



EPA Research - 2016 Call

EPA Research –Climate Research Call 2016

Technical Description

The EPA Research Programme 2014-2020 is funded by the Irish Government.

Environmental Protection Agency Research Call 2016: Climate

This document provides the **Technical Description** for the Environmental Protection Agency Climate Research Call 2016. Applicants should read the following carefully and also consult the other documentation provided (i.e. Guide for Applicants, Terms and Conditions for support of grant awards).

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Additional Documentation

Additional Documents available at

<http://www.epa.ie/pubs/reports/research/opencalls/currentcalldocuments/> and on the online portal at <https://epa.smartsimple.ie>

- *EPA Research: 2016 Guide for Applicants*
- *EPA Research: 2016 Terms & Conditions for Support of Grant Awards*
- *EPA Research: 2016 quick guide to the EPA on-line portal (How to make an application)*

1. INTRODUCTION

The EPA's Research Programme 2014-2020 is designed to identify pressures, inform policy and develop solutions to environmental challenges through the provision of strong evidence-based scientific knowledge.

- **Identifying Pressures:** Providing assessments of current environmental status and future trends to identify pressures on our environment.
- **Informing Policy:** Generating evidence, reviewing practices and building models to inform policy development and implementation.
- **Developing Solutions:** Using novel technologies and methods that address environmental challenges and provide green economy opportunities.

The EPA Research Programme has been allocated funding of approximately €2.9m for new commitments in Climate research in 2016. Where possible, the EPA will maximise the impact of these limited resources by enlisting co-funding from other national bodies with stakeholder interest in the topic areas.

Climate is structured into 4 thematic areas of research as follows, and will have approximately €2.9m in new funding.

- Theme 1: Carbon Stocks, GHG Emissions, Sinks and Management Options
- Theme 2: Ireland's Future Climate, its Impacts, and Adaptation Options
- Theme 3: Climate Solutions, Transition Management and Opportunities
- Theme 4: Air science

Funding Structure

The EPA invites research proposals under the specific topics listed in the table below. These proposals will be Desk-Studies, Medium-Scale or Large-Scale Projects:

- **Desk-Study** will typically last from 6 to 12 months with an indicative cost range of €50,000 to €100,000;
- **Medium-Scale Project** will typically last from 24 to 36 months with an indicative cost range of €100,000 to €350,000;
- **Large-Scale Project** will typically last from 36-48 months with an indicative costs range of €350,000 to €500,000.

Depending on the scope and quality of research proposals received, **a maximum of one** project will likely be funded under the proposed topics detailed in this document, unless otherwise stated

Value for Money

All research proposals must **build on findings and recommendations** from past and current research¹ projects (where relevant) and **demonstrate value for money**.

Open Access and Open Data

All projects must comply with the EPA's **Open Data** and **Open Access** rules, which are aligned with Horizon 2020 for the 2014-2020 EPA Research Programme.

Where project outputs include data and/or technical solutions (websites, developed software, database solutions etc.), the format of same **must be agreed with the EPA** to ensure that they are compatible with EPA IT infrastructure and can be maintained by the EPA after the completion of the project.

¹ including EPA-funded, other Irish and EU and international research projects and initiatives/activities

List of Topics

<i>Call Topic Ref.</i>	<i>Thematic Areas and Project Titles</i>	<i>Budget (€)</i>
	Theme 1: Carbon Stocks, GHG Emissions, Sinks and Management Options	
Climate 2016 Call-Project 1	Modelling of Impact of Land Use of GHG emissions	€250k -€300k
Climate 2016 Call-Project 2	Quantitative approaches to Greenhouse Gas Emissions Neutrality	€210k -€250k
Climate 2016 Call-Project 3	Review of National Emissions Factors for Methane Emissions associated with Agriculture and Livestock Management	€80k -€90k
	Theme 2: Ireland's Future Climate, its Impacts, and Adaptation Options	
Climate 2016 Call-Project 4	Attribution of extreme events; what is the climate change component of observed extremes	€200k -€250k
Climate 2016 Call-Project 5	National Risk Assessment of Impacts of Climate Change	€250k -€300k
Climate 2016 Call-Project 6	Mainstreaming climate change adaptation: an indicator based assessment	€120k -€150k
Climate 2016 Call-Project 7	Enabling transition to a Climate Resilient Ireland	€210k -€250k
Climate 2016 Call-Project 8	Vulnerability of critical infrastructure to climate change	€90k -€100k
Climate 2016 Call-Project 9	Reanalysis of Basic Climate descriptors	€120k - €170k
	Theme 3: Climate Solutions, Transition Management and Opportunities	
Climate 2016 Call-Project 10	Potential for Negative Emissions Technology in Ireland	€225k -€250k
Climate 2016 Call-Project 11	Options to Optimise the Impact of Adoption of Low Carbon Biomass Technologies on Air Quality	€175k -€200k
Climate 2016 Call-Project 12	Ireland's Industry participation in the EU Emissions Trading Scheme	€100k -€120k
Climate 2016 Call-Project 13	Envisioning Ireland in 2050: Future Economic Model for Ireland	€125k -€150k
Climate 2016 Call-Project 14	Enabling Transition to a Low Carbon, Climate Resilient Ireland	€210k - €250k
	Theme 4: Air science	
Climate 2016 Call-Project 15	Dynamic air quality modelling and analysis at regional scale	€210k - €250k

Climate 2016 Call-Project 16	Assessment of critical loads of air pollutants and impact on habitats	€100k-€120k
Climate 2016 Call-Project 17	Impact of NO2 emissions on health	€100k -€120k
Climate 2016 Call-Project 18	Transboundary air pollutants and greenhouse gas monitoring network support	€210k -€250k

Application Process

Making an application on-line:

Applications must ONLY be made on-line <https://epa.smartsimple.ie>.

Guide to the EPA on-line application system:

The guide to the EPA on-line application system, 'EPA Research: 2016 Quick guide to the EPA on-line portal (making an application)', is available for download at

<http://www.epa.ie/pubs/reports/research/opencalls/currentcalldocuments/> and <https://epa.smartsimple.ie>

What to include in the application form:

To make the best application possible, it is recommended that you read the 'EPA Research: 2016 Guide for applicants' before drafting and submitting an application, available at

<http://www.epa.ie/pubs/reports/research/opencalls/currentcalldocuments/> and <https://epa.smartsimple.ie>

To make an application under any of the topic areas:

Applicants must use the correct **Call Topic Reference**, as indicated in this document, from the drop down menu on the EPA on-line system e.g. *Climate 2016 Call Project 1*

It is the responsibility of the Applicants to ensure:

- Proposals are submitted before the **call deadline**, and
- That the relevant Grant Authoriser (i.e. Research Offices / Managing Directors for companies) authorises the proposals before the **organisation approval deadline**.
- **Failure to meet either of the above deadlines means your proposal will not be considered for funding**

2. Call Content

Theme 1: Carbon Stocks, GHG Emissions, Sinks and Management Options

Research undertaken under this thematic area aims to improve understanding of greenhouse gas emissions and sinks thereby providing better information to support actions to mitigate emissions and enhance sinks. Research in this area contributes to improving inventory and projections methodologies for estimation of emissions and sinks of Greenhouse Gases (GHGs), and verification of these by independent analysis.

