towards more outdoor lifestyles
<b>Economic Programmes</b>								
Commercial Developments (some include housing & leisure)	Red	Red	Green	Yellow	Red	Red	Yellow	Yellow
Housing Developments	Red	Red	Green	Yellow	Red	Red	Yellow	Grey
Transportation Projects	Yellow	Red	Green	Yellow	Red	Yellow	Yellow	Grey
Advanced Manufacturing	Yellow	Red	Grey	Yellow	Yellow	Yellow	Red	Grey
Visitor Economy & Leisure	Green	Yellow	Grey	Yellow	Red	Red	Red	Green
Skills & Education	Grey	Yellow	Grey	Grey	Yellow	Grey	Grey	Grey
Quality of Place	Yellow	Red	Yellow	Yellow	Red	Yellow	Red	Green

**Key:**

- Climate change has negative impact on project, or project increases climate change risk / vulnerability
- Climate change impacts are possible but uncertain or unknown
- Climate change has positive impact on project, or project reduces climate change risk / vulnerability
- No impact / no overlap



Image courtesy of Lancashire County Council

High risks from climate change in the **advanced manufacturing sector** are associated with premises and with requirements for water supply. It will become increasingly difficult to maintain correct working temperatures for staff and manufacturing processes, and the cost of cooling systems may increase. Where large volumes of water are required in manufacturing processes, there may be risks during prolonged dry spells and drought – eg restrictions on industrial uses. Depending upon the location of premises and plants, increased flood risk and/or sea level rise may be a consideration. Impacts on transport systems could affect supply chains, and where programmes depend upon

imported components or products, climate impacts elsewhere around the world could be significant.

The **visitor economy and leisure** sector potentially have the most to gain from climate change, with hotter drier summers, and the possibility of behaviour change towards outdoor lifestyles leading to new business opportunities. Lancashire is particularly attractive for visitors and leisure consumers looking for the combination of city and outdoor space, and this attraction should grow as the UK as a whole looks to build visitor economy trade alongside climate change.

However, significant risks are linked to possible increases in water availability and quality problems, and given the location of many of these programmes along the coast or in flood plains, risks of flooding and coastal impacts are important. Knock-on effects of climate change to the transport sector and to buildings and development generally are likely.



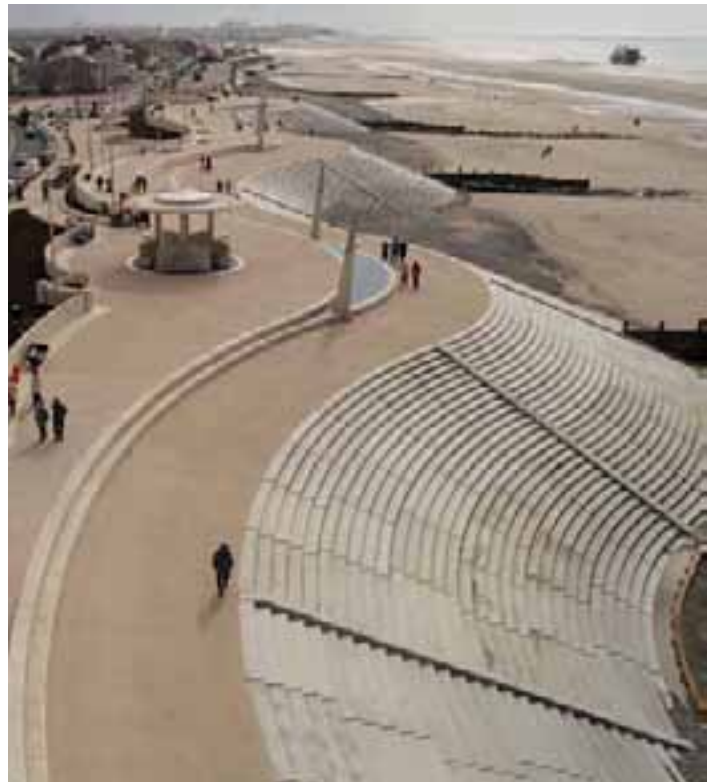
Image courtesy of Environment Agency



**Quality of Place** programmes may face risks related to increased flooding (depending on location), and where programmes are particularly focused on blue spaces, water quality and availability (particularly during hot dry summers) needs to be considered. These programmes may benefit if climate change leads to more outdoor lifestyles.

The **Skills and Education** programmes are looking to build the skills and knowledge base that will benefit the sub-region's economy in the long term. They are an important route to address adaptation capacity building that could prove key to minimising risks and taking advantage of opportunities identified in the sectors above. These programmes could provide solutions to many of the potential problems that climate change will bring.

Where programmes in this category are also making long-term infrastructure investments (e.g. in the building of new research or education establishments) many of the key risks identified above would apply (to buildings, transport links, etc).



*Image courtesy of Wyre Borough Council*



### FUTURE-PROOFING LANCASHIRE'S ECONOMY

Three aspects of the LES are identified as “high risk”, either because they have the potential to hinder progress towards the sub-region’s climate change mitigation objectives and/or because they face significant impacts from the changing climate, and could be costly in terms of adaptation. These are:

- Considerable investment in the development of long-lifetime infrastructure and the built environment;
- Investments to increase visitor numbers to Lancashire;
- Dependence upon projects and processes with high resource demands.



*Image courtesy of Environment Agency*


Although there are several aspects of the economic strategy that are at risk from climate change, there are also a number of opportunities which could help businesses be pro-active in terms of preparing for climate change. Six areas where there are significant opportunities are:

- Business opportunities in the environmental technology sector and support systems;
- Growing the sub-region’s knowledge economy focus in the environmental sector in order to build more environmental expertise in Lancashire;
- Building networks and activities to share sustainable good practice in manufacturing sector;
- Investing in the growing visitor economy sector;
- Developing a “future-proofed” sub-regional infrastructure;
- Maximising the climate benefits of Green Infrastructure strategy.



*Image courtesy of Environment Agency*





The Lancashire economy is investing in programmes with long-term implications for the sub-region, whether this is through construction of new infrastructure, development of new products and markets, or building up skills in the next generation. This means that while the programmes themselves are delivered in the short term they leave lasting legacies that will exist in a climate changed world. New economic programmes and activity need to assess the future climate that they will operate in and plan accordingly:

- ***build in adaptation measures at the design stage*** when it is cheaper than retrofitting them later on - many adaptation measures bring immediate benefits in building resilience to current climate conditions.
- ***develop options to review and address flood risk*** Other options that may need to be considered are contingency planning, insurance, strengthening flood defences, or even relocation away from sites that are facing unacceptable levels of flood risk.
- ***promote and demonstrate sustainable building techniques*** that will enhance their green credentials and protect them from future climate impacts. Aspects to consider include drainage and flood resilience, temperature control, and resilience to extreme weather.

- ***capitalise on the growing demand for cooling and ventilation techniques*** - there is a potential market opportunity to link the adaptation and mitigation agendas in the production of energy efficient or passive ventilation cooling products.
- supply chain management in the transport sector represents an opportunity to **consider more local sourcing of components and resources in order to reduce risks of disruption**. Additionally transport plans should start to include contingency for extreme weather events, and offer improved links and a range of transport modes. Business continuity plans should take account of the potential for extreme weather disruption to ensure the minimum economic losses under these scenarios.
- **Strengthening research** on climate impacts and adaptation, particularly as they apply to the sub-region, and **enhance opportunities for training** in the kinds of skills that may be needed to address the impacts of climate change. Improved workforce training and awareness can foster innovation and build motivation to improve productivity.



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