



---

## Report of the Director of Development

### Scrutiny Board (Development)

Date: 10<sup>th</sup> October 2006

### Subject: Climate Change

---

**Electoral Wards Affected:**

**Specific Implications For:**

Equality and Diversity

Community Cohesion

Narrowing the Gap

---

## Introduction

Al Gore's recent documentary 'An Inconvenient Truth' contains science-based facts that evidence the cause and effects of climate change.

He presents photographic evidence to show that almost all the mountain glaciers in the world are melting, some of them quite rapidly. Scientists attribute this to increasing concentrations of CO<sub>2</sub> in the atmosphere, which causes the temperature to rise because more heat from the sun is trapped inside (greenhouse effect). This conclusion is based on extracting long cylinders filled with ice from glaciers around the world that have formed over many centuries and examining tiny bubbles of air trapped in the ice the year that it fell. Measurements of CO<sub>2</sub> and temperature of the atmosphere year by year show a striking correlation over the last 1000 years.

In Antarctica the measurement of CO<sub>2</sub> concentrations and temperature go back 650,000 years, the lowest temperatures correlate to each ice age, in between there are periods of warming. At no point in the last 650,000 years did CO<sub>2</sub> concentrations go above 300 parts per million (ppm). Records of global temperatures show they have been increasing for the last 150 years, since the start of the industrial revolution and that 20 of the hottest years have occurred in the last 25 years with 2005 being the hottest year on record. Today CO<sub>2</sub> concentrations are above 350ppm and within 45 years they will over 600ppm if we do not make dramatic changes quickly.

The Arctic ice cap is much thinner than the Antarctic since it floats on top of the Arctic Ocean. Since the 1970s the extent and thickness of the Arctic ice cap has diminished so precipitously that if we continue with business as usual the Arctic ice cap will disappear each year during the summertime. Scientific studies show that melting of the polar ice cap is resulting in polar bears drowning in significant numbers because they have to swim much longer distances from floe to floe. Melting the Arctic could also profoundly affect the planet's entire climate pattern

The redistribution of heat from the Equator to the poles drives the wind and ocean currents - like the Gulf Stream and jet stream. These currents have followed much the same pattern since the end of

the last ice age 10,000 years ago. Today's climate pattern has existed throughout the entire history of human civilisation.

According to scientists one surprisingly fragile component of the global climate system is in the North Atlantic where the Gulf Stream encounters the cold winds coming off the Arctic and across Greenland. As the two collide heat evaporates and is carried by prevailing winds and the earth's rotation across Western Europe. The water left behind is not only colder it is also saltier and therefore sinks at the rate of 5 billions gallons second. As it drops toward the bottom of the ocean it forms the cold-water current flowing southward. Scientists call this the thermohaline pump and it is crucial in powering the continuous flow in the world's ocean currents. The last time the gulf stream stopped, when the last glacial ice sheet in N America melted around 10,000 years ago, Europe went back into an ice age for another 1000 years and the transition happened relatively quickly. As a result some scientists are concerned about the rapid melting of ice in Greenland, which is adjacent to the area where the pump operates.

Many residents of low-lying Pacific island nations have already had to evacuate their homes because of rising seas but sea levels could rise much further depending on what happens in Antarctica and Greenland.

The East Antarctic is the largest ice mass on the planet and had been thought to be increasing in size. However two studies in 2006 show that the volumes of ice appear to be declining and that 85% of the glaciers there appear to be accelerating their flow toward the sea. This ice mass is still considered to be more stable than the West Antarctic ice shelf which because it is propped up against the tops of islands does not displace sea water as floating ice would. However since the oceans flow under large sections of this ice shelf and as the oceans have warmed alarming structural changes have been documented on the underside of this shelf.

In Greenland pools of fresh meltwater can be seen on the ice, this meltwater is now believed to keep sinking all the way to the bottom of the ice sheet where it lubricates the surface of the bedrock and destabilises the ice mass, raising fears that it will slide more quickly toward the ocean. In 1992 scientists measured the amount of melting in Iceland, in 2002 their measurements showed that it was much worse and in 2005 it had accelerated dramatically yet again. If Greenland's ice mass melted or broke up and slipped into the sea, or half Greenland and half Antarctica melted, sea levels world wide would rise by 18 – 20 feet, the maps of the world would have to be redrawn and millions of people would be displaced.

## **The role of UK Local Government in climate change**

Climate change is now recognised as one of the greatest threats of the twenty first century and is the key driver for a raft of international, European and national policy aimed at reducing carbon emissions.

