

STATE OF THE ENVIRONMENT

(2009)
SOE 002

INTRODUCTION

The air we breathe is vital to our health and well being. Good air quality is essential for human health, the climate, habitats and the built environment. Air quality is changed by substances released mainly through human activity, leading to air pollution that can have a negative affect on our health and natural environment. Pollutants are estimated to reduce the life expectancy of every person in the UK by an average of 7 to 8 months. Emissions of other substances, such as ammonia and sulphur dioxide, can damage sensitive plant life, ecosystems and animals. In the 19th century air pollution was first identified as a significant problem because of industrial activities. The affect of this pollution led to the formation of smog in urban areas.

LEGISLATION

The Air Quality Strategy sets out health and habitat based standards and objectives for the main air pollutants in the UK. The European Commission National Emission Ceilings Directive sets maximum levels for emissions of nitrogen oxides, ammonia sulphur dioxide and volatile organic compounds. Emissions from large combustion plants must comply with the Revised Large Combustion Plants Directive and the National Emission Reduction Plan. Greenhouse gas emissions reduction targets were established by the Kyoto Protocol. Carbon Dioxide emissions are controlled through the European Commission Emission Trading Scheme.



AGRICULTURE



ATMOSPHERE

AIR & CLIMATE INDICATORS

To determine the quality of our air and the amount of greenhouse gas emissions in Northern Ireland, 15 air and climate indicators have been used in the 2008 State of the Environment (SOE) Report and 2009 Northern Ireland Environmental Statistics Report (NIESR). These air and climate indicators are continuously under review and the data is updated in the annual NIESR report. The indicators used are Nitrogen Oxides, Sulphur Dioxide, Particulate Matter, Ground Level Ozone, Ammonia, Greenhouse Gas Emissions, Air Quality Trends, Carbon Dioxide Emissions, Energy, Environmental Installations and Climate Change. There are 4 indicators that are categorised under Climate Change and 2 under Greenhouse Gas Emissions. Each indicator is represented as either a graph or a chart as shown in figure 1. Some of the key facts coming out of these reports are as follows.

- **Nitrogen dioxide** levels have been steadily decreasing since 1993. Annual mean background concentration of NO_2 for Northern Ireland has been below $25\mu\text{g}/\text{m}^3$ since the year 2000.
- **Sulphur dioxide** levels have significantly reduced since 1992 to 2005.
- All the readings in the last 10 years have been well below the $40\mu\text{g}/\text{m}^3$ level that has been set out as the UK Air Quality objective for the protection of human health for **Particulate Matter**.

TOTAL GREENHOUSE GAS EMISSIONS BY SECTOR (1990 AND 2006)

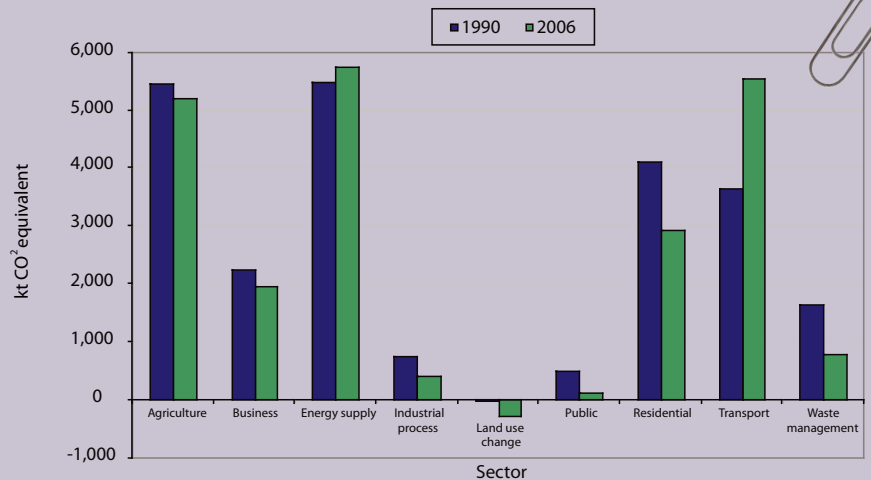


Figure 1. The above graph is taken from the indicator sub-heading greenhouse gas emissions and shows the change of the total greenhouse gas emissions per sector.

- **Greenhouse Gas emissions** have decreased by 5.8% in 2006 since 1990. This is less than the reduction seen for the UK as a whole, which has seen a decrease of 15.7% on 1990 levels.
- Energy supply, transport and agriculture are the 3 main contributors to **Greenhouse Gas emissions**; however the only one to decrease is agriculture. Transport has increased from 3,669 kt CO² equivalent in 1990 to 5,553 kt CO² equivalent in 2006.

KEY CHALLENGES

Road transport is a major and growing pressure in Northern Ireland, affecting local air quality and greenhouse gas emissions. The measures used to control emissions from road transport may not be effective due to the rapid increase in car ownership and road congestion. There is no conclusive evidence that Northern Ireland greenhouse gas emissions are declining, and this presents a major challenge in our rapidly increasing economy. The UK Government commitment to introduce a Climate Change Bill will further assist in helping to address this issue in Northern Ireland.

FURTHER INFORMATION

The full SOE and NIESR reports can be found on the Northern Ireland Environment Agency (NIEA) website:

Web: http://www.ni-environment.gov.uk/index/about-niea/our_environment.htm

For further information on this topic or the State of the Environment Report please contact;

SOE Report Team
NIEA Strategy Unit
Klondyke Building
Cromac Avenue
Gasworks Business Park
Lower Ormeau Road
Belfast, BT7 2JA
Email: SOE@doeni.gov.uk
Tel: (028) 9056 9371

Our aim is to protect, conserve and promote the natural environment and built heritage for the benefit of present and future generations.

Northern Ireland Environment Agency
Klondyke Building
Cromac Avenue
Gasworks Business Park
Belfast BT7 2JA
T. 0845 302 0008

www.ni-environment.gov.uk

Notes for Teachers

Key Stage 1 & 2

This fact sheet can be used to introduce the topic of pollution to the teacher. Activities could include a basic investigation into a local pollution incident and its affect on the local environment. This topic could be incorporated into the learning areas of the World Around Us and Language and Literacy.

Key Stage 3

This fact sheet can assist teachers in covering Local and Global Citizenship by highlighting key elements such as Personal Understanding and Education for Sustainable Development. The topic of air quality is mentioned in the general learning areas of Science and Technology, and Environment and Society.

Key Stage 4 & 5

Within the GCSE and CSE course the topic of pollution is covered both in Geography and Biology. The fact sheet is useful to both teachers and pupils when investigating air quality and its impacts on climate change. It can provide a springboard into individual investigations by pupils and highlight the key factors within this topic.

Activities for Students

This fact sheet is useful for schools undertaking a local study in Key Stages 3, 4 & 5 and can be used in the following ways:

Pupils in Key Stage 3 can use this fact sheet in Geography and Science to investigate the legislation behind air quality and pollution, as well as further investigation on the impact that pollution has on human health and environment. They could use their findings to produce a report incorporating ICT skills and communication skills.

Pupils in Key Stage 4 & 5 can use this fact sheet to individually investigate key factors on air quality and its impacts on climate change.