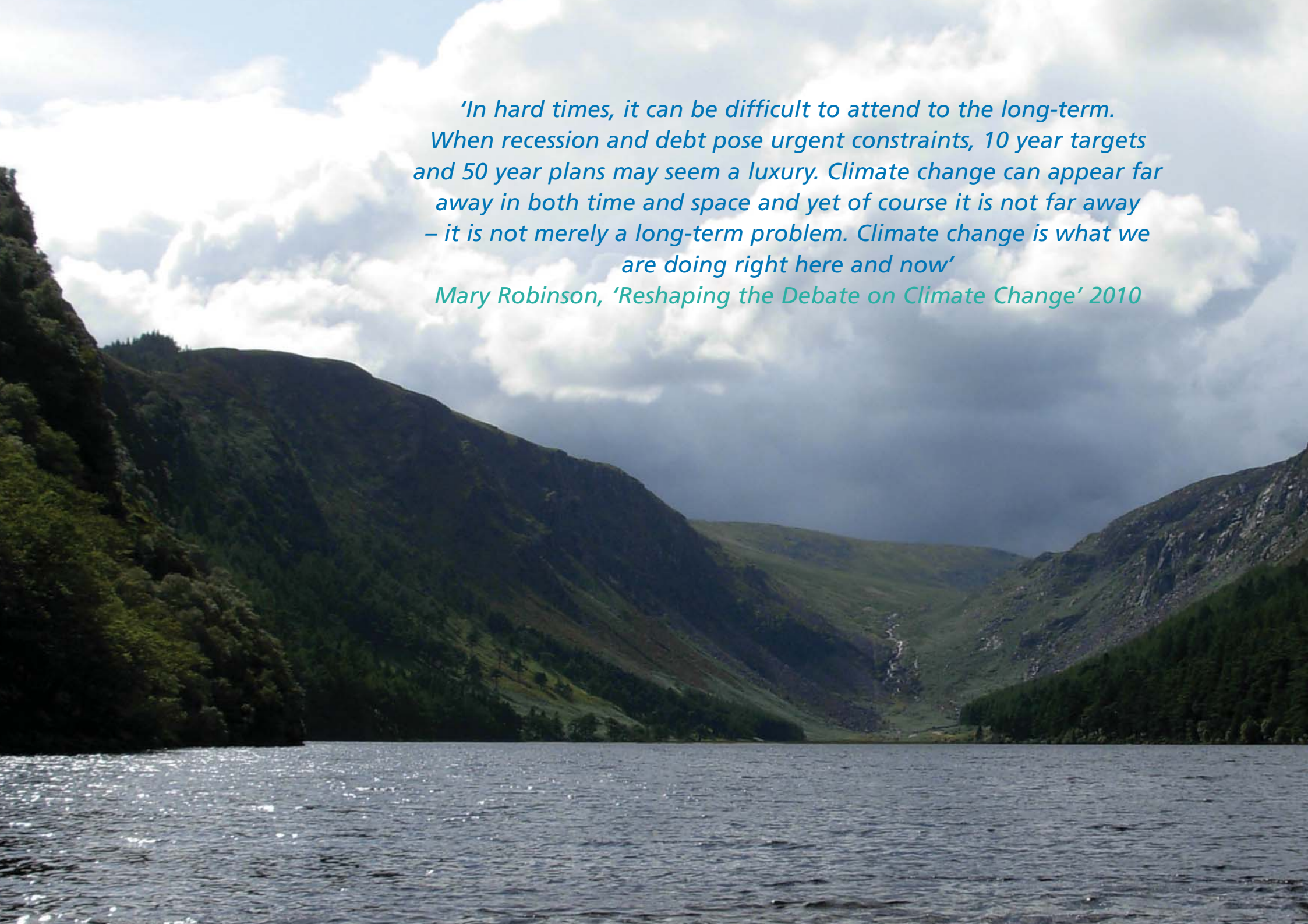
Environmental Protection Agency
*An Ghníomhaireacht um Chaomhnú Comhshaoil*

# The EPA & Climate Change

## Responsibilities, challenges and opportunities
## 2011 Update



*'In hard times, it can be difficult to attend to the long-term. When recession and debt pose urgent constraints, 10 year targets and 50 year plans may seem a luxury. Climate change can appear far away in both time and space and yet of course it is not far away – it is not merely a long-term problem. Climate change is what we are doing right here and now'*

*Mary Robinson, 'Reshaping the Debate on Climate Change' 2010*

## Acknowledgements

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Photographs were provided by Mr. David Dodd, Mr. Wayne Trodd, Mr. Stephan Leinert and Mr. Michael Neill with some stock imagery throughout.


# Contents

# Foreword

2011 marks the 150 year anniversary of the publication of Irish scientist John Tyndall's breakthrough experimental work on the absorption of infrared radiation by various atmospheric gases. This work is integral to the modern understanding of greenhouse gases and the role they play in climate change.

Whilst Ireland can be justifiably proud of our scientific and technological achievements, Ireland's greenhouse gas emissions per person are amongst the highest on the planet and the 2nd highest of the EU 27 countries[1]. The reduction in greenhouse gas emissions in Ireland and other parts of the globe which is primarily due to the global financial crisis has shown that there is still a strong link between economic growth and emissions.

The global economic crisis has been felt particularly harshly in Ireland, and has focused government and public attention on the economy and job creation. Policies and measures to address the financial crisis and stimulate the economy can be used to nurture an environmentally as well as economically sustainable economy. Promotion of low carbon technologies and renewable energies will reduce our greenhouse gases and reduce our reliance on foreign energy imports.

