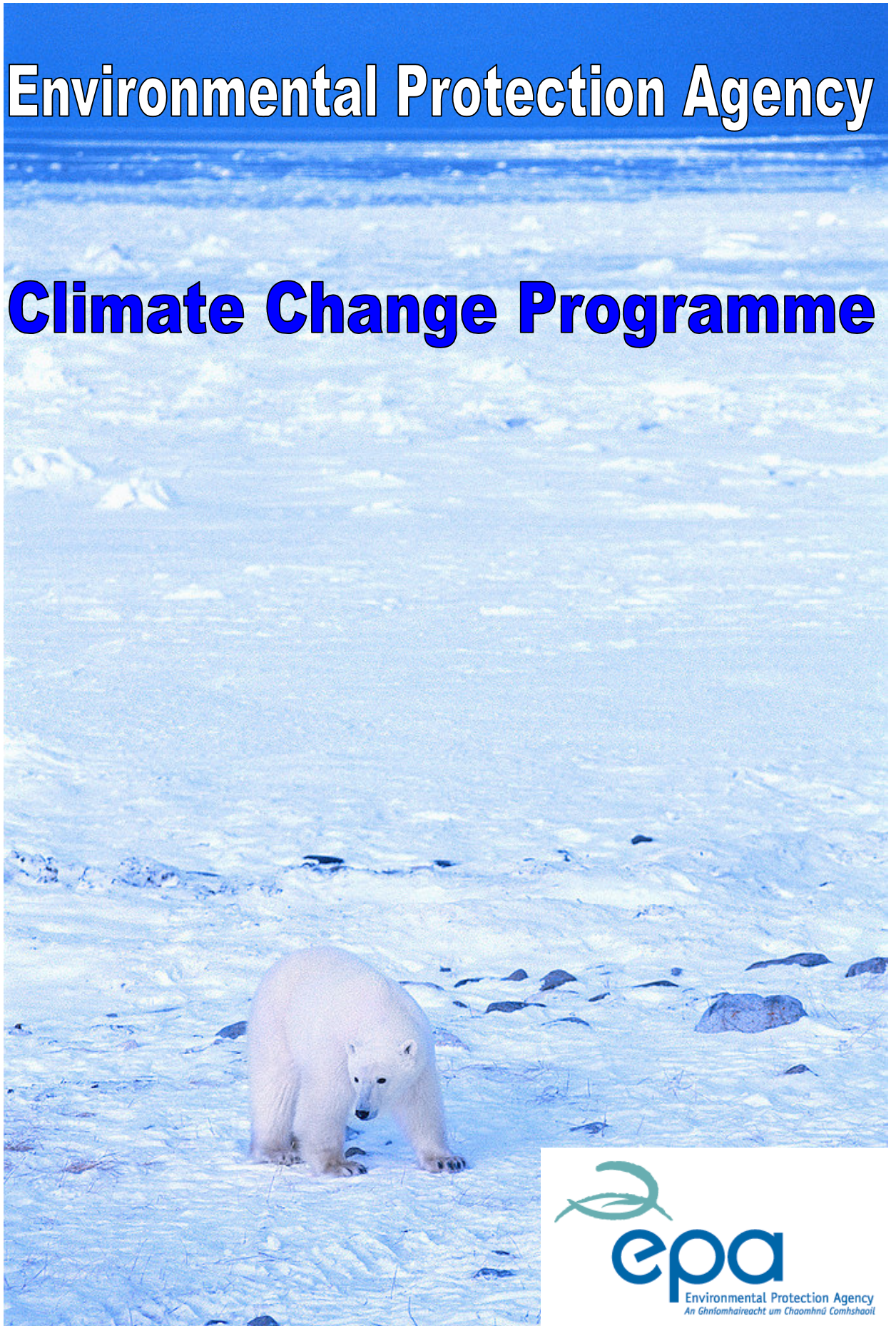


Environmental Protection Agency

Climate Change Programme



Environmental Protection Agency
An Ghníomhaireacht um Chaomhnú Comhshaol

Climate Change Programme

CONTENTS

Introduction	2
Chapter One – International Context	3
Chapter Two – European Context	7
Chapter Three – National Context	9
Chapter Four – EPA Climate Change Programme	11
Chapter Five - Conclusions	32
Figure 1	33
Figure 2	34

Climate Change Programme

Introduction

Background

The Kyoto Protocol, which established Greenhouse Gas emissions targets for industrialised countries, was agreed in 1997 following publication on the IPCC second assessment report (SAR). The SAR also informed the EU in adopting its climate protection target i.e. to limit global temperature increase to no more than 2 degrees Centigrade above pre-industrial levels.

The EPA 2020 Vision strategy (*Protecting and Improving Ireland's Environment*) and the National Climate Change Strategy, 2007, have strengthened the Agency's position on climate change and envisages new roles for the EPA in this area. This climate change programme provides a basis for addressing these developments.

EPA Programme

The Climate Change Programme in the EPA encompasses responsibilities for Emissions Trading, Kyoto Project Mechanisms, National Inventories, Emissions Projections, Scientific Advice, and Climate Change Research. It is structured into 8 functional areas as follows:

1. Emissions Trading - National Competent Authority;
2. Emissions Trading - National Allocation Authority;
3. National Emissions Trading Registry;
4. Kyoto Project Mechanisms;
5. Reporting and Review of National Inventories (for Greenhouse gases and for Acid Gases)
6. National Emissions Projections (for Greenhouse Gases and for Acid Gases);
7. Air and Climate Science (including Acid Gases and Earth Observations);
8. Climate Change Research (in particular the IDC-SSTI research programme).

Challenges ahead

Timely communication of the latest developments in all aspects of climate change to EPA Board, to Government, to other stakeholders and to the public at large will be a significant challenge facing the new programme. Attention will be paid to ensuring concise routine reports are available on a monthly basis to Directors. The EPA web site will be used to widen the treatment given to scientific and technical progress, to providing a repository of key data on emissions and projections, to collating summary information on the policies being implemented and potentially available, and to answering FAQs on the international context.

Climate Change Programme

Chapter One International Context

Main international bodies dealing with Climate Change and Atmospheric Emissions

The 1979 World Climate Conference identified climate change as an urgent problem. The Intergovernmental Panel on Climate Change (IPCC) was established in 1988 to assess the scientific understanding of climate change, its impacts, and possible response options.

The IPCC First Assessment Report in 1990 led to the establishment of the United Nations Framework Convention on Climate Change (UNFCCC) in 1992. Its objective is to stabilise atmospheric greenhouse gas concentrations at a level that would prevent dangerous human interference with the climate system.

The UNFCCC and its Subsidiary Bodies

The UNFCCC provides the international framework for agreement on actions to address climate change, which are implemented at regional, national and local levels. Operationally the UNFCCC consists of a number of linked bodies and expert groups supported by the Secretariat which is based in Bonn, Germany. The most notable of these are: the Conference of the Parties; the Subsidiary Body for Scientific and Technological Advice (SBSTA) and the Subsidiary Body for Implementation (SBI).

The COP and SB Meetings

The Conference of the Parties (COP) is the “supreme body” of the Convention. It is an association of all member countries that meets on an annual basis to decide on issues arising from the development and implementation of the Convention.

The members of SBSTA and SBI are multi-disciplinary experts nominated by governments to consider and address specific issues. The SBSTA and the SBI meet twice yearly and provide input and advice to the COP. One of the meetings takes place in Bonn in May and the second takes place in parallel with the COP near year's end.

SBSTA activities

The SBSTA functions as the link between the scientific, technical and technological assessments of information provided by competent international bodies, and the policy-oriented needs of the COP.