The estimation of emissions and sinks of GHGs from agriculture and land use remains a key uncertainty within Land Use, Land Use Change and Forestry (LULUCF). The dynamic of land use within Ireland is not fully understood, particularly the impact of management of land within agriculture. Analysis is required to assess the potential of this activity on a national scale. The potential for greenhouse gas emissions and removals from peatland due to the impact of human activities, are also a cause of on-going concern.

The 2016 Theme 1 call is focused on elements of this work.

1.1 Modelling of Impact of Land Use of GHG emissions Project Type: Medium scale project

Analysis of spatial patterns of the impact of agricultural and other land use and management practices and potential impact on GHG emissions and removals

To make an application under this topic area, you must use the following:
Call Topic Reference: Climate 2016 Call-Project 1

Background

Under the United Nations Framework Convention on Climate Change, (UNFCCC), Ireland makes an annual report on greenhouse gas emissions related to land management. Land use in Ireland is changing and this can have an important impact on the landscape and the carbon stocks within the landscape.

Previous research funded by the EPA and others has successfully characterised impact of specific land use and land management practices in Ireland, but on a limited scale. A coherent database of agricultural land use has also been developed based on the descriptors provided to the Department of Agriculture, Food and Marine, via the Land Parcel Information System, LPIS. On-going research is exploring activity data to capture the underlying land management dynamics on permanent grasslands.

The EPA seeks to consolidate and advance the analysis of GHG gas emissions and removals associated with land use and land cover to a level where inventory procedures and methodologies can reflect country specific circumstances to at least Tier 2 level across all key land use categories.

Project Description:

The EPA invites proposals to consolidate existing research and advanced methodologies for the estimation of emissions and removals of GHGs associated with land use at high spatial and temporal resolution. The study will draw on previous and on-going work, and bring together a diverse range of experts and data sources. The study should include development of tools consistent with reporting and accounting rules under the UNFCCC and the Kyoto Protocol to estimate emissions and removals of GHG associated with reported land use.

The project should aim to provide the framework solution for an inventory procedure based on the findings of a number of research studies.

The proposal should be multidiscipline and cross-institutional, it is envisaged that it will liaise closely with project teams funded under the DAFM funded GHG consortium programme

- Assessing the impact of typical/representative land use practices on emissions and removals of GHGs from soils
- Provision of a simplified approach suitable for inventory underpinned by multi-model assessment of soil processes.
- Priority should be given to the analysis of uncertainty

The study will require close collaboration with appropriate agencies and stakeholders within various sectors.

Project Structure and Funding:

This project is a **Medium Scale Project** which will run for **24-36** months. The indicative funding range is between **€250,000 and €300,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

1.2 Quantitative approaches to Greenhouse Gas Emissions Neutrality Project Type: Research Fellowship

Ensuring consistency between Inventory and Projections reporting and the Long Term Objective of the Paris Agreement

To make an application under this topic area, you must use the following:

Call Topic Reference: Climate 2016 Call-Project 2

Background

Article 4.1 of The Paris Agreement 2015 introduces the concept of a sustainable “balance between anthropogenic emissions by sources and removals by sinks of greenhouse gases”. Similarly, the “Climate Action and Low-Carbon Development- National Policy Position Ireland” paper (2015), makes specific reference to an approach to “carbon neutrality” in agriculture and land use whilst retaining capacity for sustainable food production. However, neither process provides robust definitions of these concepts.

This study would explore science based approaches to define indicators and metrics which could be used to define balance and neutrality in terms of the long term impacts on climate of contemporary emissions and removals of greenhouse gases.

Project description:

The EPA invites proposals for a Research Fellowship to develop national understanding of the long term goal of “greenhouse gas neutrality” and “carbon balance”.

The study should explore the relationship between inventory and projections methodologies; accounting rules specific targets for emissions reductions; common metrics and the overarching goals of stabilisation of climate and avoiding dangerous climate change.

It is anticipated that this work will be carried in out in close cooperation with the EPA and other bodies in Ireland that are working on analysis of GHG emissions and removals.

The study will also provide assessment of discussions under UNFCCC and at EU level.

It will seek to advance analysis of historical emissions/removals of GHGs including the uptake and release of carbon dioxide from biomass and soils, and non-CO₂ emissions across all sectors.

Expected outputs include a project report of key findings, recommendations and an outline of research activities undertaken during the project, and data products where relevant.

Applications:

Applicants are expected to have a primary or higher degree in meteorology, climatology, computing, physics, or a similar discipline and be familiar with data collection, management and analysis. It is anticipated that this person will work closely with experts in these areas within the EPA, other state agencies and government departments and international experts.

Project Structure and Funding:

The fellowship award will be up to **24 months**, with the potential for an additional year.

The indicative funding range is between **€210,000 and €250,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Awards will be made in line with the Irish Universities Association recommended salary scales, and to include (which includes 5% for post-completion publicity/dissemination² please refer to 2016 Guide for Applicants for further details).

It is recommended that Fellowship applicants identify a host organisation and supervisor prior to submission of completed proposals.

In the event that a host organisation cannot be identified by the submission deadline, the applicant may register on the EPA Grant Application & Project Management Portal under the organisation entitled: **“Organisation to be confirmed”**. A suitable host organisation must be identified during the review stage. **Failure to do so will disqualify the application.**

² For example, a €100,000 grant award is made up of €95,000 for fellowship, and €5,000 for post-completion publicity

1.3 Review of National Emissions Factors for Methane Emissions associated with Agriculture and Livestock Management
Project Type: Desk Study

Independent review of emissions factors used to estimate GHG and recommendations for revision to reflect changes in national herd and livestock management practices.

To make an application under this topic area, you must use the following:

Call Topic Reference: Climate 2016 Call-Project 3

Background

Agriculture activities are responsible for approximately 30% of total national greenhouse gas emissions. Within Agriculture, methane emissions associated with livestock management (including enteric fermentation and manure management) are key. Ireland adopted a country specific Tier 2 approach to the estimation of methane emissions from the dominant emission activities in 2008, based on the findings of “state of the art” research outputs at that time.

In order to maintain the highest possible quality and accuracy of the national inventory estimates of emissions, the EPA considers it timely to review and refine the Tier 2 factors included in current emissions modelling.