The last 12 months have seen major extreme weather events across the globe – from erratic weather in Ireland to flooding in Pakistan and Australia and the current drought in east Africa. Whilst it is difficult to attribute any particular extreme event to climate change, climate change predictions and modelling from Intergovernmental Panel on Climate Change (IPCC) indicate an increase in the frequency of such events.

In 2012, it will be twenty years since the Rio declaration in 1992 and the signing of the United Nations Framework Convention on Climate Change (UNFCCC). However, whilst significant progress has been made we still do not have a truly global legal agreement that commits all parties to preventing climate change. It is hoped that the COP 17 in Durban in December of this year will further the progress made at the previous two COPs in Copenhagen and Cancun.

The EPA through its work at national and international levels is fully committed to helping Ireland transition to a low carbon and sustainable economy which is imperative to address the challenges of limiting and adapting to climate change.

Laura Burke
Director

Office of Climate, Licensing and Resource Use
Environmental Protection Agency

October 2011

1 www.eea.europa.eu/publications/progress-towards-kyoto

# Background

The EPA's 2020 Vision strategy sets out our vision for Ireland's environment over the coming decade and beyond. The strategy aims to achieve results in a number of critical areas, including climate change, and is set within the framework of sustainable development.

We recognise that social, economic and environmental issues are interconnected and that good decisions and policy should encompass these three elements in a balanced and harmonious way.

2020 Vision outlines six environmental goals, reflecting the main challenges identified by the EPA for Ireland as well as key issues at global and EU levels.

**These goals are:**

- Limiting and adapting to climate change
- Clean air
- Protected waters
- Protected soil and biodiversity (native plants and animals)
- Sustainable use of natural resources (water, energy and materials)
- Integration and enforcement

Limiting and adapting to climate change is the key focus of this document. As Figure 1 below shows, all of the EPA 2020 Vision goals are linked to the issue of climate change.


Figure 1: Linkages between EPA 2020 Vision goals

# EPA climate change programme

The **National Climate Change Strategy (NCCS)** 2007 to 2012[2] sets out the Irish Government's plans to tackle climate change. The EPA is responsible for many actions under this strategy which are incorporated into the EPA Climate Change Programme. The main work areas are summarised below.

## National Emission Inventories

Greenhouse gas (GHG) emissions[3] are produced from many different activities. The EPA has responsibility for compiling GHG emission figures for Ireland. This includes emissions from industrial and commercial, energy, residential, agricultural, transport and waste sectors. Data is also gathered on the amount of emissions that are removed from the atmosphere. We submit this data annually to the European Union, the UNFCCC Secretariat and the UNECE Secretariat. This information allows progress towards our international emission reduction targets and helps to identify what can be done in certain sectors to reduce emissions.

Ireland's total greenhouse gas emissions in 2009 are estimated to be 62.39 million tones carbon dioxide equivalent (Mt $CO_2$eq), which is 8.0% (5.42 Mt $CO_2$eq) lower than the level of emissions in 2008[4].

2 National Climate Change Strategy (2007 to 2012), Department of Environment, Community and Local Government **http://www.environ.ie/en/Publications/Environment/Atmosphere/FileDownLoad,1861,en.pdf**

3 The most important long-lived greenhouse gases are carbon dioxide (CO2), nitrous oxide (N2O), and methane (CH4).

4 The EPA submitted final estimates of Ireland's greenhouse gas emissions up to 2009 to the secretariat of the UNFCC to meet the 15 April 2011 deadline for reporting annual greenhouse gas inventories under the Convention. **http://www.epa.ie/downloads/pubs/air/airemissions/GHG_1990-2010_Provisional_2012.pdf**

5 The emissions of the 36 developed countries that have ratified Kyoto will be measured in each of the 5 years of the 2008-2012 period. Their annual average emissions over the period must be lower than the target agreed in the protocol. **http://www.epa.ie/whatwedo/climate/emissionsinventoriesandprojections/nationalemissionsprojections/**

## National Emission Projections

The National Climate Change Strategy gave the EPA responsibility for developing annual national emission projections for GHGs, for all key sectors of the economy, alongside relevant State and other bodies. Developing GHG emissions projections is a complex process involving several strands of analytical and modeling work such as energy supply, energy demand forecasts, and policy measures that may impact on the level of emission from a given sector.

The main aim of developing national emissions projections is to monitor progress in meeting our national and international emission targets if current and planned policies and programmes are implemented. GHG projections are reported on a sectoral basis to give priority to those sectors that have the most impact on emission levels. They are published annually to assist in the identification of measures and policies that will help us to reach our emissions reduction targets. The latest projections report can be found at:
**www.epa.ie/whatwedo/climate/emissionsinventoriesandprojections/nationalemissionsprojections/**

## Emissions Trading Scheme (ETS)

The Emissions Trading Scheme (ETS) is one of the key policies introduced by the EU to tackle emissions of carbon dioxide and other greenhouse gases. The scheme began on 1 January 2005, with the first phase from 2005 – 2007 and the second phase from 2008-2012 to coincide with the first Kyoto period[5]. It is the largest "cap and trade" scheme in the world covering 27 EU States and around 12,000 installations. Cap and trade is a system whereby emissions limits or caps are issued to industry. Companies that need to increase their emission allowance must buy credits from those who pollute less.

The EPA has responsibility for introducing and applying the ETS to Ireland (S.I 437 of 2004) and is currently implementing Ireland's second National Allocation Plan for the period 2008-2012.