The SBSTA provides advice to the COP for use by the bodies governing the Kyoto flexible mechanisms. The SBSTA also focuses on the development of methodologies for national emissions inventories, projections and removals of GHGs and further improving and refining of these methodologies. It carries out

Climate Change Programme

methodological work on land use, land use change and forestry (LULUCF), and on the allocation and control of emissions from fuels used by aircraft or ships for international transport. The SBSTA is also involved in assessments of research.

SBI Activities

The SBI develops recommendations to assist the COP in its review and assessment of the effective implementation of the Convention.

The SBI reviews the financial mechanism of the Convention, which is established to assist developing countries in implementing their commitments. It also makes recommendations to the COP on the adequacy of commitments.

Ireland and the UNFCCC

At SBSTA Ireland is represented by the DEHLG on the Heads of Delegation and on the Expert Group on Further Action. In addition, K.Kizzier, F. McGovern and M.McGettigan represent Ireland on the expert groups on *Mechanisms on Science* and on *Reporting and Review* respectively. Other government bodies are also represented (see Figure 1).

The EU Presidency acts to co-ordinate the policy positions of member states for UNFCCC activities.

The Kyoto Protocol

The Kyoto Protocol was agreed in 1997 following the publication of the IPCC Second Assessment Report. It arose from the Berlin Mandate agreed at the first Conference of Parties (COP1). This mandate aimed to show that developed countries, which have historic responsibility for current GHG

levels in the atmosphere, would take a lead in reducing their emissions. These are known as Annex B Parties/Countries (38 countries).

The Protocol entered into force on 16 February 2005. Annex B Parties to the Kyoto Protocol agreed to reduce their collective GHG emission levels by at least 5 per cent below 1990 levels over a five-year commitment period from 2008 to 2012. The amount of carbon dioxide equivalent that a Party may emit during the commitment period, if it is to fully comply with its emissions target, is referred to as its assigned amount.

The Protocol applies to a basket of four individual gases (carbon dioxide, methane, nitrous oxide, sulphur hexafluoride) and two groups of gases (hydrofluorocarbons and perfluorocarbons) associated with certain sectors and source categories. Removals of GHGs by sinks can be counted towards a country's commitments, subject to certain conditions.

The annual Meetings of the Parties to the Kyoto Protocol (MOP) takes place along side the COP meetings. The first of these took place in 2005 in Montreal.

The Intergovernmental Panel on Climate Change (IPCC)

The IPCC was established in 1988, by the United Nations Environment Programme (UNEP) and the World Meteorological Organization (WMO) to provide an authoritative source of current knowledge on climate change. It is separate from the UNFCCC and has its own organisational structures and governing bodies. Membership is

Climate Change Programme

open to all members of the United Nations and the WMO. Its Secretariat is based in the WMO headquarters in Geneva.

The IPCC contributes key scientific information and assessments to the UNFCCC and has been instrumental in its formation and development. The IPCC does not carry out its own research but comprehensively assesses the scientific, technical and socio-economic information that is available in peer-reviewed literature, journals, books and from other competent sources.

The IPCC is structured in three Working Groups. Working Group I addresses the science of climate change, Working Group II deals with climate impacts, vulnerability and adaptation and Working Group III assesses mitigation options and opportunities.

The IPCC is best known for its assessment reports, which provide the authoritative source of information on climate change. The First Assessment Report 1990, confirmed the scientific basis for concern about climate change. The Second Assessment Report (SAR) in 1995 provided a basis for the negotiations that led to the adoption of the Kyoto Protocol. The Third Assessment Report (TAR) 2001, confirmed the findings of the SAR, providing new and stronger evidence of a human impacts on climate. The Fourth Assessment Report (AR4) was published in 2007 and further strengthens the science basis for linking climate change to human activities.

The IPCC also produces short special reports and technical papers on

specific issues. The IPCC has produced special reports on Land Use, Land Use Change and Forestry, Carbon Capture and Storage and links between actions to address climate change and stratospheric ozone depletion. A number of these have been produced at the request of the COP or the SBSTA.

The IPCC also includes a Task Force on National Greenhouse Gas Inventories. This Task Force provides methodologies for estimating and reporting of national GHG emissions. The IPCC 2006 Revised Guidelines for National Greenhouse Gas Inventories are used by all Parties in compiling their annual emission inventories. The IPCC also organises workshops and expert meetings to support its activities.

Ireland and IPCC

The DEHLG is the national contact point for the IPCC. The EPA through its role in development of climate change research has officially represented Ireland at IPCC Plenary and other key meetings, supported the engagement of Irish researchers with IPCC processes (e.g. on the AR4 report) and provided national responses to that report.

The EU does not formally act to coordinate inputs and responses to IPCC activities. EU member states act individually at IPCC meetings.

Other environmental Conventions and key links

Important links exist between the UNFCCC and the Vienna Convention (1985) and its Montreal Protocol (1987) on protection of the ozone layer. Ozone depleting substances

Climate Change Programme

are also important GHGs and their regulation is an important contribution to actions to protect climate.

The United Nations Economic Council for Europe (UNECE) **Convention on Long Range Transboundary Air Pollution (CLTRAP)** is the oldest convention addressing issues of transboundary air pollution on a regional basis.

The aim of the Convention is to limit and gradually reduce and prevent air pollution including long-range transboundary air pollution.

Parties develop policies and strategies to combat the discharge of air pollutants through exchanges of information, consultation, research and monitoring.

The Convention has been extended by eight protocols that identify specific measures to cut emissions of air pollutants. The best known of these is the Gothenburg Protocol which establishes emissions reduction targets for a number of transboundary species linked to environmental degradation, such as sulphur dioxide. This Protocol is intrinsically linked to the EC Clean Air For Europe (CAFÉ) process as outlined in Chapter Two below.

Within the UNECE region strong operational and analytical links exist between the UNFCCC and the Convention on Long Range Transport of Air Pollution (CLTRAP).

Observation systems

The development of systematic observations is a requirement under the UNFCCC, under CLTRAP and also under other global and regional conventions. The development of advanced observation systems through a combination of space based and in-situ observations is a key component of the European and wider international responses to these conventions. In particular the EU/ESA Global Monitoring for Environment and Security (GMES) initiative aims to contribute to work on a range of environmental issues including climate and atmosphere issues. This is also the case for the wider Group on Earth Observations initiative based in the World Meteorological Organisation, Geneva.

Future developments

While in the longer term the International conventions related to atmospheric protection may be consolidated, currently their implementation is on an individual basis at the international level.

However at national level the considerable synergies and links between these areas and issues warrant integrated activities and assessments.

The links between these areas are developed here as part of the wider remit of the EPA climate programme and under the IDC research activities.

Climate Change Programme

Chapter Two European Context

Main European structures dealing with Climate Change and Atmospheric Emissions

The EU and the UNFCCC

The EU has been a key supporter of the UNFCCC and has provided international leadership in relation to its development. This was exemplified in the EU position and role in the negotiation of the Kyoto Protocol. Ahead of the Kyoto COP meeting the EU agreed a position that the objective of the UNFCCC could be achieved if the average increase in global temperature did not exceed 2 degrees Centigrade above pre-industrial levels.

Structurally the EU Presidency leads on development of the response to climate change and engagement with the UNFCCC. This response is developed by the Working Party on Climate Change consisting of high-level representatives from each of the member states and the European Commission. This group meets on a regular basis, outside of the SB and COP sessions, to consider issues arising from the UNFCCC processes and agree responses. Key decisions or issues are referred to the Council of Ministers or the EU Council for agreement and sign off.

