

# CLIMATE CHANGE AND AIR QUALITY

## Climate Change

Climate change is recognised as the greatest threat to the planet and the greatest challenge facing humanity. The need for major reductions in greenhouse gas (GHG) emissions is now an accepted priority for most countries. Ireland's commitment under the Kyoto Protocol is to limit GHG emissions over the 2008–2012 period to no more than an annual average of 62.8 Mtonnes CO<sub>2</sub>e (13 per cent above 1990 levels). However, the most recent data show that Ireland faces a major challenge to meet this target and reduce what is one of the highest levels of per capita emissions in the EU. The more stringent targets proposed by the EU for 2020 pose even greater challenges for the country, and there is an urgent need to implement effective long-term strategies to achieve the necessary emissions reductions across all economic sectors. Current projections show that even if all projected reductions from existing and planned policies are delivered, and forest sinks and

Kyoto mechanisms purchases are used as envisaged, Ireland will still exceed its Kyoto Protocol limit by an average of 1.4 Mtonnes of CO<sub>2</sub> equivalent per annum in the period 2008–2012. Additional domestic policies and measures and/or additional Government purchases will be required to bridge this gap. In particular, Ireland will have to reduce its dependence on fossil fuels while at the same time ensuring that very significant increases are made in both energy efficiency and in the use of alternative energy sources such as wind, ocean and biomass.

The impacts of climate change are projected to increase in the coming decades. Research commissioned by the EPA has demonstrated that action is required on a national basis to prepare for adverse impacts in areas such as flooding, water management during dry spells, sea-level rise and coastal erosion. Efforts will also be required to protect native species and manage changes in vulnerable natural and managed ecosystems.

Figure S2.1 Distance to Ireland's Kyoto Limit (Source: EPA, 2008)

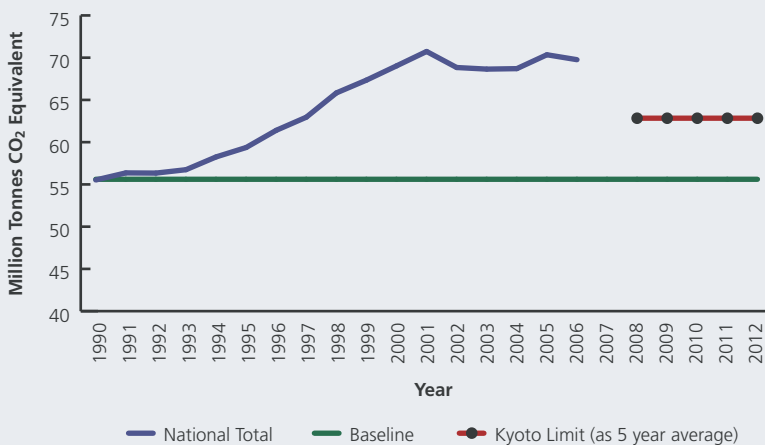
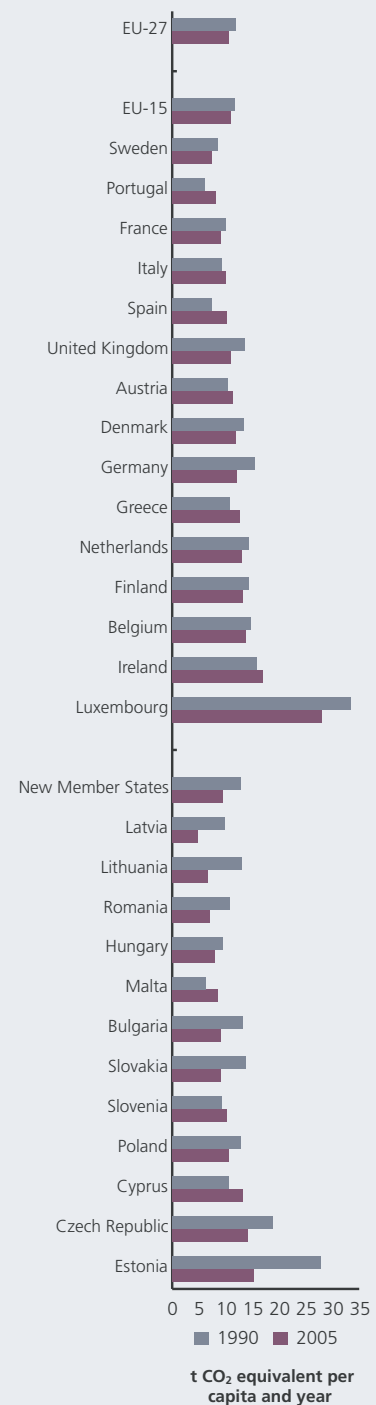
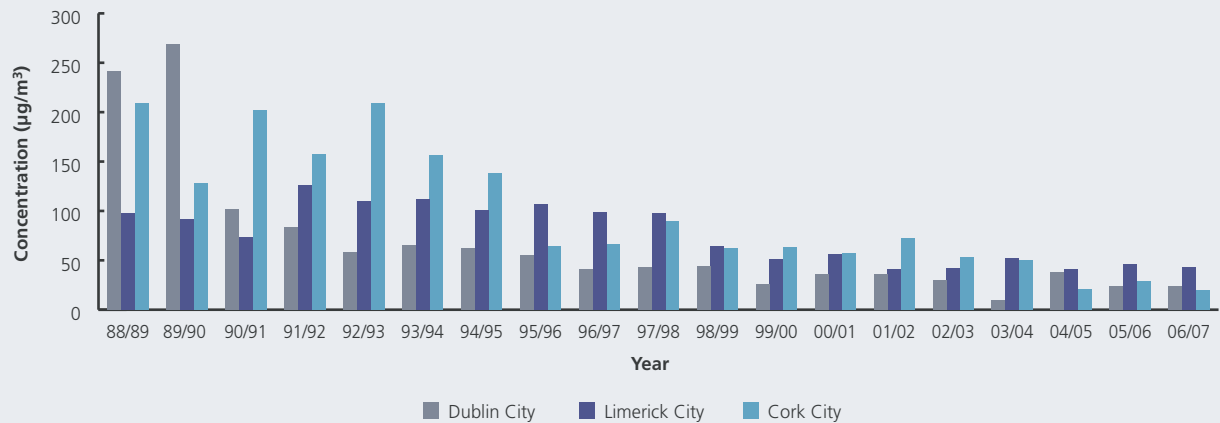


