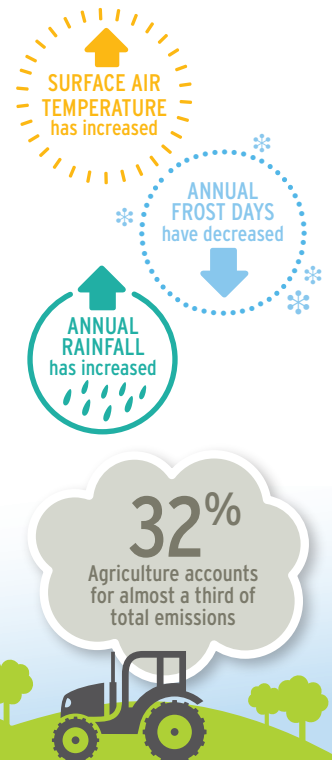


IRELAND'S ENVIRONMENT GREENHOUSE GASES AND CLIMATE CHANGE

DID YOU KNOW?

- Ireland's climate is changing :
 - > Ireland's annual surface air temperature has increased by approximately 0.8°C over the last 110 years
 - > The number of annual frost days has decreased while the number of warm days has increased
 - > Average annual national rainfall has increased by approximately 60mm or 5% in the period 1981 to 2010, compared to the 30 year period 1961 to 1990. These changes are aligned with global observations of climate change
- Ireland will meet its Kyoto obligations which is to limit growth in emissions in the period 2008-2012 to 13% above 1990 levels
- Ireland is facing significant challenges in meeting its emissions reduction target for greenhouse gases under the EU Climate and Energy Package for 2020
- Ireland has a unique emissions profile within the EU with emissions from agriculture accounting for just under a third of total national emissions. This is proportionally higher than for all other EU Member States



WHAT IS CLIMATE CHANGE, WHAT'S CAUSING IT AND HOW WILL IT AFFECT US?

It is important to distinguish between climate and weather. Climate is described as an average of weather conditions, such as temperature and rainfall, over a long period of time (typically 30 years). In contrast, weather changes rapidly over hours and days and is highly variable. Climate change, therefore, refers to a significant change in the average temperature or rainfall, over periods of decades to centuries.

Over the Earth's history, the climate has changed for many reasons including changes in the orbit of the Earth around the sun, changes in the energy from the sun and geological changes. What's different now is that human activities, that release emissions of gases and other pollutants into the atmosphere, are changing the energy balance of the planet and causing our climate to change. The gases, which are known as greenhouse gases, trap energy which then warms the planet somewhat akin to what happens in a greenhouse. The impact of this warming includes increased air and ocean temperatures, drought, melting ice and snow, rising sea levels, changes in rainfall patterns and flooding.

The main greenhouse gases are carbon dioxide (CO₂), methane (CH₄) and nitrous oxide (N₂O). Carbon dioxide emissions are primarily released through the burning of fossil fuels such as coal, oil, gas and peat. In addition, carbon dioxide is emitted through poor land management and land use changes such as deforestation and urbanisation. The main sources of methane and nitrous oxide emissions in Ireland are from the agriculture sector including livestock, manure management and application of fertilisers.

Over the last 200 years, the concentrations of the main heat-trapping greenhouse gases have increased significantly in our atmosphere; carbon dioxide by 40%, methane by 150% and nitrous oxide by 20%. These three gases are now higher than they have been for at least 800,000 years.

The consequences of this are most clearly evident in the global temperature records, which show that, on average, the global temperature has increased by 0.85°C since records began in the mid-19th century. Continued emissions at or above current levels will cause further warming and result in changes in the global climate system during the 21st century that would very likely be larger than those observed during the 20th century.