The UK ratified the Kyoto protocol in 2003 and is committed to a 12.5% cut in greenhouse gases compared to 1990 levels by 2008-12. As well as this international commitment, the UK has its own Climate Change programme, which commits it to reducing CO2 emissions by 20% by 2010. "Our energy future - creating a low carbon economy" also commits the UK to reduce CO2 emissions by 60% by 2050 and expects energy to be a strategic priority in local government.

Local authorities seeking to deal with climate change need to consider taking action in two complementary ways: Firstly councils need to reduce their own emissions of greenhouse gases so as to **mitigate** the impact of climate change in the future and then work with stakeholders in their community to help them reduce their emissions. Secondly councils need to understand how their services and communities will be affected by changes to the climate and begin now to **adapt** those services to best cope with change and take

advantage of any opportunities that climate change might offer. The tools at Local Government's disposal to address climate change include:

**Community strategy:** Government guidance expects to see climate change addressed within community strategies.

**Education for sustainable development:** should be a priority for local schools and life-long learning. School building and design should use low energy architecture and design.

**Local authority housing management:** should contribute to meeting the requirements of the Home Energy Conservation Act, by improving the energy rating of homes and invest in energy efficiency.

**Planning and development:** should reduce the need for travel and promote energy efficiency and renewable energy generation and consider options such as combined heat and power or district heating.

**Building regulations:** should be enforced to improve energy efficiency.

**Flood control and drainage development:** policies should reduce the risk of flooding by not allowing development in the flood plain and maintenance programmes should prioritise highway gully cleansing in high risk areas.

**Transport planning and policy:** should aim to reduce traffic levels and emissions of greenhouse gases

**Highway maintenance:** needs to take account of increased risk of flooding and subsidence, increased weed growth and reduced need for winter gritting.

**Energy management:** within the local authority (including fleet management) should be delivering sustainable energy outcomes that address climate change. Low carbon fuelled fleet vehicles should be considered.

**Emergency planning:** should be considering responses to more frequent, extreme weather events such as urban flash-flooding, storm surges, droughts and heat-waves.

**Inward investment:** should be looking ahead to the new businesses, technologies and skills that will be needed in a low carbon economy.

**Air quality:** management plans should support reducing greenhouse gas emissions

**Waste management:** should aim to reduce landfill greenhouse gas emissions

**Pest control:** services should be prepared for new invasive species and how warmer weather will affect animals such as rats, mice, wasps and other infestations.

**Parks and open spaces management:** is likely to have to change as the climate changes

**Biodiversity:** action plans will need to take account warmer weather and new invasive species and the effect that will have on existing ecosystems

## **Leeds contribution to climate change**

In June 2005 LCC signed the Nottingham Declaration, the declaration contains a series of commitments designed to put local government at the forefront of reducing the effects of climate change on the UK's economy, society and environment.

These commitments include an agreement to develop plans with our partners and local communities, within the next two years, to progressively address the cause and impacts of climate change and to work at a local level to help the UK deliver its national climate change targets.

Leeds City Council's proposals to develop a climate change strategy and action plan with our partners are contained in Appendix 1. As indicated above the strategy will need to utilise a number of existing and future strategies and policies. The challenge will be to ensure that the requirements of the Nottingham Declaration are firmly embedded in all relevant council plans and policies and to ensure that plans are converted into action.

It is now widely accepted that the UK will not meet its commitment to reducing CO<sub>2</sub> emissions by 20% by 2010. In fact CO<sub>2</sub> emissions in Leeds increased by 8.5% between 1990 and 2003 due to economic growth and our increasing dependency on technologies that are dependant on fossil fuel. Although alternative technologies are available to help us work toward a carbon neutral economy they are often rejected as having greater up-front costs. Unfortunately what is not considered at present, but will start to become more important as climate change starts to impact on our lives, is the potential cost of continuing with business as usual.

## **The cost of climate change**

Taking a strategic approach to climate change will allow investment by a local authority in adaptation and mitigation measures to be weighed against the benefits both to the organisation itself and to the community it serves.

- severe weather such as flooding currently costs UK £1 billion each year. This figure is likely to increase.
- increased insurance risk (£700 million flood claims in autumn 2000).
- new business opportunities, for example the opportunity for the outdoor leisure and tourism industry to develop, and changes to agriculture due to the range of crops that can be grown in the UK
- lower fuel bills, helping people to tackle fuel poverty and its health effects;
- lower costs for businesses if they become more resource efficient, making them more competitive;
- a better transport system, improving access for local residents and businesses.

Finally, authorities that do make a considered strategic response to climate change will enjoy increased resilience to the effects of climate change, leading to greater protection in the future.

## **Recommendations**

The Scrutiny Board is asked to note:

- the contents of this report
- the timetable for to produce a climate change strategy and action plan (appendix 1)
- a further report will be presented at a future scrutiny meeting.