During the SB and COP/MOP sessions the Working Party is comprised of the Heads of Delegation from each Member State and the EC. The Working Party appoints a Lead Negotiator and an Issue Leader for each Agenda item or issue being

discussed at SBs and/or COP/MOP. It is the role of the leaders to ensure that the EU Position is represented in the negotiation and in the text of any resulting Conclusion or Decision. EPA staff have often acted as Lead Negotiators and Issue Leaders in previous COP/MOP and SB sessions.

When developing any position, the Working Party seeks input from the relevant expert group (see Figure 1). The number and membership of these groups varies according to the development of the Convention and Agenda items being considered under the COP/MOP and SB meetings.

Member state representatives provide information on activities at expert group meetings and develop reports and technical papers. The Expert groups provide a key route to influence the development of policy within the EU and the UNFCCC and also provide a crucial avenue for collaboration and information sharing. EPA staff currently represents Ireland on the *Mechanisms, Science and Reporting* Expert Groups.

EU ETS

The European Union (EU) and its Member States are signatories to the Kyoto Protocol. Under the Protocol, the EU committed to an average reduction of greenhouse gas emissions of 8% below 1990 levels for

Climate Change Programme

the then 15 Member States. Similar reductions are required for the 10 new Member States. Decision 2002/358/EC (the *Burden Sharing Agreement*) apportioned this 8% reduction among the 15 Member States and requires Ireland to limit the growth in emissions for the period 2008-2012 to 13% above base year emissions.

The EU Emissions Trading Scheme (EU ETS) has been implemented to assist in achieving emissions targets in a cost effective manner. The Directive established the largest ever international emissions trading scheme. The pilot phase (2005-2007) of the scheme is currently operational and the first Kyoto phase (2008-2012) begins in January 2008. The EPA has been given a broad remit for the implementation of the EU ETS in Ireland.

CAFÉ and UNECE CLTRAP

The EU Clean Air For Europe (CAFÉ) aims to develop a long-term, strategic and integrated policy advice to protect against significant negative effects of air pollution on human health and the environment.

Legal instruments arising from CAFE include the National Emissions Ceilings (NEC) Directive. The emissions reductions required in the NEC Directive are based on those in the Gothenburg Protocol. The targets are therefore incorporated into EU law.

The strong links which exist between the CAFÉ and CLTRAP processes are being further developed under the review and revision of the Gothenburg Protocol and the NEC Directive. This will establish longer term targets and

extend the range of pollutants to be covered e.g. include particulate matter.

EPA Climate Change Programme is also now responsible for reporting emissions and projections of these gases.

ECCP

The EU Commission has a key role in the development of the EU response to climate change through the development and implementation of climate change legislation. This is done through the European Climate Change Programme. The second phase of the European Climate Change Programme (ECCP II) was launched in 2005. ECCP II is the main EC instrument to discuss and prepare the further development of the EU's climate policy. This Programme is run in close cooperation with a wide range of stakeholders. The ECCP II consists of several working groups addressing:

- 1) ECCP I review (with 5 subgroups: transport, energy supply, energy demand, non-CO₂ gases, agriculture)
- 2) Aviation;
- 3) CO₂ and cars;
- 4) Carbon capture and storage;
- 5) Adaptation;
- 6) EU Emission Trading Scheme review.

The meetings and other events arising from the ECCP are open to experts from Member States. This process occurs in parallel with EU engagement with the UNFCCC processes and will result in Green Papers as well as additional and revised Directives on climate change issues.

EPA Climate Change staff participate as experts on request in these areas.

Climate Change Programme

Chapter Three - National Context

Ireland

The DEHLG develops the national policy response to climate change. This has been recently published in the revised National Climate Change Strategy (2007). Ireland is a Party to the UNFCCC and its Kyoto Protocol. Ireland is also a member of the IPCC. The Minister for Environment attends COP meetings. Ireland supports the EU position in relation to the development of the UNFCCC and adheres to its 2°C target as a valid interpretation of the objective of the UNFCCC.

Ireland's GHG emissions target is established within the overall EU bubble (for an 8% EU reduction) as part of the burden sharing agreements. The Kyoto Protocol also established three flexible mechanisms allowing countries to achieve a proportion of their commitments by earning credits for GHG emissions avoided or purchasing GHG removals achieved in other countries.

The DEHLG is the official link to the UNFCCC and attends the EU meeting for Ireland. Engagement with UNFCCC and IPCC processes other than via the EU Presidency is largely confined to operational activities arising from reporting and review obligations under the Convention. The DEHLG nominates experts from Ireland to EU Expert Groups and ECCP meetings.

At National level a range of Government Departments, Government Agencies and funding

bodies are involved in addressing the CC issue. These include:

■ Government Departments:

Environment, Heritage and Local Government; Agriculture, Fisheries and Food; Communications, Energy and Natural Resources (including Energy); and Transport & the Marine.

■ Government agencies:

EPA; Met Eireann; Teagasc; Council for Forest research (COFORD); Marine Institute (MI); Sustainable Energy Ireland (SEI); Geological Survey of Ireland (GSI).

■ Funding:

Agencies which have been allocated funding for Climate Change research: EPA, COFORD, MI, SEI and Irish Energy Research Council and the Department of Agriculture and Food.

Figure 2 summaries some of the inputs identified above.

Met Eireann's work on climate modelling will be further developed to support information provision in relation to adaptation needs under future climate change conditions.

The NCCS has identified a number of new operational roles for the EPA and other other state agencies as well as new groups and structures to address climate change and related issues. A new climate and atmosphere analysis centre will be established under the remit of the Environmental Protection

Climate Change Programme

Agency. This new centre will strengthen analytical capacity in support of current and emerging regulatory and monitoring activities on climate change and wider atmospheric protection issues. It will provide support for implementation of policies and measures to reduce greenhouse gas emissions. The NCCS also emphasises and strengthens the ongoing work of the EPA in the areas of climate change research, emissions trading, inventory and projections. This work is outlined in more detail in the following Chapter.

Climate Change Programme

Chapter Four EPA Climate Change Programme

EPA Role

The *EPA 2020 Vision Strategy (Protecting and Improving Ireland's Environment)* identified key objectives for the EPA in relation to climate.

■ LIMITING AND ADAPTING TO CLIMATE CHANGE

- “Ireland will achieve major reductions in greenhouse gas emissions and will be prepared for the unavoidable impact of climate change.”

■ ENVIRONMENTAL CHAMPION

- Operate the EU Emissions Trading Scheme in Ireland. This will include preparation of national allocation plans, issuing of allocations and permits to the trading scheme facilities, and monitoring, verifying and reporting carbon dioxide emissions of the facilities.
- Help reduce emissions of greenhouse gases and promote energy efficiency by working with national, regional and local bodies.
- Advocate for the greater penetration of renewable resources and investment in public transport.

■ LICENSING & ENFORCEMENT

- Control greenhouse gas emissions at licensed industrial and waste sites through our licensing systems and emissions trading scheme.
- Monitor facilities licensed by the EPA to check that they are in compliance with their licence

conditions, and take action against those not in compliance.

■ MONITORING, INFORMATION & COMMUNICATIONS

- Provide analysis and informed advice to policymakers and decision-makers on emissions reduction strategies and adaptation measures.
- Meet Ireland's international obligations by preparing national inventories on greenhouse gas emissions for submission to the EU and other international bodies.
- Continue to raise awareness among the public of climate change issues, highlighting the need to reduce emissions and to adapt to the impacts of climate change.
- Provide advice and support to Government departments and state agencies in relation to flood risk and water resources management by compiling information on river flows and levels from the national network of hydrometric monitoring stations.

■ RESEARCH & CAPACITY-BUILDING

- Coordinate and publish research on climate change in Ireland and participate in international research activities on mitigation and adaptation and on emissions reduction potentials.

Climate Change Programme

- Target new research on the use and deployment of low carbon technologies and on assessing barriers to behavioral change.