100 of Ireland's largest GHG emitters are covered, representing about one third of our national emissions. The ETS provides an assurance that, within the European wide allocation cap, emissions reductions can be made in the most economic way possible. From 2012 the ETS will be expanded to include emissions from air flights to and from European airports and the EPA is working with the aviation industry to ensure implementation.

Under the Kyoto Protocol and the EU ETS, Ireland is required to establish and implement a National Registry to track the movement and surrender of various approved GHG emission allowances. The EPA is responsible for managing the National Registry in Ireland including security and governance.

## Research and capacity building for the future

If Ireland is to meet the challenges that climate change will bring, we must be as informed as possible about the problems we face. Our Climate Change Research Programme (CCRP) co-ordinates and publishes research in a very wide range of areas from climate modelling to the social and economic consequences of climate change and on approaches to adaptation development and planning.

**The research programme focuses on four themes:**

| | |
|---|---|
| **Theme 1** | Greenhouse Gas Emissions, Sinks and Management Systems |
| **Theme 2** | Ireland and Future Climate, Impacts and Adaptation |
| **Theme 3** | Socio-Economic and Technological Climate Solutions and Transition Management |
| **Theme 4** | Trans-Boundary Air Pollution / Short Life Climate Forcers |

This research is essential to address key gaps and uncertainties in the science of climate change and also to inform government policy for mitigating and adapting to climate change.

The EPA chairs the climate change research coordination committee in Ireland which has members from all the key stakeholders including government departments and state bodies. Further information on our research programme can be downloaded at www.epa.ie/whatwedo/climate/

CIRCLE 2
CLIMATE IMPACT RESEARCH & RESPONSE COORDINATION FOR A LARGER EUROPE
EU FP7 ERA-NET

We are a partner in the Climate Impact Research Coordination for a Larger Europe (CIRCLE2)[6] project with other European Member States. CIRCLE aims to share the findings of climate change impacts research, National Adaptation plans and organise joint research calls between countries.

## Air and Climate Science and Observation Systems

Science has pushed forward international actions on issues such as climate change and air pollution at regional and global levels. This is a complex area, and as a result responses to climate change and air pollution are born out of detailed negotiations.

The EPA funds integrated assessment modeling[7] to better understand the impacts of climate, energy and air pollution policies on national targets. We also aim to have researchers participate in key international bodies

6 CIRCLE2 – Climate Impact Research Coordination for a Larger Europe **http://www.circle-era.eu/np4/home.html**
7 IMP Ireland **http://www.impireland.ie/index.html**

such as the Intergovernmental Panel on Climate Change (IPCC) and Task Force Groups under the Convention on Long Range Transboundary Air Pollution (CLRTAP).

## Monitoring and analysis

Our Water Data Unit works in cooperation with other stakeholders such as Local Authorities, and the Office of Public Works (OPW) to monitor the physical, chemical and biological properties of surface water bodies throughout the country. According to current projections, climate change will affect water resources in Ireland and so monitoring this work is essential to highlight climate signals in the data collected.

In 2010, Ireland began participation in the Integrated Carbon Observation System (ICOS) project[8] which aims to provide an accurate greenhouse gas emission monitoring network across Europe. We currently have GHG monitoring instruments installed as part of our transboundary air pollution network at Malin Head in Donegal, Carsnore Point in Wexford and Mace Head in Galway.

Observation systems are an integral part of monitoring the environment. For example satellite monitoring systems are increasingly being used to track pollution events such as volcanic eruptions, forest fires and oil spills and minimise the impacts they have on the environment through improved response. They are also useful in monitoring land use change and habitats.

The National Climate Change Strategy expressed its commitment to ensuring that Ireland has an adequate and modern capability for climate observation.  The EPA works with national stakeholders such as Met Éireann, the Marine Institute and the OPW to look at what is needed for an integrated national climate observation system in Ireland[9] . A national system will be a crucial means of monitoring the future impacts of climate change in Ireland.

Figure 2: Satellite Photograph of Eyjafjallajokull Volcano, Iceland May 2010 (Source: ESA – Envisat – MERIS)

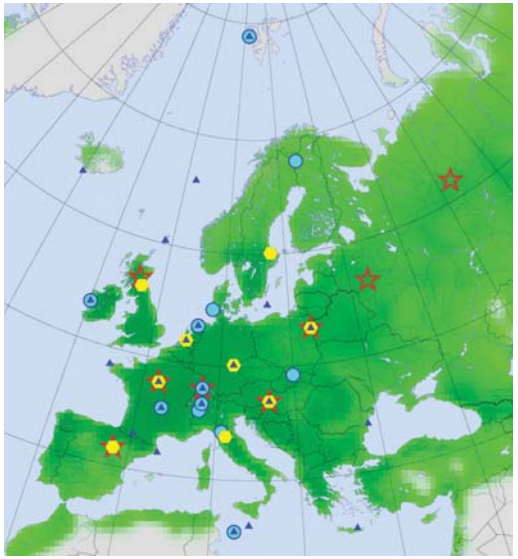


Figure 3: Existing European Network of Atmospheric observation sites as part of ICOS project

8 Integrated Carbon Observation System **http://www.icos-infrastructure.eu/**
9 EPA, Current Status and Required Actions for National Climate Observing Systems (2009) **http://www.epa.ie/downloads/pubs/research/climate/name,27740,en.html**

# Ireland's greenhouse gas emissions

The EPA is responsible for compiling Ireland's greenhouse gas inventories using guidelines established by the Intergovernmental Panel on Climate Change. The sectoral emissions for 2009 are presented in Figure 4 below.