Project description:

The EPA invites proposals to undertake a desk study to

- Review IPCC default and country specific emissions factors and other parameters relevant to the estimation of GHG emissions associated with livestock management.
- Identify relevant changes in the national herd, farming practices and other activities which may have had significant influence on typical emissions associated with livestock.
- Specifically the study should consider
 - Sector 3.1.A Livestock Enteric Fermentation
 - Sector 3.1.B Livestock Manure Management

Expected outputs for this project include:

Expected outputs include an interim report including

- a review of country specific methodology and emission factors
- a review of recent published literature
- recommendations on next steps, research priorities.

Project Structure and Funding:

This project is a **Desk Study** which will run for **12 months**. The indicative funding range is between **€80,000 and €90,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Theme 2: Ireland's Future Climate, its Impacts, and Adaptation Options

Research under this thematic area aims to provide information on future climate conditions in Ireland and their impacts. This information will create the basis for better informed decision making on adaptation in the years to come and make key economic and policy sectors more resilient to the effects of climate change.

The research focus of this thematic area is to improve climate observations and projections, identify risk and vulnerability and inform adaptation responses. In recent years, research has progressed on climate modelling, climate analysis, development of observation systems and indicators. This information has been used in impact analysis, risk and vulnerability assessment. The outputs from these assessments have been designed to support national, sectoral and local level planning and decision making in the context of climate change. At a broader scale it also develops a basis for provision of future Climate Services as identified by Joint Programme Initiative- Climate and Horizon 2020.

The 2016 Theme 2 call aims to advance aspects of work in this area.

2.1 Attribution of extreme events; what is the climate change component of observed extremes
Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:

Call Topic Reference: Climate 2016 Call-Project 4

Background

The IPCC AR5 has reported on the observed impact of climate change on extreme events across the world. The assessment of the regional and local sensitivity to climate change is very important in providing targeted information to stakeholders and decision makers. Recent studies which focused on localised extreme events have been successful in quantifying the degree to which climate change has contributed to the intensity and severity of these events. In Ireland, there has been limited capacity to undertake attribution studies of this type, which has led to some confusion as to role of climate change in events such as the Fodder Crisis 2011/2012 and Shannon Floods 2015/2016. There is a risk that simplistic attribution of all extremes to climate change would mask critical underlying vulnerability in existing infrastructure and systems. This would improve development of adaptation policy, and also help quantify key parameters in cost and damage. Timely attribution assessment can also be a powerful communications tool on climate issues.

Proposals are invited for a research project to undertake the following:

The EPA invites proposals to undertake an assessment of the drivers of historical and recent extreme events (including storms, floods, prolonged cold and warm spells, prolonged wet and dry periods) and to establish the probable influence of observed climate change on these. This work must begin with an inventory of historical extreme weather events, which must be mapped and dated. The study should also make recommendations as to the structures and resources required to allow routine and timely assessment of climate attribution in response to future extreme events.

Aims and goals:

- Provide a national inventory of historical extreme weather events, mapped and dated
- Provide an assessment of the drivers of historical and recent extreme event which have had significant economic or social impact on Ireland.
- Provide an assessment of the sensitivity of the extreme components of Ireland's climate to observed climate change

Expected outputs for this project include:

- User centered information, guidelines and decision supports for sectoral and local adaptation decision making
- Tailored climate change adaptation knowledge

- Training material and outreach to end users
- Recommendations on structures and resources required for on-going analysis of this type
- Promotion of climate Ireland as a key national resource of adaptation planning

Project Structure and Funding:

This project is a **Medium Scale Project** which will run for **24** months. The indicative funding range is between **€200,000 and €250,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

2.2 National Risk Assessment of Impacts of Climate Change Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 5](#)

Background

Under the Climate Act 2015, the key objective is to transition towards a climate resilient Ireland by 2050. To do so will require a clear understanding of the resilience of Ireland's communities, livelihoods and ecosystems to the risks and opportunities posed by current and future climate extremes and trends. Analysis is required to determine climate risk under scenarios of 2-4°C temperature rise, tipping points and the characteristics of key impacts. Information is also required as to where and when change might occur across a number of sectors and regions. In particular, analysis is required of the resilience of marine coastal environments, communities and businesses to climate risk.

The purpose of the risk assessment is to inform the actions and policies Government takes through the National Adaptation Framework (Climate Bill, 2015), as well as informing sectors and localities.

Proposals are invited for a research project to undertake the following:

The EPA invites proposals to undertake an assessment of the risks and opportunities for the Irish economy, environment and society posed by climate change.

Aims and goals:

- Refining future climate change impacts under 2C-4C for both extremes and climatic trends, and the identification of potential tipping points
- Prioritisation of sectoral impacts to demonstrate severity, where and when (short, medium and long term) consequences are projected to be experienced
- Assessment of the resilience of marine and coastal environment to climate risk
- Assessment of the magnitude of impact and the urgency of action needed for different threats and opportunities.
- Assessment of the effects of current and planned policies and other actions in the overall assessment of risk
- Consideration of how climate change overseas could impact on Ireland's economy and society
- Consideration of what the net effect of different risks acting together could be, either due to concurrent timing, acting on the same location or the same receptor (coincidence).
- An assessment of the uncertainties, limitations and confidence in the underlying evidence and analysis for different risks
- Assessment of cross cutting issues such as flooding, invasive species, etc.

Project Structure and Funding:

This project is a **Medium Scale Project** which will run for **24-36** months. The indicative funding range is between **€250,000 and €300,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

2.3 Mainstreaming climate change adaptation: an indicator based assessment
Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:

Call Topic Reference: [Climate 2016 Call-Project 6](#)

Background

Climate change mainstreaming is an important policy mechanism for to progress the implementation of adaptation actions into EU policies and programmes. In Ireland, the National Climate Change Adaptation Framework (2012) recognises the potential role of policy mainstreaming as an effective mechanism to address adaptation requirements across the full breadth of economic and development decision making (national, sectoral and local). Mainstreaming means that climate risks are carefully considered and incorporated into all development planning and practices, and is therefore relevant to all government agencies, civil society and community groups, and across all sectors. An appropriate set of indicators are the ideal mechanism by which such an appraisal can be undertaken and provide for future monitoring and evaluation of progress towards adaptation.

Proposals are invited for a research project to undertake the following:

The EPA invites proposals for a research project to undertake an initial assessment of the efficacy of national policy instruments to inculcate adaptation at sectoral and local levels. It will develop and consider a range of indicators within a decision framework that capture the extent to which consideration of climate change adaptation (risks, opportunities) are integrated into national, sectoral and local planning processes. It will consider the policy barriers and opportunities for the integration of climate change adaptation into planning processes.

Expected outputs for this project include:

- Assessment of national, sectoral and local level policy instruments for mainstreaming climate change adaptation considerations;
- Recommendation of an indicator set/decision framework for monitoring the integration of adaptation considerations into national, sectoral and local planning processes;
- Demonstration of how the proposed set of indicators can be used to support national level and international monitoring, reporting and evaluation such as UNFCCC national stock-take and EU Adaptation Preparedness Scoreboard
- Assessment of barriers and opportunities for the integration of adaptation planning considerations.