Figure S2.2 GHG Emissions per Capita of EU-27 Member States for 1990 and 2005 (Source: EEA, 2007)



**Figure S2.3** Black Smoke Concentrations in Dublin, Cork and Limerick 1988–2007 (Source: EPA)



Climate change research commissioned by the EPA in recent years has contributed to the development of expertise and scientific knowledge in this area in Ireland. This research has also contributed to better estimates of GHG emissions and is supporting the development of appropriate national policies on climate change. Future research is planned to establish, among other aspects, a scientific basis for the achievement of GHG emissions targets for the country and the identification of sustainable adaptation measures.

## Air Quality

Thanks to the influence of clean Atlantic air and lack of large cities and heavy industry, Ireland is one of the only countries in Europe to have had no exceedances of any ambient air quality limit values in recent years. The continued implementation and enforcement of the existing policy measures are vital to maintain

Ireland's good air quality. A key issue for policy-makers is to ensure that air quality control is considered an integral part of traffic management, industrial development and planning processes. It is important that policies to address these areas and major issues such as climate change are implemented in a holistic manner to take full account of possible benefits for air quality.

## Improving Air Quality in Towns

The pollutant of most concern is PM<sub>10</sub>, levels of which are close to the EU limit value across the country, and efforts must be made to address this situation. The ban on bituminous coal in large cities and towns has greatly reduced levels of particulate matter and should be maintained.