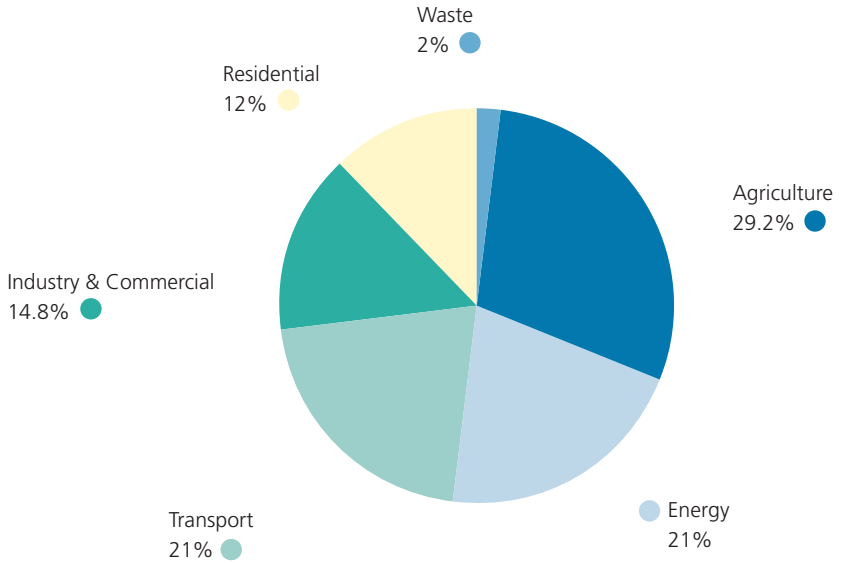



Figure 4: Ireland's Greenhouse gas emissions by sector for 2009 (Source: EPA 2011)

Agriculture is the single largest contributor to the overall emissions, at 29.2% of the total, followed by Energy (power generation & oil refining) at 21% and Transport at 21%. The remainder is made up by Industry and Commercial at 14.8%, the Residential sector at 12%, and Waste at 2%.

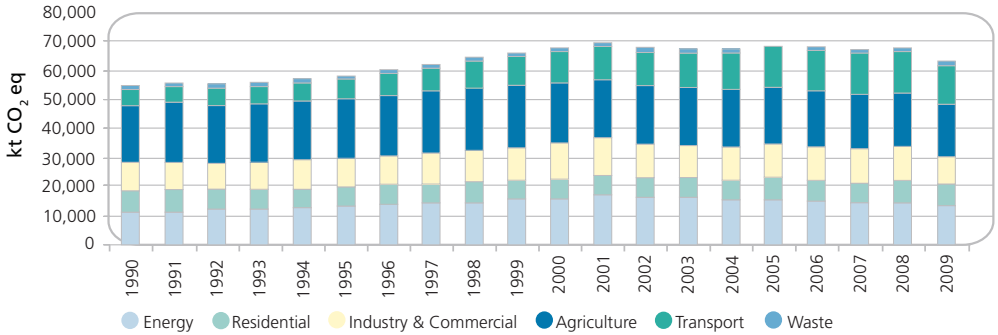



Figure 5: Ireland's GHG emissions 1990 to 2009 (Source: EPA 2011)

Figure 5 shows a breakdown of Ireland's GHG emissions for different sectors from 1990 to 2009.

This figure shows that our total emissions have increased from a level of approximately 55 Mt $CO_2$eq in the early 1990s to 62.39 Mt $CO_2$eq in 2009. Looking at different sectors, transport in particular has shown significant increases.

The 2009 estimates of greenhouse gas emissions show a considerable annual reduction compared with 2008 emissions which primarily reflects the downturn in economic activity during 2009. The impact of the measures already adopted under the National Climate Change Strategy and other Government policy documents such as the Energy White Paper are incorporated into these figures. Participants operating under the EU Emission Trading Scheme accounted for 3.16 Mt $CO_2$eq of the total annual reduction.

# Greenhouse gas emissions limits

Ireland is currently faced with meeting two limits with respect to greenhouse gas emissions;

1 The first of these is the **Kyoto Protocol** to the **United Nations Framework Convention on Climate Change (UNFCCC)**. Under the Kyoto Agreement, Ireland has committed to limiting the increase of green house gases to 13% above the 1990 baseline year when our emissions were 55.6 Mt $CO_2$eq, resulting in a Kyoto limit for Ireland during the period 2008 to 2012 of just under 63 Mt $CO_2$eq. In 2008 emissions were 67.82 Mt $CO_2$eq, and due to economic contraction our total greenhouse gas emissions in 2009 were 62.39 Mt $CO_2$eq. Compliance can be achieved through emissions reductions and forestry sinks, and/or emissions allowances that can be purchased from countries that have successfully lowered their own emissions.

2 The **Kyoto Protocol** is, however, only a first step in addressing the serious global threat of climate change. The ultimate goal of the **UNFCCC** is to stabilise atmospheric concentrations of greenhouse gases at a level that prevents dangerous human interference with the climate system. Therefore, in early 2009 the EU Commission agreed a package of proposals that will deliver on the **European Union's commitments** to fight climate change and promote renewable energy up to 2020 and beyond. The package seeks to deliver a total EU greenhouse gas emissions by 2020 (relative to 1990 levels) and at the same time to increase to 20% the share of renewable energies in energy consumption. The emissions reduction will be increased to 30% by 2020 if a new global climate change agreement is reached.

## Distance to Kyoto limit

The global economic downturn and current economic challenges in Ireland may assist in reducing emissions, however it is critical that greenhouse gas emissions are separated from economic growth. Figure 6 below shows Ireland's emissions relative to the Kyoto limit.