Project Structure and Funding:

This project is a **Study** which will run for **12** months. The indicative funding range is between **€120,000 and €150,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

2.4 Enabling transition to a Climate Resilient Ireland Project Type: Research Fellowship

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 7](#)

Background

Under the Climate Action and Low Carbon Development Act (2015), the key objective is to transition towards a low carbon climate resilient Ireland by 2050. A large body of research exists to provide the evidence base, support projections of future climate change and estimate the costs of this societal transition. It is now time to utilise this data and information and begin to implement climate change adaptation action across sectors, local level planning and development activities, private businesses and communities. Evidence from other member states has demonstrated that it is simplistic to assume that the generation of information and data is sufficient to support the delivery of robust adaptation strategies. Rather, this new policy and planning area will require a number of additional supports to enable the transition to a climate resilient Ireland in the short and medium term.

Proposals are invited for a research project to undertake the following:

The EPA invites proposals for a study to undertake an assessment of the measures and actions that are required to enable the transition to a climate resilient Ireland. This will require a clear understanding of the science of climate change impacts and adaptation, the international and national policy context, governance arrangements at the national, sectoral and local level, the role of networks of practice and collaboration (including cross border) and the status of awareness and capacity.

It is envisaged that the PI of the project will contribute to the design and coordination of the work undertaken under the EPA research programme and supported by TRAM on adaptation to climate change.

Expected outputs for this project include:

- Assessment of current implementation supports and recommendations on knowledge gaps
- Clear description of International and national policy requirements (e.g. UNFCCC stock take, EU Adaptation Preparedness Scoreboard, national reporting under Climate Act 2015, etc.)
- Ongoing policy advice and support to sectors and local authorities as needed
- Identification and support for governance arrangements (horizontal and vertical)
- Assessment of role and value of networks of practice and collaboration at all levels
- Assessment and recommendations for awareness raising and capacity building
- Coordination of the work undertaken by those elements of the EPA research programme supported by TRAM

Applications:

Applicants are expected to have a primary or higher degree in meteorology, climatology, computing, physics, or a similar discipline and be familiar with data collection, management and analysis. It is anticipated that this person will work closely with experts in these areas within the EPA, other state agencies and government departments and international experts.

Project Structure and Funding:

The fellowship award will be up to **24 months**, with the potential for an additional year.

The indicative funding range is between **€210,000 and €250,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

Awards will be made in line with the Irish Universities Association recommended salary scales, and to include (which includes 5% for post-completion publicity/dissemination³ please refer to 2016 Guide for Applicants for further details).

It is required that Fellowship applicants identify a host organisation and supervisor prior to submission of completed proposals.

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

³ For example, a €100,000 grant award is made up of €95,000 for fellowship, and €5,000 for post-completion publicity

2.5 Vulnerability of critical infrastructure to climate change
Project type: Medium Scale Study

To make an application under this topic area, you must use the following:

Call Topic Reference: [Climate 2016 Call-Project 8](#)

Background

Ensuring that infrastructure is resilient to climate change is a critical element of countries' efforts to adapt to climate change. Reliable, cost-effective energy, water, transport and communication infrastructure networks underpin economic growth. Climate change poses new challenges for achieving this, as networks have to adapt to changing patterns of extreme events and trends. Climate change will need to be considered in the construction of new infrastructure, and it may also be necessary to retrofit existing networks.

The risks from climate change are diverse, ranging from melting roads to flooding of electricity transformers. The appropriate responses to these risks will be context specific, depending on the type, lifespan and location of infrastructure assets. These risks will also evolve over time, in response to changing socio-economic pressures and climate change projections. As such, the standards and approaches used to manage these risks need to be flexible to respond to changing circumstances.

Proposals are invited for a research project to undertake the following:

The EPA invites proposals for a study to undertake an assessment of the vulnerability of Ireland's critical infrastructure (public and private) to the risks posed by current and future climate change (extremes and trends). This will require the development of an inventory of key assets, identification of owners/responsibility and mapping of location. These assets will need to be assessed for the impacts of current and future climate change risk and opportunities across 2-4C temperature rise scenarios. The identification of a suite of adaptation response measures across different time frames will be a key component of this study.

Expected outputs for this project include:

- Inventory and mapping of responsibilities and location key pieces of critical infrastructure (public and private)
- Climate change risk assessment of infrastructure over short, medium and long term time horizons
- Identification of adaptation options over different time horizons-
- Recommendations on mainstreaming and climate risk disclosure

Project Structure and Funding:

This project is a **Medium Scale Study** which will run for **12-18** months. The indicative funding range is between **€90,000** and **€100,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

2.6 Reanalysis of Basic Climate Descriptors Project Type: Research Fellowship

To make an application under this topic area, you must use the following:

Call Topic Reference: [Climate 2016 Call-Project 9](#)

Background

Met Eireann is currently performing a re-analysis of the Irish climate using the Harmonie mesoscale model running on a 2.5km horizontal grid with 60 vertical levels. The domain covers Ireland, the UK and coastal areas. The system assimilates conventional surface and upper-air observations on a 3-hour cycle producing output fields at 3-hour intervals, supplemented by forecast data at the intermediate 1 hour intervals. The re-analysis is being run on the ECMWF supercomputer and will cover the period 1981-2015. All data are being saved at ECMWF with local copies pulled back to Met Eireann. The re-analysis is targeted to complete in Q4 2016.

Approximately 64 weather parameters on a regular 2.5km gridded field are produced by the re-analysis at 3 or 1-hour intervals. Apart from the normal parameters (wind, pressure, temperature, humidity ...) the re-analysis also provides upper level fields (winds, gusts, etc. at various heights in the atmosphere) to facilitate the assessment of wind energy potential.

It is expected that this re-analysis dataset will greatly expand our knowledge of the Irish climate and facilitate the applications of the data (e.g. in agriculture and renewable energy).

Proposals are invited for a research project to undertake the following:

The EPA invites proposals for a Fellowship to;

- assess the quality/reliability of the datasets by using existing conventional observations, including remotely sensed observations;
- provide detailed statistics (return periods, percentiles, frequencies of hot/cold/wet spells, trends, duration of calm periods for winds, storm tracks, etc.) for the different weather parameters;
- develop, using the re-analysis data, composite indices of the weather for use by agriculture, renewable energy interests, etc.;
- make the data accessible to the community;
- provide recommendations on the scope of a follow-up re-analysis in the future.

Applications:

Applicants are expected to have a primary or higher degree in meteorology, climatology, computing, physics, or a similar discipline and be familiar with data collection, management and analysis. It is anticipated that this person will work closely with experts in these areas within the EPA, other state agencies and government departments and international experts.