The revised NCCS identified new roles for the EPA:

- A new climate and atmosphere analysis centre will be established under the remit of the Environmental Protection Agency. This new centre will strengthen analytical capacity in support of current and emerging regulatory and monitoring activities on climate change and wider atmospheric protection issues. It will provide support for implementation of policies and measures to reduce greenhouse gas emissions through:
 - the provision of a focal point for analysis and assessment of greenhouse gas emissions and sinks and wider atmospheric issues;
 - linking outputs from research, regulatory and monitoring activities and bridging gaps between these areas;
 - the provision of new analytical capacity which will link to similar centres and activities within Europe and more widely; and
 - regulatory activities and assessment of the effectiveness of policy responses.

The Climate Change Programme in the EPA encompasses responsibilities for Emissions Trading, Kyoto Project Mechanisms, National Inventories, Emissions Projections, Climate Change Research and Scientific

Advice. It is structured into 8 functional areas as follows:

1. Emissions Trading - National Competent Authority;
2. Emissions Trading - National Allocation Authority;
3. National Emissions Trading Registry;
4. Kyoto Project Mechanisms;
5. Reporting and Review of National Inventories (for Greenhouse gases and for Acid Gases)
6. National Emissions Projections (for Greenhouse Gases and for Acid Gases);
7. Air and Climate Science (including Acid Gases and Earth Observations).
8. Climate Change Research (in particular the IDC- SSTI research programme);

Each of these areas is described in more detail in the following sections. They are individually technically challenging and are structured to allow optimum management of the various elements. Having the different streams working together under the one programme will facilitate better co-ordination of output together with increased communications and synergies.

Climate Change Programme

1. Emissions Trading - National Competent Authority

The National Competent Authority (NCA) has the following principal tasks:

- To issue permits to operators of installations covered by the Emissions Trading Scheme.
- To ensure that permit holders are capable of monitoring and reporting the greenhouse gas emissions specified in their permit (currently CO₂ only) and that such reporting is carried out in accordance with the EU Commission's guidelines.
- To ensure that all operators enter their total verified emissions into the National Emissions Trading Registry and submit a verified report on their annual emissions of greenhouse gases (the Annual Installation Emissions Report – AIER) in accordance with a specified format.
- To verify data submitted by operators in order to claim free allocation of allowances as part of the National Allocation Plans or through an application to one of the New Entrants Set-Asides.

Permitting

The NCA issues guidance to operators on how to apply for a permit and carries out site visits to assess the application and to check the ability of the operator to monitor and report the relevant greenhouse gas emissions. The permit is issued to the operator and displayed on the EPA website.

The permit requires that any changes to the installation which could require an update of the permit are reported to the National Competent Authority and, where necessary, the NCA issues a modified permit.

Monitoring and reporting

Permit holders are required to submit a *monitoring and reporting plan* in accordance with the EU Commission Monitoring and Reporting Guidelines (MRG) for greenhouse gases under the scheme and the NCA are required to examine and approve the plan. The MRG have been revised and the changes will come into effect in January 2008. The NCA will brief operators and verifiers on the new guidelines and require operators to submit revised monitoring and reporting plans during the second half of 2007.

Verification

Verification of the Annual Installation Emissions Report (AIER) is carried out by accredited third party verifiers. The Irish National Accreditation Board (INAB) has been given responsibility by the NCA for accrediting greenhouse gas verifiers. The NCA liaises regularly with INAB and the verification bodies and issues guidance on Annual Verification in Ireland.

Although responsibility for ensuring the adequacy of the data in the AIER lies with a third party verifier the NCA checks the adequacy of the verified reports in a desk-top study, passes on any comments on the standard of verification to the accreditation body

Climate Change Programme

and, where errors are detected, the NCA ensures that emissions are updated on the Registry and that the operator surrenders further allowances if necessary.

Baseline data/New Entrant data verification

In Ireland, the NCA is responsible for verification of the baseline data for each National Allocation Plan. This involves the assessment of both historical emissions and, for more recently commenced sources, emissions projections. Similarly applications for allowances from the New Entrants Set Aside are initially assessed by the NCA, with input where necessary on business projections from the National Allocation Authority (see next section).

Other tasks

Article 21 of the ETS Directive requires each Member State to report annually

to the Commission on the implementation of the Directive. This report is placed on EIONET and the European Environment Agency compiles a summary report of the individual Member States' reports. The NCA compiles this Article 21 report with input from the Registry Manager and the DEHLG where necessary.

Harmonisation of Monitoring, Reporting, Verification and Accreditation across the EU is of greater importance than in most other environmental legislation because of the need to ensure that a tonne of CO₂ emitted in Ireland is the same as a tonne emitted in any other EU country. The NCA contributes to several working groups on Monitoring, Reporting, Verification and Accreditation in order to play a role in harmonisation and to keep abreast of developments in these areas.

Climate Change Programme

2. Emissions Trading - National Allocation Authority

Background

The EPA has been assigned responsibility for the implementation of the EU ETS in Ireland under S.I. 437 of 2004. Part of the remit involves the design and implementation, in accordance with the direction of the Minister for Environment, Heritage and Local Government, of a National Allocation Plan for each trading period which indicates:

- What proportion of national emissions will be assigned to emissions trading; and
- How the portion assigned to emissions trading will be distributed among entities covered by the scheme.

The first National Allocation Plan (NAP1) covering the period 2005-2007 was approved in July 2004. The second National Allocation Plan covers the period 2008-2012 and is currently in the approval process.

A National Allocation Advisory Group (NAAG) was appointed by Government to advise the EPA on how best to discharge its obligations in formulating the National Allocation Plan. The Group comprises the Chief Executives (or their senior nominees) of the Commission for Energy Regulation, Forfás, the National Treasury Management Agency and Sustainable Energy Ireland, together with the Director General of the EPA, under the chairmanship of Dr. E. Walsh.

Further, input into each National Allocation Plan was sought from the

public (including operators of installations covered by the scheme) by way of public consultation. It is the responsibility of the NAA to process submissions received during the public consultation phase and to incorporate comments into the National Allocation Plan as appropriate.

National Allocation Plans

The EU ETS Directive requires that National Allocation Plans are based on objective and transparent criteria including those described in Annex III which lists eleven criteria (some mandatory; some optional) to be considered in the development of the National Allocation Plan. A Communication from the Commission issued in 2004 contained guidance on the completion of National Allocation Plans by Member States, and in particular on the application of the eleven criteria listed in Schedule 3 of the Regulations. A further Communication from the Commission was issued in 2005 supplementing the previous guidance, with the aim of ensuring increased harmonisation among Member States in the interpretation of various issues. In addition this communication incorporated a twelfth criterion requiring the Second National Allocations Plan (NAP2) to specify the maximum amount of allowances from the project mechanisms which may be used by operators.

Meeting all the above requirements makes preparation of each NAP (at five yearly intervals from now on) a challenging task involving the consideration of many complex issues.

Climate Change Programme

In order for approval to be granted each NAP (for both trading periods for all Member States) must be considered by both Working Group 3 and by the Climate Change Committee of the Directorate General of Environment of the European Commission. The NAA represents Ireland at these meetings and both presents and defends Ireland's NAP as well as contributing to the scrutiny of the NAPs submitted by the other 26 EU Member States.

benefit of the Exchequer. To date, the NAA has held two auctions (the first in February 2006 with the second in December 2006) while a third is planned for later in 2007.

Draft NAP2 has also set-aside allowances for auction or sale. The recommended methodology and implementation of the auction will fall under the remit of the NAA.