**Figure S2.4** Annual Mean NO<sub>2</sub> concentration in Dublin and Cork 2000–2007 (Source: EPA)

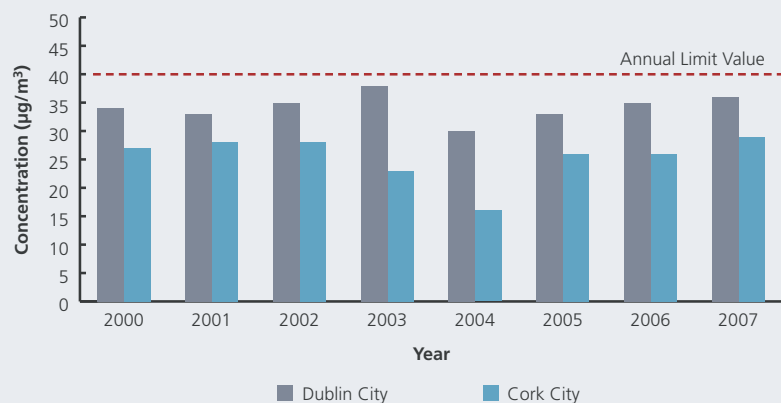
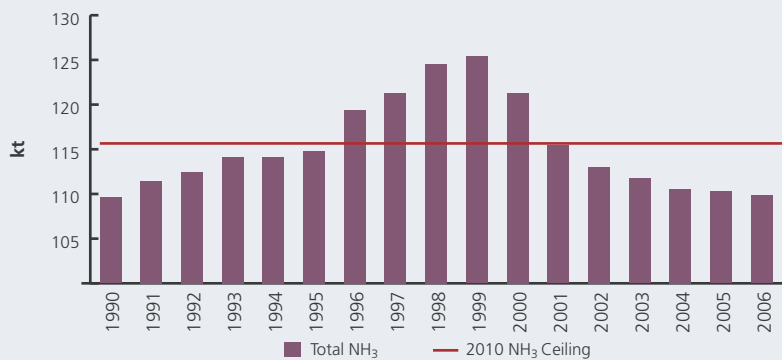
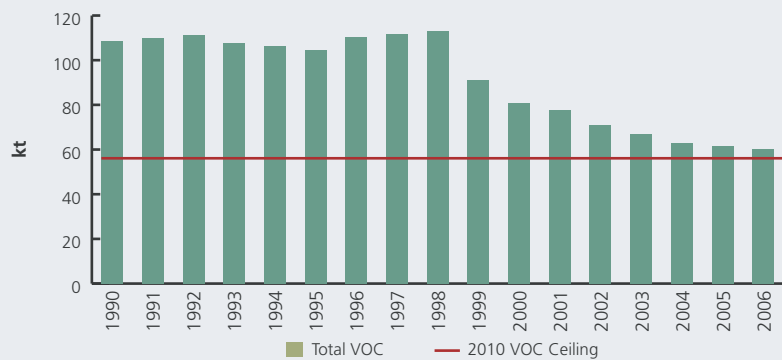
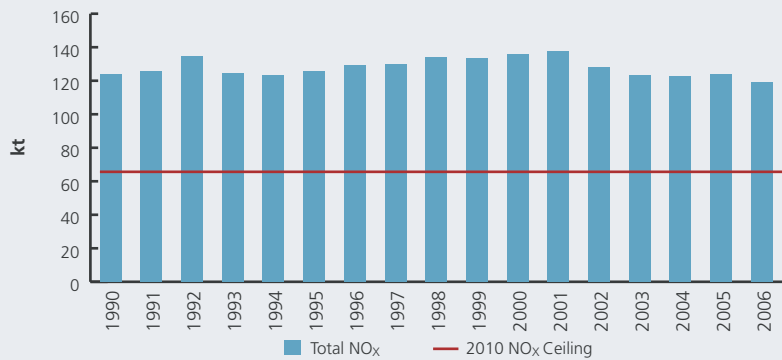
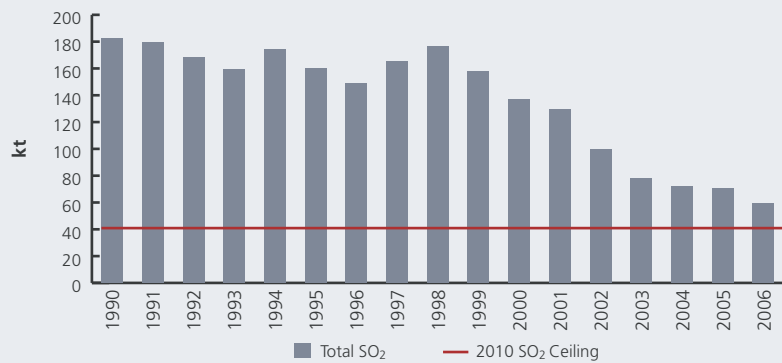


Figure S2.3 shows the effectiveness of the coal ban in three major urban areas. Concentrations of black smoke – another measure of particulate matter – decreased significantly after the introduction of the ban in Dublin in 1990, in Cork in 1995 and in Limerick in 1998. A widening of the ban on bituminous coal to other urban areas would be expected to decrease levels of particulate matter across the country in a similar manner.

### Improving Air Quality in Cities

Emissions of air pollutants, particularly PM<sub>10</sub> and NO<sub>x</sub>, from road traffic remain the main threat to air quality in urban areas. Figure S2.4 shows that levels of NO<sub>2</sub> in Cork and Dublin are close to the limit value for annual mean concentrations. While new standards for car emissions and the resultant cleaner technology have curbed emissions from individual vehicles, this has been offset by the increasing number and bigger engine sizes of vehicles on Ireland's roads. Air quality issues must therefore be an integral part of traffic management and planning processes, and there needs to be a modal shift from the private car to high-quality public transport.

**Figure S2.5** Progress towards National Emissions Ceilings (Source: EPA)



### **Meeting National Emissions Targets**

The strategies to achieve compliance with the EU Directive on National Emissions Ceilings have substantially reduced emissions of SO<sub>2</sub> and VOCs, as shown in Figure S2.5, while the emissions of NH<sub>3</sub> are below the 2010 ceiling of 116 kt. Emissions of NO<sub>x</sub> are currently well above the 2010 ceiling of 55 kt and are expected to remain high in the short term, largely due to the difficulty in achieving large-scale reductions in emissions from road traffic. This is the major contributing sector and the increase in road traffic must be curtailed in order to reduce NO<sub>x</sub> emissions overall. Existing policies and measures are expected to secure and maintain compliance with the ceilings for the other NEC gases.