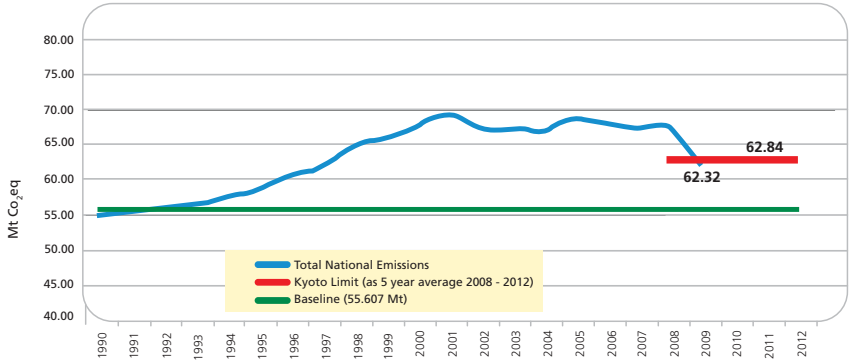



Figure 6: Distance to Ireland's Kyoto Limit (Source: EPA 2011)

**The government's White Paper on Delivering a Sustainable Energy Future for Ireland and the National Bioenergy Action Plan include other targets such as:**

- A target of **12% renewable energy** share in the heating sector
- Achieving a **10%** penetration of **biofuels** in road transport
- Achieving **40%** of **electricity consumption** from **renewable energy sources**
- Installing **500MW** ocean **energy capacity**; and
- Achieving **800MW** from combined **heat and power**.

Figure 7: Windfarm at Carsnore Point Co. Wexford

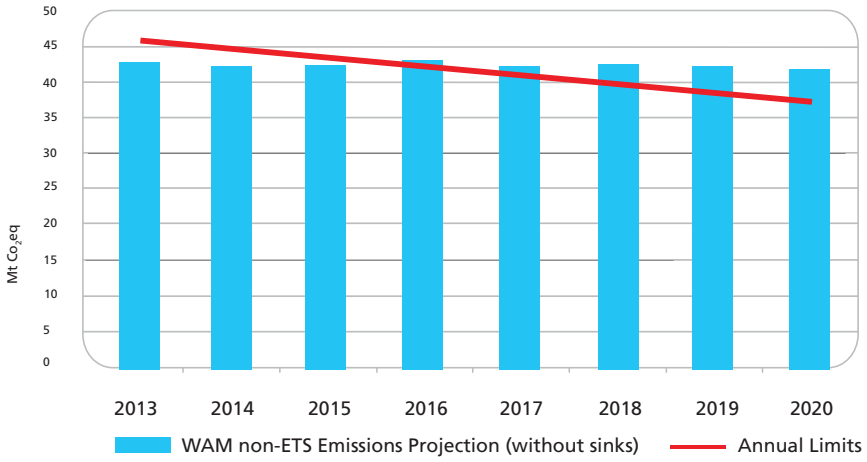



Figure 8: Projected greenhouse gas emissions to 2020 (Source: EPA 2011) (WAM = With Additional Measures)

EPA current projections reflect the reduced industrial activity due to the economic downturn, but even with this, and with all plans and measures implemented on time and delivering to their fullest extent, there is still an ongoing challenge for Ireland to meet its obligations under the EU 2020 targets. Figure 8 shows the projected distance to target for non-ETS sector emissions relative to EU 2020 targets.

In the longer term, Ireland's unique position within the EU as the country with the highest national proportion of agricultural emissions, together with further projected growth in agriculture as well as possible growth in transport emissions, will present this country with major challenges in meeting the EU's proposed future emission reduction targets. Current projections estimate that total cumulative non-Emissions Trading Scheme sector emissions for 2013-2020 will be 4.5 to 30.1 million tonnes of CO2 higher than the binding target agreed for this period. This gap will be even larger if the EU target is further reduced in the event of an appropriate international agreement to follow the Kyoto Protocol.

**In summary, EPA projections for the period 2010 to 2020 show:**

- Ireland can comply with its Kyoto obligations (2008 – 2012) with regard to greenhouse gas (GHG) emissions
- Ireland is predicted to breach its annual obligations under the EU 2020 target with regard to greenhouse gas emissions, from 2016 onwards
- Total emissions for 2020 are projected to be 4.1 to 8.8 million tonnes of CO2eq above the EU 2020 target
- Growth in transport emissions is projected to slow significantly
- Emissions from agriculture are projected to increase by 4% by 2020 (on 2009 levels) which shows the projected impact of Food Harvest 2020 and removal of the EU milk quota.

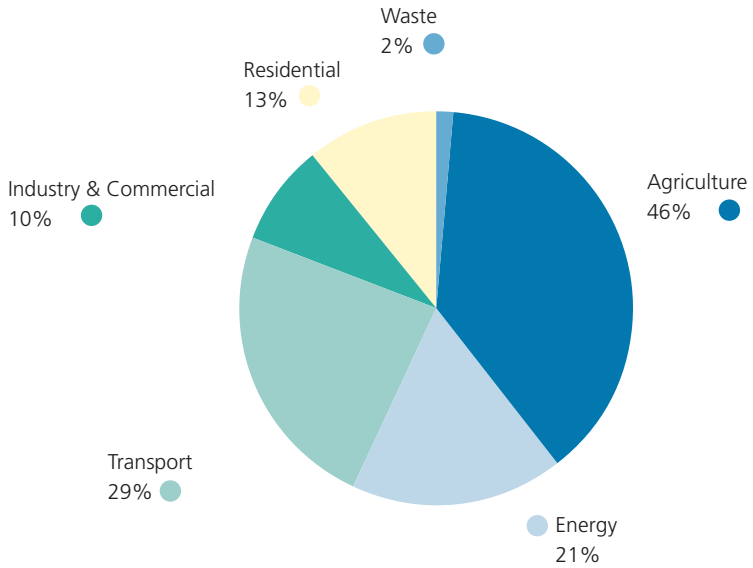



Figure 9: Projected sectoral share of non-ETS greenhouse gas emissions in 2020 for the With Additional Measures (WAM) scenario. As can be seen, transport and agriculture will be responsible for 75% of our overall emissions.