Project Structure and Funding:

The fellowship award will be up to **24 months**, with the potential for an additional year.

The indicative funding range is between **€120,000** and **€170,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

Awards will be made in line with the Irish Universities Association recommended salary scales, and to include (which includes 5% for post-completion publicity/dissemination⁴ please refer to 2016 Guide for Applicants for further details).

It is recommended that Fellowship applicants identify a host organisation and supervisor prior to submission of completed proposals.

In the event that a host organisation cannot be identified by the submission deadline, the applicant may register on the EPA Grant Application & Project Management Portal under the organisation entitled: **“Organisation to be confirmed”**. A suitable host organisation must be identified during the review stage. **Failure to do so will disqualify the application.**

⁴ For example, a €100,000 grant award is made up of €95,000 for fellowship, and €5,000 for post-completion publicity

Theme 3: Climate Solutions, Transition Management and Opportunities

Research priorities are informed by our vision under this theme of “a carbon neutral Ireland by 2050, with a thriving green economy and society” and the new national policy position on climate change aiming “to achieve transition to a competitive, low-carbon, climate-resilient and environmentally sustainable economy by 2050” and mandating low carbon roadmaps. Research under this call is planned to build on existing Irish climate research and analysis such as "Addressing Climate Change Challenges in Ireland" research report (O'Reilly, O'Brien et al, 2012), “Irish TIMES Energy Systems Model” (Ó Gallachóir et al, 2013) and “Ireland and the Climate Change Challenge; Connecting ‘How much’ to ‘How to’” (NESC, 2012).

The following research objectives have been identified under this theme; 1) To advance socioeconomic modelling of cross sectoral greenhouse gas emissions to 2050; 2) To promote cross disciplinary analysis of effective options for behavioural change in businesses and households and to identify and assess current and future mitigation options including technologies; and 3) To bring together diverse research outputs to form a coherent picture of analysis for Ireland and in so doing, to identify green economy and other opportunities from international trends in policy and economics. Significant progress has been already been achieved in building cross-sectoral modelling capacity. This call aims to engage a broad range of academic disciplines in examining the core questions and sectoral challenges behind transition management and identification of climate solutions and opportunities.

3.1 Potential for Negative Emissions Technology in Ireland Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 10](#)

Background

Analysis by the IPCC and by the Irish TIMES research group shows that most scenarios for efforts consistent with 2°C warming involve use of negative emissions technologies e.g. application of carbon capture and storage with biomass (BECCs) when biomass is burnt to generate electricity. Other suggested options include the development of synthetic (renewable) hydrocarbon fuels from captured carbon. The EPA, GSI and SEAI have funded research into the potential for geological storage of carbon in Ireland, while the EPA has funded research into methods for sequestration of carbon. However other research in Ireland to support policy, technology or infrastructure development in this area has been limited.

The EPA aims to build research capacity in this emerging area either to improve high level analysis of available technologies or to build specialist knowledge in a specific technology where Ireland may be in a position to exploit a natural advantage or early adopter advantage.

The objective is to gain a better understanding of negative emission technologies that may be usefully applied in an Irish context. This is an open call to encourage innovative responses.

Proposals are invited for a research project to undertake the following:

The EPA invites applicants to submit a research proposal to either:

- Synthesis and analysis of available research on negative emission technologies and their application and implication in Ireland, including impact on the energy sector and potential infrastructure requirements
- A report and analysis of synthetic fuels research with potential for development and use in Ireland
- Research to develop an individual technology for negative emissions in Ireland including methods or technologies for carbon sequestration, carbon storage or carbon use

Project Structure and Funding:

This is a **Medium Scale Study** which will run for **24 months**. The indicative funding available is between **€225,000 and €250,000** (which includes a 5% provision for communication costs⁵ please refer to the 2016 Guide for Applicants for further details).

⁵ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

3.2 Reducing the Impact of Low Carbon Biomass on Air Quality Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 11](#)

Background

Research by the World Health Organisation (WHO, 2013 a,b⁶) suggests that there are no ‘safe levels’ of air pollution with respect to human health and goes on to identify the lengthy catalogue of health impacts associated with air pollution exposure including lost working days, reduced activity days and premature death. Ireland faces legally-binding European (National Emissions Ceiling Directive 2001/81/EC) and United Nations’ (Gothenburg Protocol) ceilings with respect to national emissions of air pollutants, as well as standards for ambient air quality. Ireland also faces greenhouse gas emission reduction targets under Decision No. 406/2009/EC of the European Parliament and of the Council on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020 and the EU’s INDC submitted to the UNFCCC under the Paris Agreement that commits the EU and its 28 Member States to a binding target of an at least 40% domestic reduction in greenhouse gas emissions by 2030 compared to 1990.

Analysis produced by the Irish TIMES (UCC) and IMP Ireland (Envecon) modelling research groups has suggested that Ireland will use biomass and an increasing proportion of diesel versus petrol vehicles in the Irish fleet (‘dieselification’) to achieve mitigation reduction targets to 2020 and 2030. However these strategies will lead to increases in emissions of particulate matter (PM) and volatile organic compounds (VOC) with an associated significant negative impact on air quality. This may have an impact on efforts to meet European and UN air quality targets.

Further analysis is required to examine options for reducing negative air quality impacts of GHG mitigation measures such as use of biomass (particularly in the residential sector) and ‘dieselification’ (the increasing proportion of diesel versus petrol vehicles).

Proposals are invited for a research project to undertake the following:

The EPA invites applicants to submit a research proposal to provide analysis that can inform a cohesive and coherent approach to meeting greenhouse gas mitigation and air quality targets in Ireland.

Expected outputs for this project include:

- Literature review
- Identification or development of technical solutions, including end of pipe solutions, for air quality impacts of GHG mitigation measures e.g. use of biomass particularly at residential level
- Identification of policy options to reduce tensions between climate and air quality policy and associated cost implications
- A stakeholder workshop

Project Structure and Funding: Project Structure and Funding

⁶ World Health Organisation (2013a) Recommendations for concentration–response functions for cost–benefit analysis of particulate matter, ozone and nitrogen dioxide, World Health Organisation Regional Office, Germany & World Health Organisation (2013b) Review of evidence on health aspects of air pollution – REVIHAAP Project, Final Technical Report, World Health Organisation Regional Office, Germany.

This project is a **Medium Scale Project** which will run for 24 months. The indicative funding available is between **€175,000 and €200,000** (which includes a 5% provision for communication costs⁷ please refer to the 2016 Guide for Applicants for further details).

⁷ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

3.3 Ireland's Participation in the EU Emissions Trading Scheme Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 12](#)

Background

The EU emissions trading system (EU ETS) is a cornerstone of the European Union's policy to combat climate change and its key tool for reducing industrial greenhouse gas emissions cost-effectively⁸. The first, and still by far the biggest, international system for trading greenhouse gas emission allowances, the EU ETS covers more than 11,000 power stations and industrial plants in 31 countries, as well as airlines. In 2020, emissions from sectors covered by the EU ETS will be 21% lower than in 2005. By 2030, the Commission proposes, they would be 43% lower. Approximately 30% of Ireland's reported greenhouse gas emissions are regulated under the EU Emissions Trading Scheme.