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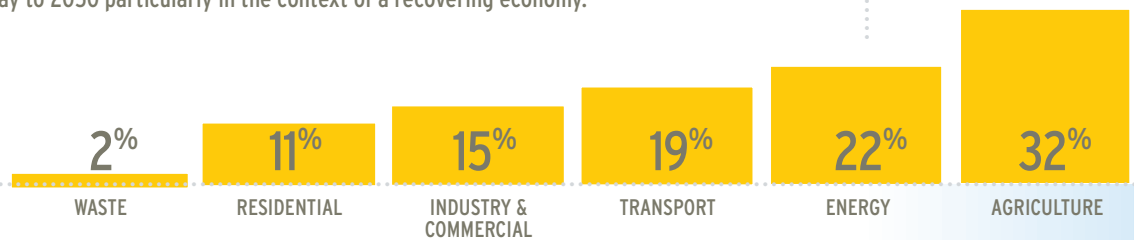
IRELAND'S GREENHOUSE GAS EMISSIONS

For 2012, Ireland's total national greenhouse gas emissions are estimated to be 57.92 million tonnes of carbon dioxide equivalent. In relation to the overall trend in emissions, Ireland's emissions peaked in 2001 and have decreased by 17% since then which in recent years has been largely driven by the downturn in the economy. The positive impact of policies and measures such as increased renewables in electricity generation has also resulted in lower emissions.

Agriculture is the single largest contributor to overall emissions at 32% of the total while Energy and Transport are the second and third largest contributors at 22% and 19% respectively. The remainder is made up of emissions from Industry and Commercial at 15%, Residential at 11% and Waste at 2%.

Ireland's per capita emissions also peaked in 2001 at 18.2 tonnes. With the decrease in emissions since 2001, per capita emissions declined to 12.6 tonnes per capita in 2012. This compares with an EU-28 average in 2011 of 9.0 tonnes. Ireland's per capita emissions were 5th highest in the EU-28 in 2011.

Ireland will meet its Kyoto Protocol commitments which is to limit emissions in the period 2008-2012 to 13% above 1990 levels. In relation to future targets, Ireland is required to reduce its emissions by 20% by 2020 and ensure our emissions remain within annual limits over the period 2013-2020. EPA projections indicate that we will breach our annual obligations from 2016 onwards in the best-case scenario. We face significant challenges in transitioning to a low-carbon emission pathway to 2050 particularly in the context of a recovering economy.



WHAT DOES IT MEAN FOR IRELAND?

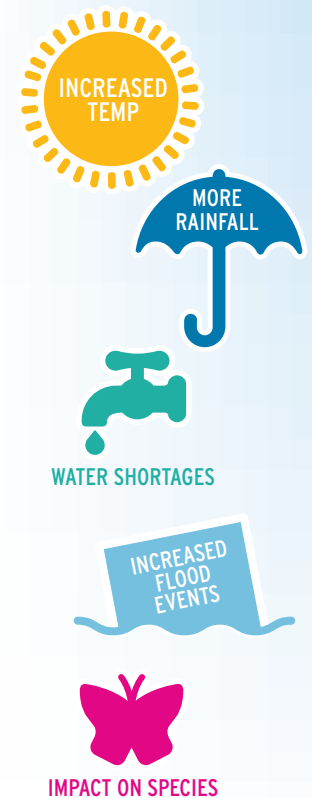
Projected impacts of climate change in Ireland include:

- > increasing average temperature
- > more extreme weather conditions including rainfall events
- > an increased likelihood of river and coastal flooding
- > water shortages, particularly in the East of the country
- > changes in the types and distribution of species
- > the possible extinction of some vulnerable species

The National Climate Change Adaptation Framework was published in 2012 and provides the policy context for a strategic national adaptation response to climate change in Ireland. Under the Framework, the relevant Government Departments, Agencies and local authorities are preparing draft sectoral and local adaptation plans to be published by mid-2014.

FUTURE DEVELOPMENTS

Climate change impacts are projected to increase in the coming decades and during the rest of this century. Uncertainties remain in relation to the scale and extent of these impacts, particularly during the second half of the century. The greatest uncertainty lies in how effective global actions will be in reducing greenhouse gas emissions. The next big step in international policy development will take place in 2015 when World Governments are expected to agree on how to collectively take actions to reduce emissions of greenhouse gases. This agreement will come into effect in 2020. In the meantime Ireland will need to meet its targets to 2020 under the EU Climate and Energy Package. It will also need to identify pathways to become effectively carbon neutral by 2050.



MORE INFORMATION

For more information see the EPA's website at www.epa.ie/climate or www.epa.ie/researchandeducation/