Figure 10: Dublin City Council Dublin Bike scheme (www.dublinbikes.ie)

## Transport

The rise in transport emissions due to increased car ownership in recent years poses a particular challenge for Ireland. **Examples of actions being undertaken to reduce emissions from this sector include;**

- Investment in public transport
- Vehicle labeling and taxation
- Bike to work scheme.
- Promotion of electric car network
- Achieving 10% electric road vehicles by 2020

## Agriculture

Whilst agriculture is key to Ireland's economic growth, employing 150,000 people and producing annual exports of more than €7 billion, emissions from the sector are projected to increase by 4% between 2009 and 2020. This increase is based on the assumption that the targets in the Department of Agriculture's strategy 'Food Harvest 2020'[10] will be achieved in full and the EU milk quota will be removed.

These projected increased emissions leave agriculture as the largest contributor to our national greenhouse gas total. Significant challenges remain in reducing emissions from agricultural activities in the future.

10 **Food Harvest 2020 http://www.agriculture.gov.ie/agri-foodindustry/foodharvest2020/**

# Climate change: indicators and impacts for Ireland

Recent findings from our **Climate Change Research Programme** show that Ireland's climate has changed over the past 100 years. This change is similar to patterns seen globally. The clearest trend is in temperature records but there is also a trend towards more intense and frequent rainfall.

**Some indicators of this change are as follows:**

- Ireland's mean annual temperature increased by 0.7°C between 1890 and 2004
- The average rate of increase is 0.06°C per decade, but as Ireland experiences considerable climate variability, the trend here is not linear
- The highest ten-yearly rates of increase have occurred between 1980 and 2004, with a warming rate of 0.42°C per decade
- There has been a reduction in the number of frost days and a shortening of the frost season length
- The annual rainfall has increased on the north and west coasts, with decreases or small increases in the south and east. These changes are reflected in the ecosystem, with an increase in the growing season as well as greater numbers of wildlife and fauna suited to warmer climates being evident in Ireland and its surrounding waters.

Climate change impacts are projected to increase in the coming decades and during the rest of this century and uncertainties surround the magnitude and extent of these impacts, particularly for the second half of the century.

**Projected impacts for Ireland include:**

- Our climate will continue to warm, with possible increases of 1.8o to 4oC towards the end of the century
- Seal level rise of between 18cm and 59cm this century
- More intense storms and rainfall events
- Increased likelihood and magnitude of river and coastal flooding; increased storm surges
- Greater need for irrigation of crops
- Water shortages during summer in the East
- Negative impacts on water quality
- Increased agricultural crop diversity and productivity due to more benign growing conditions and extended growing year
- Negative impacts on water quality
- Changes in the distribution of species, and possible extinction of vulnerable species requiring cooler conditions, e.g. the Arctic Char
- Effects on fish species that are sensitive to small changes in temperature, e.g. Cod
- Increased frequency of wild fires and pest infestations

# The EPA's role in a low carbon economy

If Ireland is to achieve the necessary level of reduction in greenhouse gas emissions, we must strive to become a low carbon economy that uses energy efficiently, and as a society develop and integrate low carbon technologies into our daily lives.

## Research

Environmental research funded by the EPA is strongly focused on providing support for developing new environmental policy and implementing current policies.

**This work is broadly categorised under three pillars:**

- Climate Change
- Water Quality
- Sustainable Environment[11]

Under legislation, EPA is mandated to co-ordinate environmental research in Ireland and has established working groups in each of its three focus areas to deliver on this obligation.


11 In addition, EPA-funded R&D is aligned to, and supportive of, national strategic directions including capacity building activities under the SSTI and development of the green economy.

A high-quality, well managed environment is critical to quality of life and economic growth for Ireland. Environmental R&D plays a pivotal role in delivering effective environmental protection. At present, environmental research in Ireland is quite active, with work in this area funded through a variety of sources.

Whilst funding and budget cuts are realities in the public and private sectors alike, the EPA issued research and fellowship calls in the three pillars – Climate Change, Water Quality and Sustainable Environment –in 2011. We aim to produce research outputs that are relevant to the needs of policy-makers and the commercial sector.

## Cleaner Greener Production Programme

The Environmental Protection Agency launched the Cleaner Greener Production Programme (CGPP) in 2001 as a grant scheme to encourage Irish organisations to implement cleaner greener more efficient practices. The philosophy of the programme is that prevention is better than cure.

The CGPP challenged organisations to produce goods and services in more environmentally friendly ways, targeting the minimisation of emissions through cleaner production methods. The objective was to achieve a balance between economic activity and protection of the environment.

Since 2001 the EPA has committed over €7 million to 89 organisations that have received part funding for demonstration projects under this programme. Companies commit to developing demonstration projects that reduce their environmental impact and are applicable across the business sector. A recent study has shown almost €1.6 million annual savings from a one off investment by the EPA of €1 million.
For more information, see **www.cleanerproduction.ie**

## Licensing and Enforcement

The EPA regulates the emissions produced by industry and by waste sites in Ireland through a combination of Integrated Pollution Prevention Control (IPCC) Licensing, Waste Licensing and the Emissions Trading Scheme (ETS). Large industrial and waste sites are licensed by the EPA and monitored to make sure they comply with the terms and conditions of these licences.