The ETS faces a challenge in the form of a growing surplus of allowances, largely because of the economic crisis which has depressed emissions more than anticipated. In the short term this surplus risks undermining the orderly functioning of the carbon market; in the longer term it could affect the ability of the EU ETS to meet more demanding emission reduction targets cost-effectively. The Commission has therefore taken the initiative to postpone (or 'back-load') the auctioning of some allowances as an immediate first step. In addition, following a public debate on options for structural reform of the carbon market which could provide a sustainable solution to the surplus in the longer term, a Market Stability Reserve shall be established in 2018 and the placing of allowances in the reserve shall operate from 1 January 2019. Further reforms are being discussed. However, it is unclear what effect these changes will have on Irish Industry, whether competitiveness impacts may be positive or negative. The EPA holds significant data, much of it public, on Irish ETS participation and associated trading activity that has yet to be fully analysed.

Objectives and Expected Outputs

The objective is to better understand the impact of the ETS, and carbon price movements on Irish Industry, the competitiveness impacts, if any, and associated changes in emissions. The analysis should make use of EPA and EU data to uncover the trends in purchase and sale of units. The research should also benefit from close contact with EPA and departmental staff to build on existing analysis. Results of the analysis should inform Irish policy on the EU ETS and on mitigation in the ETS.

Expected outputs for this project include:

- Interim report with literature review
- Stakeholder engagement to their elicit experience, opinions and concerns regarding ETS
- Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- Dissemination 2-pager, which will be used to disseminated the findings of the research to the key stakeholders.
- Workshop/dissemination event to all stakeholders in the relevant arena (e.g., policy, monitoring, regulatory, NGOs, media, public, etc.).

⁸ Directive 2003/87/EC of the European Parliament and of the Council of 13 October 2003 establishing a scheme for greenhouse gas emission allowance trading within the Community and amending Council Directive 96/61/EC

- It is also expected that a number of additional *ad hoc* outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

Project Structure and Funding: Project Structure and Funding

This project is a **Medium Scale Project** which will run for 12-18 months. The indicative funding available is between **€100,000 and €120,000** (which includes a 5% provision for communication costs⁹ please refer to the 2016 Guide for Applicants for further details).

⁹ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

3.4 **Envisioning Ireland in 2050: Future Economic Model for Ireland** **Project Type: Medium Scale Study**

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 13](#)

Background

At an international level there has been considerable research into the transition from fossil based economic model. This work has been carried out by leading groups including by the World Bank, regional development banks, the International Monetary Fund, International Energy Agency, Organisation for Economic Co-operation and Development. Ireland is facing a similar transition and significant engagement is required from the public and decision makers. This is central to a successful transition to a Low Carbon Climate Resilient Economy and Society as envisaged in the Climate Action and Low Carbon Development Act 2015.

However, the concept of such transition to 2050 can be difficult to envisage from the perspective of economic decision-makers in at various levels in public and private sectors. Climate change may not be a primary concern within key sectors which influence greenhouse gas emissions. Engagement with these decision makers can be advanced by envisioning achievement of developmental and societal goals while enhancing actions on climate change. Envisioning Ireland economy and society in a post-fossil energy scenario can therefore assist in current decision make to enable the necessary transition.

The concept of transition to 2050 can be difficult to engage with and support if the end-point is unclear. Emission scenarios utilised by policy and decision makers are highly abstract and technical. There is a risk of a disconnection between policy objectives and public perception. Therefore, it may be useful to present these mitigation scenarios in a narrative accessible to the general public.

Objectives and Expected Outputs:

The objective of this research is to envision and explore the operation of a post-fossil, ecosystem service & renewable energy based economy. It is expected to include scenario analysis for key sectoral and economy wide transition. It is expected to be based on projections for key drivers e.g. population , demographics etc. and to include consideration of governance issues and requirements, financial flows and approaches to regulation and taxation. Exploration of the co-benefits and trade-off with other environmental and quality of life indicators should be included.

The project should also aim to increase understanding of the transition or transformation required for a low carbon climate resilient future consistent with international targets under the Paris Agreement. The project should consider options on how to communicate mitigation scenarios in a narrative and visualisation format accessible to the general public and explore the perceptions of co-benefits and trade-off with other environmental and quality of life indicators.

Expected outputs for this project include:

- (i) Detailed literature review.
- (ii) Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- (iii) Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- (iv) Dissemination 2-pager, which will be used to disseminated the findings of the research to the key stakeholders.

- (v) Workshop/dissemination event to all stakeholders in the relevant arena (e.g., policy, monitoring, regulatory, NGOs, media, public, etc.).

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

Project Structure and Funding: Project Structure and Funding

This project is a **Medium Scale Project** which will run for 12-18 months. The indicative funding available is between **€125,000 and €150,000** (which includes a 5% provision for communication costs¹⁰ please refer to the 2016 Guide for Applicants for further details).

¹⁰ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

3.5 Enabling Transition to a Low Carbon Economy and Society in Ireland Project Type: Research Fellowship

To make an application under this topic area, you must use the following:
Call Topic Reference: Climate 2016 Call-Project 14

Background

At the Paris climate conference (COP21) in December 2015, 195 countries adopted the first-ever universal, legally binding global climate deal. The agreement sets out a global action plan to put the world on track to avoid dangerous climate change by limiting global warming to well below 2°C. The agreement is due to enter into force in 2020. Governments agreed;

- a long-term goal of keeping the increase in global average temperature to **well below 2°C** above pre-industrial levels;
- to aim to limit the increase to **1.5°C**, since this would significantly reduce risks and the impacts of climate change;
- on the need for **global emissions to peak as soon as possible**, recognising that this will take longer for developing countries;
- to undertake **rapid reductions thereafter** in accordance with the best available science.
- an objective to make finance flows consistent with a pathway towards low greenhouse gas emissions and climate-resilient development

The scale of ambition is clear. In Ireland, with the passing of the *Climate Action and Low Carbon Development Act 2015*, systems for national planning are in place to meet this challenge.

Objectives and Expected Outputs

A strategic response is required such that opportunities for Ireland are realised and costs are reduced. A cross disciplinary approach is required in order to address economic, financial, social, behavioural, political and technological drivers of emissions as well as structural or systemic barriers to transition.

It is envisaged that the PI of the project will contribute to the design and coordination of the work undertaken under the EPA research programme and supported by TRAM on mitigation of GHG emissions.

The objective of this research is to digest and integrate current research in Ireland, the EU and Internationally into a cohesive picture of feasible options facing Ireland in its transition and transformation to a low carbon economy and society by 2050. Close interaction with other EPA funded climate research will be required.