New Entrant Set-Aside

The Greenhouse Gas Emissions Trading National Allocation Methodology & Allocation Decision (2005-2007) commonly referred to as NAP1, established a New Entrant Set-Aside and a CHP Set-Aside and procedures for allocating from each. The NAA and the NCA assessed all applications for allowances from the set-aside in this context. For each approved application the NAA recommended an allocation and allocated allowances as appropriate pending Board approval. In total, 49 applications were received of which 46 have been fully processed with the remaining three nearing completion.

Draft NAP2 has established similar set-asides and procedures and the NAA will be required to assess each application for the 2008-2012 period and make related recommendations and allocations.

Auction

In accordance with NAP1 the EPA is required to auction allowances in order to fund the administration of the Emissions Trading scheme in Ireland. In addition, allowances arising from closures are to be auctioned to the

Climate Change Programme

3. National Emissions Trading Registry

The National Registry

Under the Kyoto Protocol and the EU ETS, Ireland is required to establish and implement a National Registry to track the creation, holding, transfer and compliance processes associated with Assigned Amount Units, Kyoto Project Units and European Allowance Units. Each national registry must conform to detailed technical standards.

The EPA is responsible for the implementation and management of the National Registry in Ireland including security and governance. This is a crucial role of the EPA as the Registry tracks the holding and trading of Kyoto units and EU allowances with values exceeding €1 billion. Governance is managed through an operating procedure which is created and maintained by the EPA with independent approval by external auditors. The quality of the Security System is also audited regularly.

EU Emissions Trading Scheme (ETS)

Under the European Communities (Greenhouse Gas Emissions Trading) Regulations 2004 (S.I. 437 of 2004) the EPA must maintain a registry that covers:

- serial numbers of allowance units
- transaction rules, including termination of invalid transactions.

In order to ensure consistent implementation and facilitate collaboration, the European Commission convenes the EU Registry Administrators forum at which Ireland (EPA Registry staff) are regular participants.

UNFCCC/Kyoto Protocol

The Kyoto Protocol requires that its rules apply and its procedures are used within the National Registry system. Crucially, under the Kyoto Protocol the proper maintenance and operation of the National Registry System is a requirement for eligibility for International Emissions Trading. In other words, if the National Registry is not implemented and maintained to a strict standard, Ireland and its entities would not be eligible to participate in the mechanisms under the Kyoto Protocol or the EU ETS.

Common Procedures for the operation and maintenance of Registry Systems and collaboration amongst Registry System Administrators and the UNFCCC Secretariat is maintained through the UNFCCC RSA forum. Ireland is represented at this forum by EPA staff.

Registry Application, GRETA

Ireland is using the GRETA Emissions Trading System that was developed by DEFRA (Department of Environment, Food and Rural Affairs) in the UK and

- All requirements as given in the EU Registries Regulation
- data exchange and communication between registries, via the Community Independent Transaction Log
- data security,

Climate Change Programme

is licensed to 17 other countries. This software is regularly updated to provide up to date functionality in line with legal requirements and to address issues and enhance performance.

Registry Operations

The EPA is responsible for the management of all National Accounts required under the Kyoto Protocol and the EU ETS and the creation and maintenance of Users and Entity Accounts on the system. Issuance and allocation of allowances and assigned amount units (AAUs) into the National Account and then on to operators is undertaken as specified in the Compilation and Accounting Database under the Kyoto Protocol and in the National Allocation Plan (NAP) respectively. Reconciliation between the National Registry and the International Transaction Log (ITL) and the EU Community Independent Transaction Log (CITL) is also managed by the NETR. The compliance process under the EU ETS and the Kyoto Protocol (Verified Emissions, Surrender and Retirement) of EU ETS units and all Kyoto units are also managed within the registry.

Compliance

The registry is the main tool for calculating compliance within the EU Emissions Trading Scheme and within the Kyoto Protocol. Under the EU ETS, all operators must have entered their verified emissions into the National Registry by the 31st March in each year. By the 30th April annually all operators must have surrendered the correct number of allowances to cover their verified emissions within the Registry. Any operator who fails to comply with these requirements is liable for penalties as specified in the

Emissions Trading Directive. The EPA must also annually retire all surrendered allowances by June 30th each year.

At the end of the initial phase of the Kyoto Protocol, Ireland will have to retire units equivalent to the total emissions of GHGs during the period. The retirement process and hence the record of Ireland's compliance with the Kyoto protocol is managed through the National Registry.

Policy Advice

As the National Registry is a mechanism to implement the detailed rules and procedures of the Kyoto Protocol (Marrakech Accords) and the EU Emissions Trading Scheme (EU ETS) the NETR team have a unique insight into the detailed structure of these schemes. As a result technical and policy advice is provided to Government, to Operators under the EU ETS, to industry and to other interested parties as appropriate.

Eligibility for International Emissions Trading

Ireland needs to pass certain eligibility requirements in order to partake in International Emissions Trading from January 1, 2008. The UNFCCC Expert Review team will complete an Independent Assessment Report by September this year covering three areas:

- Registry Readiness,
- Connectivity and
- Interoperability

Once these requirements have been met Ireland's Registry will be ready to connect to the UN's ITL.

Climate Change Programme

4. Project Mechanisms

Overview of Project-Based Mechanisms under the Kyoto Protocol

The Kyoto Protocol allows for emission reductions to be carried out in projects implemented abroad through the Clean Development Mechanism (CDM) and Joint Implementation (JI). These “project-based” mechanisms allow Parties to the Kyoto Protocol to implement emission reduction projects in other countries in exchange for credits which can be used towards achieving the Kyoto target.

When projects are carried out in countries without a Kyoto target (non-Annex I Parties) they operate under the “Clean Development Mechanism” and the credits earned are called “Certified Emission Reductions” (CERs). The CDM generates investment in developing countries, especially from the private sector, and promotes the transfer of environmentally-friendly technologies.

When projects are carried out in countries with a Kyoto target (Annex I Parties) they operate under “Joint Implementation” and the credits earned are called, “Emission Reduction Units” (ERUs).

Irish Companies can also benefit from the project-based mechanisms. The “Linking Directive” (2004/101/EC) allows Operators under the EU ETS to use the credits earned through JI and CDM towards compliance in Ireland.

Project Approval

Both the CDM and JI mechanisms require project approval by all Parties involved. Project approval is granted by an official notice to prospective participants referred to as the “*Letter of Approval*” (LoA).

CDM – Designated National Authority

Approval for participation in each CDM project must be granted by the Designated National Authority (DNA) in each Annex I and non-Annex I Party. SI 244 of 2006 established the EPA as the DNA in Ireland. The Project Mechanisms team have established a procedure for issuing *Letters of Approval* to prospective Irish project participants and support for the process is provided via the EPA website, email, phone contact and meetings as required. Further, the Mechanisms team provides technical and legislative advice to Government, to traders, to industry and to other interested parties.

In order to ensure that the process is consistently implemented to the extent possible across Annex I Parties and to ensure sufficient collaboration with DNAs in host countries (non-Annex I) a DNA forum has been established and the Project Mechanisms team participate in these meetings regularly.

The CDM is regulated and supervised by the CDM Executive Board (CDM EB) consisting of 10 members and 10 alternates appointed by the Conference of Parties serving as the Meeting of Parties to the Kyoto

Climate Change Programme

Protocol (COP/MOP). Project registration, methodology approval and the issuance of CERs are ultimately under the remit of this Board. As such, the Project Mechanisms team attends CDM EB meetings when impending decisions and guidance are relevant for Ireland.