The EPA works with industrial and waste sites to find ways of reducing their emissions and their use of energy and fuel. Sites with EPA licences must produce Resource Use and Energy Efficiency reports and these measures help licensees to track their efforts and their expenditure in relation to energy and emissions.

## Resource Efficiency

Our National Waste Prevention Programme (NWPP) aims to explore practical ways to minimise and prevent waste, so as to break the link between economic growth and the environmental impacts associated with the generation of waste.

**Examples of nationwide projects promoting the prevention of waste, water and energy use include:**

- Green Hospitality Award - **www.gha.ie**
- Green Business - **www.greenbusiness.ie**
- Local Authority Prevention Demonstration Programme - **www.lapd.ie** and
- Green Home Programme - **www.antaisce.ie**
- Stop Food Waste - **www.stopfoodwaste.ie**

All of these projects are concerned with measuring and reducing the of resources. These reductions have a knock-on benefit in terms of reduced emissions to the atmosphere and potential savings for the organisations concerned. The recently commissioned work on food waste prevention / home composting has the potential to divert biodegradable waste from landfill, thereby preventing the formation of methane, a powerful greenhouse gas.

## EPA Green Team

The EPA strongly believes that public sector organisations should be setting an example in terms of their own environmental performance and carbon footprint.

**An Environmental Management System** (EMS) is in place for the EPA and we are ISO14001 certified.

Detailed energy audits have been undertaken and Display Energy Certificates (DEC) have been received for all inspectorates. A DEC indicates the amount of energy the building consumes compared to a benchmark for buildings of the same type. Local Green Teams are working in each of our offices to minimise the impacts of our activities such as transport, hazardous material, energy and water use and waste management. Regular internal audits are undertaken and targets set to improve our performance.

The EPA aims to use environmentally friendly suppliers and products and is increasingly using environmental criteria in our tender specifications. A recently completed extension to the EPA Headquarters in Wexford incorporated renewable energy such as photovoltaics, solar water heating, solar gain, rainwater recycling and a woodchip burner to reduce the carbon footprint of the building on the environment. Our Cork inspectorate is also heated using a woodchip burner.

Figure 11: The EPA headquarters in Johnstown Castle, Wexford hosts the country's largest array of Photovoltaic (PV) solar panels in Ireland.

# Communicating climate change issues

Communication is an integral part of our work not only on climate change, but on the state of the environment in general. We regularly communicate the impacts and challenges that climate change poses for Ireland to policy makers, the research community and the public at large.

**The aim of our climate change communications strategy is:**

- To **provide expert independent scientific advice** and information on climate change, and other key environmental issues based on sound research
- To be a **leader in the climate change debate** based on the strength of EPA expertise and research
- To be **recognised as an expert** educator and communicator on climate change and its impacts for all interest levels
- To **provide informed advice** to policy makers on emissions reduction strategies and adaptation measures
- To be an **authority on research-based actions** to address the causes and consequences of climate change across all sectors
- To **promote climate change research** in Ireland as a support to action across all sectors
- To be a **respected regulator**

Our **public lecture series** on climate change issues continued in 2010 and 2011 with speakers such as Mary Robinson, former president of Ireland. The series has been well attended by stakeholders and the general public. The lectures can be viewed on our website and also the EPA's YouTube channel, **www.YouTube.com/EPAIreland**.

Figure 12: Public audience at EPA climate change lecture.

**Our climate change webpages offer:**

- Frequently Asked Questions on climate change
- The latest research findings from EPA funded projects
- Up to date information from international climate negotiations
- Links to international organisations working on climate change
- Carbon calculator tools for personal and business use
- Information on climate change impacts for Ireland
- Ireland's Emissions Inventories and Projections

We also partner with TV programmes like *The Investigators* and *Eco Eye* on RTE. Though our National Waste Prevention Programme we fund innovative initiatives such as An Taisce's *Green Homes* bringing information on climate change to over 9,000 homes throughout Ireland.

Where possible, we publish relevant local environmental research data in regional newspapers so that people are regularly informed about issues like recycling, water quality and green technologies.

A key message in all our communications is that we all need to play our part, no matter how small, in fighting climate change. We welcome suggestions and engagement from our stakeholders on this ongoing challenge.


Over the last year the EPA has been reaching new audiences through the use of **social media channels** and was selected as a finalist in the 2011 social media awards.

For short, timely updates on the work of the EPA's Climate Change Unit you can follow us on Twitter at: **www.Twitter.com/EPAClimateNews**

The EPA has also set up a YouTube channel, which includes all 14 of the EPA's Climate Lecture Series[12] – over 20 hours of content – and the full length RTE documentary 'A Burning Question?'.
**www.YouTube.com/EPAIreland**

For a selection of high quality presentations on Climate Change and other topics check out the EPA on SlideShare:
**www.slideshare.net/EPAIreland**

The EPA also encourages its staff to use LinkedIn which is an online professional networking channel that connects professionals in similar fields:
**www.linkedin.com/company/environmental-protection-agency-ireland/**

# Future challenges

*'Climate change is an absolute emergency. It's an emergency, now, and it will become a catastrophe if we're not careful. It's not something that is going to get better unless we radically change.... It's a wake-up call, it's time to change our whole mindset about how we will live and our children and grandchildren will live in the years to come. It's also for Ireland, an opportunity to renew ourselves'.*

(Mary Robinson – former President of Ireland (1990-1997), former United Nations High Commissioner for Human Rights (1997-2002) and President of the Mary Robinson Foundation for Climate Justice - 2010)

## Adapting to climate change

Even if global greenhouse gas levels were significantly reduced now, some impacts would be unavoidable, due to the lifespan of certain GHGs in the atmosphere. The EPA is currently providing expert input to develop a **National Adaptation Strategy** for Ireland in conjunction with relevant government departments. The aim is to help identify impacts, vulnerabilities, adaptive capacity, costs and response options for key social, economic and environmental sectors.