Expected outputs for this project include:

- (vi) Detailed literature review.
- (vii) Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- (viii) Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- (ix) Dissemination 2-pager, which will be used to disseminated the findings of the research to the key stakeholders.
- (x) Workshop/dissemination event to all stakeholders in the relevant arena (e.g., policy, monitoring, regulatory, NGOs, media, public, etc.).

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

Applications:

Applicants are expected to have a primary or higher degree in meteorology, climatology, computing, physics, or a similar discipline and be familiar with data collection, management and analysis. It is anticipated that this person will work closely with experts in these areas within the EPA, other state agencies and government departments and international experts.

Project Structure and Funding:

The fellowship award will be up to **24 months**, with the potential for an additional year.

The indicative funding range is between **€210,000** and **€250,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

Awards will be made in line with the Irish Universities Association recommended salary scales, and to include (which includes 5% for post-completion publicity/dissemination¹¹ please refer to 2016 Guide for Applicants for further details).

It is required that Fellowship applicants identify a host organisation and supervisor prior to submission of completed proposals.

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

¹¹ For example, a €100,000 grant award is made up of €95,000 for fellowship, and €5,000 for post-completion publicity

Theme 4: Air science

The aim of research under this theme is to provide the analysis necessary for the achievement of clean air and co-benefits for climate, health, environment and society, to inform pathways for achievement of highest air quality standards in Ireland, and to advance integrated assessments of air pollution and wider environmental issues. In particular:

- To advance analyses of emissions, transport and removal of air pollutants and increase understanding and awareness of the impacts of air pollutants;
- To improve national inventories and projections of emissions over a wide range of pollutants including heavy metals and POPs;
- To identify and promote emissions abatement options which can enable Ireland to achieve the highest air quality standards.

Topic areas include attribution of air pollutant emissions to economic sectors in order to inform effective actions and improvement of inventory and projections of emissions under National Emissions Ceilings Directive (NECD) and UNECE Convention on Long Range Transboundary Air Pollution/Gothenburg Protocol.

4.1 Dynamic air quality modelling and analysis at regional scale Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:

Call Topic Reference: [Climate 2016 Call-Project 15](#)

Background

The current air quality forecast and warning system operated by the EPA in cooperation with Met Eireann is based on empirical analysis of observed air quality and the meteorological conditions which give rise to poor air quality. As climate and source activities change over time (e.g. changing transport fleet, heating fuel mix etc.), there is a risk the empirical approach may lose relevance and predicative power.

A dynamic forecast model approach incorporates net real time monitoring data, meteorological forecasting, high spatial and temporal resolution emissions mapping and modelling of *in situ* atmospheric chemistry to provide forecast simulations of air quality.

The EPA is funding development work on a national, high resolution emissions mapping database ¹²(1x1km). The principal outputs of this work should be available by Q1 2017. It is timely to harness this resource in order to improve air quality modelling and analysis and with a view to more robust forecasting of air quality for vulnerable members of the community.

Project description

The objective of this research is to support informed policy and decision making regarding the setting and meeting of national and sectoral air pollution targets. Researchers should be ready to collaborate across disciplines and to work with researchers in other EPA funded projects and government policy makers.

Expected outputs for this project include:

- (i) Detailed literature review.
- (ii) Near-operational dynamic air quality forecasting system
- (iii) Model outputs should be presented in an accessible format, and preferably compatible with standard mapping and visualisation software

¹² <http://projects.au.dk/mapeire/>

- (iv) Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- (v) Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- (vi) Dissemination 2-pager, which will be used to disseminated the findings of the research to the key stakeholders.
- (vii) Workshop/dissemination event to all stakeholders in the relevant arena (e.g., policy, monitoring, regulatory, NGOs, media, public, etc.).
- (viii) Training for EPA staff on operation and maintenance of the forecasting system.

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

Project Structure and Funding:

This project is a **Medium Scale Project** which will run for **24** months. The indicative funding available is between **€210,000 and €250,000** (which includes a 5% provision for communication costs¹³ please refer to the 2016 Guide for Applicants for further details).

¹³ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

4.2 Assessment of critical loads of air pollutants and impact on habitats
Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:

Call Topic Reference: [Climate 2016 Call-Project 16](#)

Background

There is a major policy focus on the impacts of nitrogen deposition on ecosystem biodiversity. Despite being a significant area of research across Europe, there is limited capacity in this area nationally. The work under the UNECE Convention on Long Range Transboundary Air Pollution (CLRTAP) is strongly focused on the application of coupled dynamic hydro-geochemical and vegetation models to assess the impacts of nitrogen pollutants.

Work is required for continued improvement in analysis procedures and reporting of data under CLRTAP and the Thematic Strategy on Air Pollution.

The EPA and National Parks and Wildlife Service (NPWS) are key stakeholders in this area.

Proposals are invited for a research project to undertake the following:

Consolidate national research in the area of critical loads and dynamic vegetation modelling. The project should consider previous research undertaken in this area specific to Ireland and regionally. The project will involve;

- close collaboration with stakeholders across various sectors with a view to developing national capacity for the analysis of critical loads
- responding to calls for data in particular from the Centre for Coordination of Effects (CCE) under CLRTAP and
- provision of a solution to the EPA for on-going analysis and data submission.

Expected outputs for this project include:

- (i) Detailed literature review.
- (ii) Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- (iii) Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- (iv) Dissemination 2-pager, which will be used to disseminate the findings of the research to the key stakeholders.
- (v) Workshop/dissemination event to all stakeholders in the relevant arena (e.g., policy, monitoring, regulatory, NGOs, media, public, etc.).
- (vi) Knowledge transfer and training for on-going analysis and data submission.

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

Project Structure and Funding:

This project is a **Medium Scale Project** which will run for **24** months. The indicative funding available is between **€100,000 and €120,000** (which includes a 5% provision for communication costs¹⁴ please refer to the 2016 Guide for Applicants for further details).

¹⁴ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

4.3 Impact of NO₂ emissions on health Project Type: Medium Scale Study

To make an application under this topic area, you must use the following:
Call Topic Reference: [Climate 2016 Call-Project 17](#)

Background

Evidence on the health impacts associated with exposure to NO₂ concentrations has developed significantly over the past few years. In the UK, the Committee on the Medical Effects of Air Pollutants (COMEAP), funded by the Department of Health, provides independent advice to government on the health impacts of air pollution. On 12 March 2015, in light of the new health evidence, COMEAP published a statement entitled “Nitrogen dioxide: health effects of exposure¹⁵”.

The COMEAP concluded:

- Evidence of associations of ambient concentrations of NO₂ with a range of effects on health has strengthened in recent years. These associations have been shown to be robust to adjustment for other pollutants including some particle metrics.
- Although it is possible that, to some extent, NO₂ acts as a marker of the effects of other traffic-related pollutants, the epidemiological and mechanistic evidence now suggests that it would be sensible to regard NO₂ as causing some of the health impact found to be associated with it in epidemiological studies.