JI - Focal Point

Approval for each JI project must be granted by the Focal Point (FP) in each participating Annex I Party. SI 244 of 2006 established the EPA as the designated Focal Point in Ireland. In line with the National Climate Change Strategy, the EPA is not currently mandated to approve JI projects in Ireland, but issues *Letters of Approval* to Irish companies wishing to participate in JI projects abroad. The Project Mechanisms team have established a procedure for issuing *Letters of Approval* to prospective Irish project participants and support for the process is provided via the EPA website, email, phone contact and meetings as required. Further, the Mechanisms team provides technical and legislative advice to Government, to traders, to industry and to other interested parties. The world's first ever project under the Joint Implementation mechanism was undertaken by an Irish entity with project approval issued by the EPA.

Joint Implementation is regulated and supervised by the JI Supervisory Committee (JISC) consisting of 10 members and 10 alternates appointed by the Conference of Parties serving as the Meeting of Parties to the Kyoto Protocol (COP/MOP). As such, the Project Mechanisms team attend JISC meetings when impending decisions and guidance are relevant for Ireland.

EU Mechanism Experts

As the EPA have been given a lead role in the implementation of all of the Kyoto Mechanisms in Ireland (Joint Implementation, Clean Development Mechanism, International Emissions Trading, National Emissions Trading Registry) the Project Mechanisms team in the EPA is responsible for representing Ireland internationally and for providing technical policy advice to Government. The main forum for this input is the EU Mechanisms Expert Group (Mexperts). The Mexperts are chaired by the Presidency and meet regularly to consolidate the EU position on all matters relating to the Kyoto Mechanisms. It is the responsibility of the Project Mechanisms team to ensure that the consolidated position and the related decisions represent Ireland's interests and/or do not adversely impact national policy or contradict national legislation. Once a consolidated EU position is reached, it becomes the mandate for the EU representatives in the intergovernmental negotiation process. Under the UNFCCC and the Kyoto Protocol this process mainly encompasses the Conference of Parties & the Meeting of Parties (COP&MOP) and the meetings of the Subsidiary Bodies (SBI/SBSTA).

Climate Change Programme

5. Reporting and Review of National Inventories

Estimates of national anthropogenic emissions and removals of GHG to/from the atmosphere are compiled on an annual basis by the EPA.

The Department of the Environment Heritage and Local Government (DEHLG) has designated the EPA as the inventory agency with responsibility for the compilation and submission of various emissions data to the EU, the UNFCCC Secretariat and the UNECE Secretariat, as outlined below. The EPA inventory experts are also active participants in the annual review of national submissions by other countries under the UNFCCC and the Kyoto Protocol.

Kyoto Protocol

Article 5.1 of the Kyoto Protocol requires that each Party included in Annex I shall have in place, no later than one year prior to the start of the first commitment period, a national system for the estimation of anthropogenic emissions by sources and removals by sinks of all greenhouse gases not controlled by the Montreal Protocol. Guidelines for national systems were formally adopted as Decision 19/CMP.1 at COP/MOP1 in Montreal in 2005.

In Ireland, the National Atmospheric Inventory System (NAIS) is established by Government Decision of 3rd April 2007. It establishes the necessary institutional, legal and procedural arrangements for the compilation of robust inventories of

national emissions to the atmosphere. The NAIS is, in essence, a management system which assures the quality of inputs to, and outputs from, the national atmospheric inventory.

The primary objective of the National Atmospheric Inventory System is to ensure that Ireland can compile a robust and verifiable inventory of atmospheric emissions and report its emissions (and removals by sinks) in accordance with relevant international obligations under the Kyoto Protocol. It also facilitates the review of information submitted under international obligations and provides a means for improving the quality of emission inventories. This will become an increasingly important aspect of reporting in the years ahead as timely and complete high quality GHG inventory submissions are needed to ensure continued eligibility to use the Kyoto mechanisms.

The system will be implemented initially for the reporting years 2006 through 2012. It will be reviewed after a period of three years to assess its efficacy and efficiency taking into account the experience gained by all participants and entities in the implementation of the NAIS.

Emissions of acid gases are also compiled and reported to meet Ireland's requirements under the NEC Directive.

Climate Change Programme

Reporting Commitments 2007

Data Flow	Date	Remarks	Directive	Gases
EU GHG data	15/01/2007	Initial estimates for GHGs for 2005 & Draft NIR 2007. Data on GHG Indicators reports.	280/2004/EC monitoring mechanism	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆
CLTRAP data	14/02/2007	Final 2005 data and time series 1990-2005	Protocols under CLTRAP	SO ₂ , NO _x , CO, VOCs, NH ₃ , PM10, PM2.5, TSP, Cd, Hg, As, Annex III POPs.
EU GHG data	15/03/2007	Final 2005 data, time series 1990-2005 and Final National Inventory Report 2007	280/2004/EC monitoring mechanism	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆
UNFCCC data	15/04/2007	Final 2005 data, time series 1990-2005 and National Inventory Report 2007	Framework Convention on Climate Change	CO ₂ , CH ₄ , N ₂ O, HFCs, PFCs and SF ₆
LCP data	30/09/2007	2006 data from Large Combustion Plants, time series 1990-2006	2001/80/EC	SO ₂ , NO _x and Dust.
NEC data	31/12/2007	Final 2005 data, provisional 2006 data and projections for 2010	2001/81/EC National emission ceilings	SO ₂ , NO _x , VOCs, NH ₃

Climate Change Programme

6. National Emissions Projections

The primary aim of developing national emissions projections is to monitor progress in meeting our national and international emission targets; to inform EPA, Government and others as to the likely effect of current policies (if continued); and to assist decisions on future policy options and responses.

In addition the National Climate Change Strategy has identified the need to ensure:

- Annual greenhouse gas and acidifying gas emission projections are submitted annually to DEHLG. These projections will form part of DEHLG's annual progress report to Government on implementation of the National Climate Change Strategy.
- Bi-annual projections of greenhouse gas emissions to be submitted to the EU Commission under reporting requirements set out under Council Decision 2004/280/EC.
- Annual projections of acidifying gases to be submitted to the EU Commission under reporting requirements set out under NEC Directive 2001/81/EC

Greenhouse Gas Projections

Under Decision 2004/280/EC, projections of greenhouse gases (GHG) must be reported on a sectoral basis giving priority to those sectors that have the most impact on GHG emission levels. To the extent possible the following sectors should be considered: (i) Energy (ii) Transport (iii) Industry (iv) Agriculture (v) Forestry and (vi) Waste management. Projections for greenhouse gases must be reported under a “with

measures” scenario and under a “with additional measures” scenario.

Developing emissions projections for greenhouse gas emissions is a complex process, involving several strands of analytical and modeling work.

- Energy supply and demand forecasts are currently produced by the Economic, Social and Research Institute (ESRI) for Sustainable Energy Ireland (SEI) using a macroeconomic model. These energy forecasts hold the potential to underpin the EPA's emissions projections work for the energy, transport and industrial sectors.
- Forecast sectoral energy demands are converted into GHG emissions using models developed by the EPA's inventory team.
- Policy measures are incorporated into the energy/emission forecasts in a number of ways
 - a. Some are included by changing inputs in the model directly (needs liaison with ESRI/SEI to assess potential).
 - b. In other cases significant analytical work is required to assess the impact of a particular policy or measure. Liaison with the relevant Government Department is required.
- Methodologies and models to determine projections for sub-sectors that are not included in the ESRI/SEI energy forecasts (e.g. oil refining, solid fuel manufacture, industrial processes, rail transport, navigation, domestic aviation, fugitive emissions from natural gas

Climate Change Programme

distribution and production) will need to be developed.

- Activity data to underpin the development of non-energy related greenhouse gas emission projections (e.g. waste and agriculture sectors) will be developed in consultation with relevant bodies (e.g. Teagasc for agriculture emissions). These activity data are converted into emissions using models developed by the EPA's inventory team.

Different models and approaches for developing emissions projections are used by Member States and Convention Parties. It will be important to keep up-to-date with developments and assess the potential of other approaches and models for Ireland by attendance at key EU and international meetings and associated workshops (e.g. Climate Change Committee's Working Group II on National Programmes and Projections).