Research on climate change impacts and adaptation has mainly been progressed through the EPA's Climate Change Research Programme (CCRP 2007-2013). Research has progressed on climate modelling, climate analysis and the development of observation systems and indicators. Outputs have included analysis of potential impacts for Ireland, as summarised in the State of Knowledge[13] Report (Desmond et al., 2009).

12 www.youtube.com/user/epaireland#p/u/35/TYl9rH_tU-M
13 http://www.epa.ie/downloads/pubs/research/climate/CCRP1(low).pdf

Ongoing research in this area includes the development of climate change indicators and a national climate change vulnerability scoping study. The CCRP is also working towards the development of a web based tool to host key information in relation to the impacts of and adaptation to climate change in Ireland. It aims to disseminate relevant, accurate and authorative climate change information. The anticipated audience for the system are those involved in adaptation planning and decision making at the local and sectoral level.

EPA experts continue to participate in climate change negotiations and are active at national, European and International levels. Through our research and communication programmes we will provide up to date and relevant information on climate change to all of our stakeholders.

## Mitigation

Ireland has national and international obligations to reduce its greenhouse gas emissions and minimise the impacts of climate change. Through our own performance and practices we aim to set an example in the public sector for environmental management. The Emissions Trading Scheme ensures our largest emitters comply with emission allowances and decreases set for them under the scheme. The Cleaner Greener Production Programme funds more efficient resource use in industry from air emissions to waste management. Our research outputs contribute to mitigation efforts through projects which examine Sustainable Transport options, renewable sources of energy such as Biomethane, and Carbon Capture and Storage for Ireland[14]. We have also funded projects to expand research capacity and develop expertise in the quantification of emissions and sinks to soil, with a particular emphasis on agriculture and peatlands.

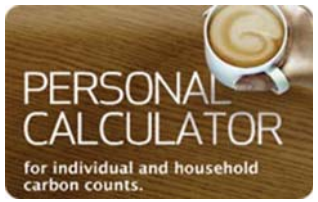
## What can you do?

Whether you are at home, at work, in school or in college everyone can play a part in tackling climate change. By improving energy efficiency, investing in renewable energy and adopting sustainable transport and development practices, we can reduce our contribution to climate change while creating a cleaner, greener and more prosperous country.

Play your part in tackling climate change! Learn how to reduce your impact on the environment, increase your green credentials and save money on energy and resources.

### Change.ie Carbon Calculators

For actions to reduce your personal greenhouse gas emissions check out your carbon number on the EPA carbon calculator.




For businesses, the Carbon Management Tool is a free online service designed to help your organisation reduce its carbon emissions.


You can find the calculators at
**www.epa.ie/whatwedo/climate/calculators/**

14 www.seai.ie/News_Events/Press_Releases/Storage%20of%20CO2%20Report%20Sept%2008.pdf

For more detailed information on climate change contact the EPA Climate Change Unit by any of the following means:


Climate Change webpages at **www.epa.ie/whatwedo/climate/**
**E-mail:** **info@epa.ie**
**Telephone:** **+353 1 2680100**


# Glossary

**CCRP**: Climate Change Research Programme

**CGPP**: Cleaner Greener Production Programme

**CLRTAP**: Convention on Long Range Transboundary Air Pollution.

**$CO_2$eq**: Total greenhouse gas emissions expressed as $CO_2$ equivalents. The CO2 emission is added to the equivalent emission of methane, nitrous oxide and so-called F-gases which are converted to $CO_2$ equivalents using their global warming potentials.

**ETS**: European Union Emission Trading Scheme

**F-gases**:These gases comprise the following three gases, HFCs (Hydroflurocarbons), PFCs(Perfluorcarbons) and SF6 (Sulphur Hexafluoride). They have very much higher global warming potentials than the naturally occurring GHGs (carbon dioxide, methane and nitrous oxide).

**GHG**: Greenhouse gas

**ICOS**: Integrated Carbon Observation System

**IPCC**: Intergovernmental Panel on Climate Change

**NCCS**: National Climate Change Strategy

**Non-ETS**: Non-ETS sectors cover those that are outside the EU Emissions Trading Scheme and include agriculture, transport,residential and waste.

**UNECE**: United Nations Economic Commission for Europe

**UNFCCC**: United Nations Framework Convention on Climate Change

**Units**: 1 Mt = 1,000 kilotonnes = 1,000,000 tonnes

# The Environmental Protection Agency

The EPA protects the environment for everyone in the country. We regulate and police activities that might otherwise cause pollution. Our priorities are protecting the Irish environment and ensuring that development is sustainable. **Our mission is:**

*'To protect and improve the natural environment for present and future generations, taking into account the environmental, social and economic principles of sustainable development.'*

**We are responsible for:**

- Environmental licensing of large scale waste and industrial activities
- National environmental policing of EPA-licensed facilities and overseeing local authorities' environmental protection responsibilities
- Monitoring, analysing and reporting on the environment
- Regulating Ireland's greenhouse gas (GHG) emissions
- Environmental research and development
- Strategic environmental assessment
- Environmental planning, education and guidance
- Proactive waste management and waste prevention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