However, it was also noted that the observed heterogeneity in health effects of NO₂ are poorly understood and these may be linked to co-associated differences in exposure to ultrafine particulates. Also, the observed associations of NO₂ exposure and bronchitic symptoms in asthmatic children would need to be replicated.

This new research should be viewed in the context of very significant challenges across Europe in meeting the existing targets for the reduction of NO_x emissions from the transport sector.

Proposals are invited for a research project to undertake the following:

It is important that the implications for Ireland of this new research on the health impact of NO₂ and the findings of the UK review are assessed. A desk study is proposed to apply a similar review methodology to establish country specific drivers and vulnerabilities.

Expected outputs for this project include:

- (i) Detailed literature review.
- (ii) Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- (iii) Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- (iv) Dissemination 2-pager, which will be used to disseminated the findings of the research to the key stakeholders.
- (v) Workshop/dissemination event to all stakeholders in the relevant arena (e.g., policy, monitoring, regulatory, NGOs, media, public, etc.).

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It

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https://www.gov.uk/government/uploads/system/uploads/attachment_data/file/411756/COMEAP_The_evidence_for_the_effects_of_nitrogen_dioxide.pdf

is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

Project Structure and Funding:

This project is a **Medium Scale Project** which will run for **24** months. The indicative funding available is between **€100,000 and €120,000** (which includes a 5% provision for communication costs¹⁶ please refer to the 2016 Guide for Applicants for further details).

¹⁶ For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

4.4 **Transboundary air pollutants and greenhouse gas monitoring network support** **Project Type: Research Fellowship**

To make an application under this topic area, you must use the following:

Call Topic Reference: [Climate 2016 Call-Project 18](#)

Background

Ireland is party to the UN Framework Convention on Climate Change (UFCCC) and the UNECE Convention on Long Range Transboundary Air Pollution (CLRTAP). Ireland also fully supports EU actions to address climate change and its programme on Clean Air For Europe (CAFÉ). As part of this process the EPA in conjunction with other stakeholders has developed national transboundary air quality monitoring sites under the European Monitoring and Evaluation Programme (EMEP)¹⁷. A Greenhouse Gas (GHG) monitoring infrastructure has also been developed under the Integrated Carbon Observation System (ICOS).

The EPA has installed relevant GHG monitoring instrumentation at Mace Head in Galway, Carnsore Point in Wexford and Malin Head in County Donegal.

Proposals are invited for a research project to undertake the following:

A Research Fellowship will support the transition of the Transboundary Monitoring Network over to the long term operational management of the EPA. The objective is to ensure continuity in operation and scientific analysis of data during the transition.

- Analysis of transboundary and GHG data from the existing observation network.
- Assist in the submission of relevant quality controlled datasets to relevant international bodies (e.g. ICOS, EMEP)
- Identify gaps in the existing observing infrastructure, in terms of atmospheric monitoring, modelling and ecosystem research.
- Assess the IGOS-I programme in terms of national and international requirements. Liaise with research groups to ensure strong links with ICOS members.
- Assess the level of commitment required to achieve the Operational Phase of ICOS, 2012–2031, for national benefit from participation as well as enhancing the overall function of ICOS. This includes identifying the optimum number and location of atmospheric sites and optimum number and ecosystem types of flux sampling sites

Expected outputs for this project include:

- (i) Detailed literature review.
- (ii) Final report, which should provide a clear and detailed account of all the steps and methodologies used during the project.
- (iii) Synthesis report (20-30pp) which provide a clear non-technical summary of the research.
- (iv) Dissemination 2-pager, which will be used to disseminated the findings of the research to the key stakeholders.

The list provided above is indicative and relevant alternatives will be considered. A dedicated website/webpage should be created and maintained presenting the project and work carried out to date. It is also expected that a number of disseminating outputs such as policy briefs, peer-reviewed publications and presentations will arise from this project.

¹⁷ See Leinert et Al, 2008 <http://www.epa.ie/pubs/reports/research/air/ercreport10.html>

Applications:

Applicants are expected to have a primary or higher degree in meteorology, climatology, computing, physics, or a similar discipline and be familiar with data collection, management and analysis. It is anticipated that this person will work closely with experts in these areas within the EPA, other state agencies and government departments and international experts.

Project Structure and Funding:

The fellowship award will be up to **24 months**, with the potential for an additional year.

The indicative funding range is between **€210,000 and €250,000** (which includes a 5% provision for communication costs^[1] please refer to the 2016 Guide for Applicants for further details).

Awards will be made in line with the Irish Universities Association recommended salary scales, and to include (which includes 5% for post-completion publicity/dissemination¹⁸ please refer to 2016 Guide for Applicants for further details).

It is required that Fellowship applicants identify a host organisation and supervisor prior to submission of completed proposals.

^[1] For example, a €100,000 grant award is made up of €95,000 for project costs, and €5,000 for communication costs (€3,000 of which relates to communication activities and events which take place over the lifetime of the project and €2,000 which relates to post completion dissemination costs).

¹⁸ For example, a €100,000 grant award is made up of €95,000 for fellowship, and €5,000 for post-completion publicity

3. INDICATIVE TIMEFRAME

20 th May 2016:	Call Opening
24 th June 2016 (5pm):	Deadline for queries relating to the technical contents of this call
1 st July 2016 (5pm):	Deadline for submission of applications by applicants
15 th July 2016 (5pm):	Organisation Approval Deadline for authorisation by Research Offices
July/September 2016:	Evaluation Process
September/October 2016:	Negotiation ¹⁹
November 2016:	Grant Award of Successful Projects

4. FURTHER INFORMATION

Information on current research projects being supported by the programme is available in the Research Section of the EPA web site (www.epa.ie/researchandeducation/research).

Alternatively, for further information on this call, please contact research@epa.ie

Follow us on Twitter [@eparesearchnews](https://twitter.com/eparesearchnews) to keep up-to-date with all of our activities

Additional Documents available from the EPA website: www.epa.ie

- *2016 EPA Research Guide for Applicants*
- *2016 EPA Research Guide for Grantees*
- *2016 EPA Research Terms & Conditions for Support of Grant Awards*
- *2016 Quick guide to the EPA on-line portal (How to make an application)*
- *EPA's Open Data and Open Access Rules*

ALL QUERIES, OTHER THAN ON THE SUBMISSION PROCESS, SHOULD BE SUBMITTED BY THE 24TH JUNE 2016, 5PM AT THE LATEST.

[Research@epa.ie](mailto:research@epa.ie) MUST BE COPIED IN ALL EMAILS. NO QUERIES WILL BE ENTERTAINED AFTERWARDS.

¹⁹ The EPA may consider calling the shortlisted applicants for interview at this stage.