Much of the work involving emission projections needs to be supported by longer-term research projects. Key sensitivities and uncertainties will need to be determined with time. In addition, it is intended to bring together a 'Projections Advisory Group', comprised of key internal and external stakeholders, to input into the development of projections work.

Acidifying Gases Emission Projections

The National Emission Ceilings Directive requires Member States to report, inter alia, annual emission projections of NH₃, NO_x, SO₂ and VOCs. These four pollutants are primarily responsible for acidification,

eutrophication, and the production of ground-level O₃. To date, emission projections of these gases have been produced by the EPA's inventory team in collaboration with the DEHLG on an ad-hoc basis. Henceforth, the EPA's projection work will now include the development of emission projections for acidifying gases on an annual basis.

Development of these emission projections will largely build on the work underpinning greenhouse gas emissions projections. However, additional work will include:

- Converting energy forecasts into the relevant emissions using models developed by the EPA's inventory team.
- Developing expertise to model NO_x emissions from road transport – the complexity of these emission processes requires separate modeling.
- Emissions from the power generation sector will require dedicated modeling to capture the complexity of these emission processes.
- NH₃ emission projections from the agricultural sector will require specific considerations.
- Quantifying the impact of policies and measures and their impact on the emissions of acidifying gases will require additional analytical work.
- Representation on key international and EU task force meetings (e.g. UNECE Task Force on Emission Inventories and Projections) to keep up-to-date on developments in modeling and projection methodologies.

Climate Change Programme

7. Air and Climate Science and Observation Systems

Introduction

Human induced changes in atmospheric composition are responsible for key global and regional environmental challenges.

Science has been the main driver of international actions on issues such as climate change and transboundary air pollution at global and regional levels.

Complex scientific links exist between these areas and synergies and trade-off occur in the development of responses to these issues. Analyses of these in the context of evolving scientific understanding is required.

Programme contributions

The overall aim is to provide science and observation based analyses of issues in support of policy development in Ireland in the context of developments at EU and UN levels.

The development of observation systems is required under the UNFCCC and CLTRAP. These interface with European and international initiatives on observations systems such as GMES and GEO.

Approaches

The strategic approaches to research and observation systems on climate, transboundary pollution are outlined here. Linkages between these and other areas (e.g. ozone-depleting substances) are highlighted.

Science of Climate change

The objective is to enhance and develop scientific understanding of climate change issues in order to

support policy development. The aims are:

- To provide the scientific basis for achievement of sustainable GHG emissions
- To provide analysis of climate change impacts, key vulnerabilities and to identify sustainable adaptation options
- To increase understanding of factors influencing the radiative balance
- To develop and sustain observations systems and analyses of data
- To identify, develop and promote socio-economic and technological solutions

Transboundary air-pollution

The objective is to develop scientific understanding of emissions to the atmosphere, transport and processes, impacts and options and solutions in support of the development of policy responses. Aims include

- To improve analysis of anthropogenic emissions and approaches to reducing these
- To develop understanding of atmospheric impacts on pollutant properties, transport and removal processes
- To study interactions of pollutants with biogeochemical processes and cycles
- To develop systems and tools for integrated analyses of abatement options

Roles and links

In addition the research programme will

- Coordinate and integrate outputs from related research funded by

Climate Change Programme

other state agencies, government departments and companies

- Advance strategic links with
 - European Commission (EC) Framework Program (FP) and European Space Agency (ESA) Earth Observations research programs,
 - Other countries with shared research interests e.g. New Zealand on GHG emissions
 - The British Irish Council and on a North-South basis
- Promote researcher participation in key international bodies & research councils e.g. the Intergovernmental Panel on Climate Change, and Task Forces under CLTRAP

Location and development

Ireland's location, infrastructure and environment, attracts significant international research interest. The aim is to further develop and utilise such interest by targeted development of research infrastructure and fostering leadership based on geographic advantage.

Observation systems

Observation systems are required at national and local levels that are in line with regional and global observations as identified by the UNFCCC Global Climate Observation System (GCOS) programme and under the EMEP observation strategy.

The Global Monitoring for Environment and Security (GMES) initiative aims to integrate in-situ and remotely-sensed data in support of EU environmental policies. It is also the European contribution to the wider Group on Earth Observations initiative.

EPA Programme

The EPA programme will work with other state agencies and groups to develop research and systemic observation. It will

- Facilitate and target the provision of policy relevant assessments of scientific developments at relevant fora
- Synthesize findings in support of national actions
- Contribute to relevant EU Expert groups and
- Provide input to UN bodies and groups e.g. SBSTA, CLTRAP and CAFÉ bodies.
- Interact and develop links with research bodies and groups within Europe and at a wider international level

This will provide key information in development of the *EPA 2020 Vision Strategy (Protecting and Improving Ireland's Environment)*, the NCCS and contribute to the work in relation to the updated national program on the NEC Directive.

Climate Change Programme

8. Climate Change Research Programme (CCRP)

The EPA's Climate Change Research Programme is aimed at filling gaps in scientific knowledge and understanding in priority areas as indicated in the National Climate Change Strategy (NCCS) 2007-2012. The programme builds on projects funded by earlier EPA research programmes, notably the ERTDI programme 2000-2006.

The Climate Change Research Programme is funded from resources allocated to the EPA by the Interdepartmental Committee on Strategy for Science, Technology and Innovation (IDC SSTI) and from funds allocated under STRIVE. The programme provides the means to tackle a number of the key research and capacity building tasks set out in the *EPA 2020 Vision Strategy (Protecting and Improving Ireland's Environment)* under Goal 1: Limiting and Adapting to Climate Change and Goal 2: Clean Air. It will also assist in addressing a number of the scientific and technical objectives in the NSSC.

Scope of the programme

This research programme consists of three main thematic areas and one co-ordination, communications and policy linkage activity. These are described below:

- Co-ordination, communication and management
- Thematic areas
 1. Greenhouse Gas Emissions and Mitigation
 2. Impacts and Adaptation
 3. Technology and Socio-economic analysis

Co-ordination, communication and management

The three technical areas will be managed by a Climate Change Research Programme co-ordination team who will be responsible for ensuring that work in the thematic areas is carried out to the highest possible standard. In addition this team will be responsible for ensuring that the research is co-ordinated with other national programmes and for communicating the findings to policy makers, stakeholders with responsibility for GHG emissions reduction and the public.

Main actions: Establish structures and systems for management of the research programme and appropriate mechanisms for networking with other funding agencies. Appoint a programme review group to advise on the direction of the programme and on the development of a follow-on programme. Fund a number of communications projects and actions to engage stakeholders, decision makers and also local community awareness initiatives.

Indicative budget: €0.6m.

Technical content of the programme

- Greenhouse Gas Emissions and Mitigation

The main aim of the research in this thematic area is to strengthen forecasts and to carry out in-depth examination of reduction options through estimating the capacity of various sinks and mitigation actions.

Climate Change Programme

This work will provide detailed analysis for future EU and UN emissions targets for Ireland.

Main actions: Establish a national group of priority projects and researchers focused on delivery of more comprehensive analysis of Irelands greenhouse gases and on measures to offset these.

Indicative budget: €1.06m

■ Impacts and Adaptation

The main aim is to develop systems for determining the impacts of climate change on the Irish environment and to generate information for those responsible for policy and planning for adaptation to climate change. The main focus will be on climate modeling at regional scale to produce predictions of types and locations of impacts on Ireland for planning purposes.

Main actions: Establish climate models for a range of assessments including the stability of ocean circulation and sensitivity of Irelands climate to Atlantic circulation, ocean river discharge, coastal flooding and on the hydrological cycle and water resources.

Indicative budget: €2.44m

■ Technologies and Socio-economic analysis

The purpose of research in this area is to provide an analysis of technologies, policies and international actions that can be used by Ireland to offset the effects of a changing climate both in Ireland and in developing countries e.g. Clean Development Mechanisms (CDM), as well as examination of the economic and sociological barriers to

the use of alternative energy and more efficient use of energy in Ireland.

Main actions: A number of projects will be funded aimed at developing technological solutions both for carbon emissions reduction (e.g. carbon capture and storage for Ireland) and for the promotion of non-carbon energy technologies. In addition assessments will be carried out of the costs and other barriers to achievement of emissions reductions targets and the more widespread use of renewable technologies in Ireland.

Indicative budget: €2.6m

Transboundary air pollution & environmental observations.

Operationally climate change and transboundary air pollution work are linked in Ireland. They are also linked scientifically e.g. ozone as an air pollutant and as a greenhouse gas. Work in this area requires the support of environmental observations systems. Research to be carried out under this part of the programme will contribute to the achievement of Goal 2 of the *EPA 2020 Vision Strategy (Protecting and Improving Ireland's Environment)*.

■ Transboundary Air Pollution
Ireland faces a significant challenge in meeting certain emissions targets set by the Gothenburg Protocol to the UN Convention on Long Range Transboundary Air Pollution and under the EC National Emissions Ceilings Directive. In particular, meeting targets for oxides of nitrogen is one of the main challenges facing Ireland.

Main actions: Projects will be carried out on NOx and PM emissions

Climate Change Programme

inventories; on modeling of national emissions; on strengthening forecasts of reductions potential; on analysis of impacts on sensitive ecosystems; in quantifying the impact of emissions from transport and from air-sea exchanges.

Indicative budget: €1m

■ Environmental observation systems

Satellite data from the EU's Global Monitoring for Environment and Security (GMES) programme is very useful for national assessments of environmental resources (e.g.

assessment of land use, vegetation cover, land type) and trends in land use changes. It provides a very accurate and efficient method for assessing environmental change. The lack of expertise in the use of this data source is a major disadvantage which this part of the research programme will address.

Main action: Provide national assessments of GMES products and services and identify how these can assist climate impact assessment and environmental resource management.

Indicative budget: €0.3m

Climate Change Programme

Chapter Five Conclusion

In conclusion, meeting Greenhouse Gas emissions reduction targets (and air pollution targets) is a major challenge for Ireland.

This Climate Change Programme is a key component of the EPA strategic vision that should see the EPA further develop its leadership role at national level in an area that is of major importance nationally and globally.

In establishing a single Programme to address Climate Change and related issues, the EPA is putting in place the infrastructure to ensure that the objectives identified in the *EPA 2020 Vision Strategy (Protecting and Improving Ireland's Environment)*, and the additional responsibilities highlighted in the *National Climate Change Strategy 2007* are delivered.

Having the different streams working together under the one programme will facilitate better co-ordination of output

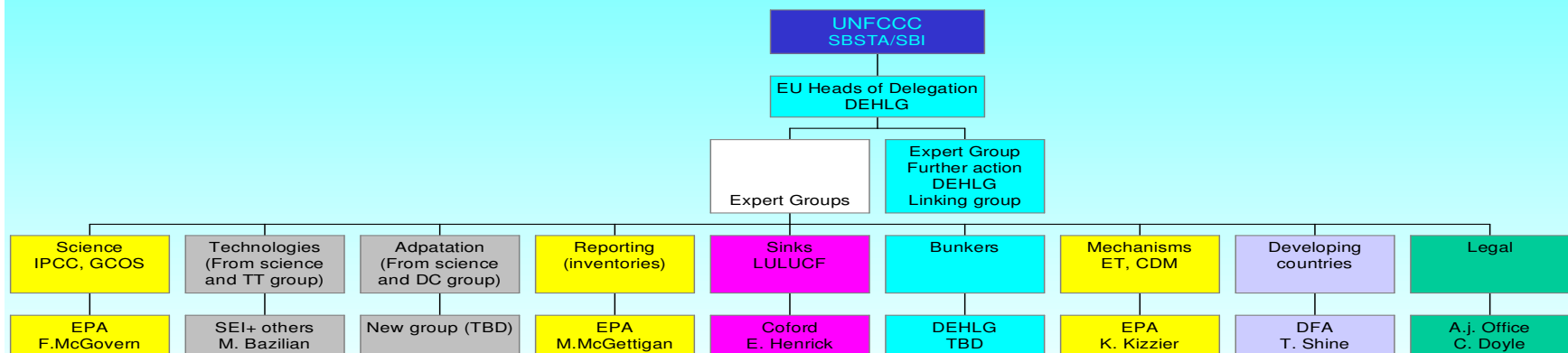
together with increased communications and synergies.

The additional resources needed to ensure these commitments are met must be put in place as a matter of urgency in order to ensure that the challenges are met and the expected outputs are realised in a timely manner. Key to this will be timely communication of the latest developments in all aspects of climate change to EPA Board, to Government, to other stakeholders and to the public at large.

Separate detailed documents on the IDC-SSTI projects have been prepared and the research call for Post-Doctoral Fellows to work on these projects in the EPA's Environmental Research Centre is due for publication on 8 June.

Figure 1

EU Climate Change Expert Groups linked to UNFCCC



Organisation name	Climate Change Responsibilities	Activities
<i>Department of Environment, Heritage and Local Government</i>	Policy development on Air and Climate.	National Climate Change Strategy Lead department for international protocols (Montreal, UNFCC and UNECE) and EU legislation for Air , for Climate and for Ozone depleting substances. Provision of funding for research.
<i>Department of Agriculture F&F</i>	Provides funding for a range of R&D programmes including “Stimulus Fund” for 'public good' agri production related research	Agriculture attend some of the UNFCCC meetings Funding of projects on climate emissions and impacts
<i>Department of Transport and the Marine</i>	Protection of fisheries and of coastal resources, development of marine resources. OSPAR Convention	SSTI funding “Sea Change” programme LIDAR project on assessment of coast
<i>Department of Communications, Energy and Natural Resources</i>	Policy development on Communications, Energy and Natural Resources	Policy and incentives for alternative energy and funding of Sustainable Energy Ireland programme Irish Energy Research Council – funds priority energy research projects.
Department of Foreign Affairs	Relations with other countries	CDM in Kyoto Protocol
Met Eireann	Developing regional climate modelling Climatological observations.	Climate and weather data and modelling. Longer term observations and research. National climate modelling. Focal point for EU met and EU met sat. Participants in WMO.
<i>Teagasc</i>	Provides research, advisory and training services to the agriculture and food industry and rural communities.	Research on grasslands, soils, land use, and farm management systems. Carries out a number of projects in the area of farm management of relevance to climate change.
COFORD	Forest research including forests as a C sink	Implementation of forestry research programme UNFCCC expert group on sinks
<i>Marine Institute (MI)</i>	Funds marine research and development including topics of relevance to Climate Change.	Marine research “Sea Change” programme
<i>Sustainable Energy Ireland (SEI)</i>	Promotes energy efficiency and use of renewable sources of energy. Implementation of funding programme for sustainable energy projects.	Grants for sustainable energy projects and funding of research projects.
<i>Geological Survey of Ireland</i>	Provides geological advice and information. GSI acts as a knowledge centre and project partner in all aspects of Irish geology.	Carbon Capture & Storage (CCS) Earth observation systems
<i>Irish Energy Research Council</i>	The functions are to establish priorities for Irish energy research up to 2013 and beyond, coordinate energy RTDI activities in Ireland and advise the Minister on the development of policy for energy research.	