



## **EPA Research - 2017 Call**

### **EPA Research – Climate Research Call 2017**

#### **Technical Description**

The EPA Research Programme is funded by the Irish Government.

## **Environmental Protection Agency Research Call 2017: Climate**

This document provides the **Technical Description** for the Environmental Protection Agency (EPA) **Climate** Research Call 2017. Applicants should read the following carefully and also consult the other documentation provided (i.e. Guide for Applicants, Guide for Grantees, EPA Terms and Conditions for support of grant awards).

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# 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.

## Ireland's Climate & Air Quality

Ireland's State of the Environment Report 2016<sup>1</sup> states that responding effectively to climate change is both urgent and long term. It is urgent in that our global actions and responses in the next 5–15 years may effectively lock in large-scale and irreversible planetary changes over this and subsequent centuries. While the 2015 Paris Agreement sets the international agenda, Ireland's actions for addressing climate change need to occur at national, sub-national levels and within and between communities. The National Policy Position (DECLG, 2014), the Climate Action and Low Carbon Development Act 2015 and the draft National Mitigation Plan (DCCA, 2017) provide the policy framework for these actions. These in combination with EU-level emissions targets for 2020 and 2030 will inform and specify the short-term actions and longer-term strategies to advance mitigation and adaptation actions (EPA, 2016). Similarly, the UNECE Air Convention, the EU Clean Air Package and the resulting European and national legislation set the agenda and policy framework for addressing air quality issues.

## EPA Climate Research

A sustained Climate Research Programme is an essential component of Ireland's role in meeting its requirements under The Paris Agreement 2015, the Climate Action and Low Carbon Development Act (2015), the UNECE Air Convention, the EU Clean Air Package and the United Nation's Sustainable Development Goals (UN SDGs) and is committed to aligning our research to assist in the delivery of these goals.

The EPA Climate Research priorities include:

- Supporting the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050. This is will be done through developing the public, policy makers and the research community understanding of what this objective means in an Irish context and how it might be achieved.
- Developing integrated approaches and growth opportunities through management of the challenges that arise from climate change, air quality and other environmental issues.

The EPA Research Programme has been allocated funding of approximately € 1.14m for new commitments in Climate research in 2017.

The EPA Climate Research Pillar is structured into four thematic areas of research as follows:

- Carbon Stocks, GHG Emissions, Sinks and Management Options
- Climate Solutions, Transition Management and Opportunities
- Ireland's Future Climate, its Impacts, and Adaptation Options
- Air science

Multi- and inter-disciplinary research is required on these themes, with expected social, economic, technological, environmental and policy impacts.

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<sup>1</sup> [\*Ireland's State of the Environment Report 2016 – Environmental Protection Agency 2016\*](#)

## Funding Structure

The EPA invites research proposals under the specific topics listed in Table 1. These proposals will be Research fellowships, Desk-Studies or Medium-Scale Projects:

- **Research Fellowship** will typically last from 24 to 36 months with an indicative cost range of up to €250,000;
- **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;
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## Cofunding and Partnerships



As part of the 2017 EPA Climate Research Call, one topic will be cofunded on a 50:50 basis with the Department of Agriculture, Food and the Marine (DAFM).

In carrying out its mandate, DAFM undertakes a variety of functions including:

- Policy advice and development on all areas of Departmental responsibility.
- Representation in international especially EU and national negotiations.
- Development and implementation of national and EU schemes in support of Agriculture, Food, Fisheries, Forestry and Rural Environment.
- Monitoring and controlling aspects of Food Safety.
- Control and audit of public expenditure under its control.
- Regulation of the agriculture, fisheries, and food industries through national and EU legislation.
- Monitoring and controlling animal and plant health and animal welfare.
- Monitoring and direction of State Bodies engaged in the following areas - research training and advice - market development and promotion- industry regulation and development-commercial activities.
- Direct provision of support services to Agriculture, Fisheries, Food and Forestry.

DAFM operates three 'public good' competitive research funding programmes for agriculture, food and forestry to support innovation and economic success across the bioeconomy. DAFM also provides support for Irish involvement in the EU Horizon 2020 research funding programme.



As part of the 2017 EPA Climate Research Call, one topic will be in collaboration with Met Éireann.

Met Éireann, Ireland's National Meteorological Service, is the leading provider of weather information and related services in the State. Its mission is to monitor, analyse and predict Ireland's weather and climate and to provide a range of high quality meteorological and related information to the public and to specific customers in, for example, the aviation and agricultural sectors. As a scientific and technical organisation, it strives to utilise the latest technological and scientific advances in order to improve the efficiency, effectiveness and accuracy of its forecasts.

## Value for Money

All research proposals must **build on findings and recommendations** from past and current research<sup>2</sup> 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.

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<sup>2</sup> including EPA-funded, other Irish and EU and international research projects and initiatives/activities

## List of Topics

**Table 1: List of topics included in the EPA 2017 Climate Research Call**

Call Topic Ref.	Thematic Areas and Project Titles	Max. Budget (€) per project
<b>Ireland's Future Climate, its Impacts, and Adaptation Options</b>		
Climate 2017 Call - Project 1	Societal transition to low carbon, climate resilience by 2050	350,000
Climate 2017 Call - Project 2	Status of Ireland's climate	200,000
<b>Climate Solutions, Transition Management and Opportunities</b>		
Climate 2017 Call - Project 3	Climate Change Mitigation in the land use Sector: Synergies and trade-offs with biodiversity and amenity objectives	120,000 <b>To be cofunded 50:50 with DAFM</b>
Climate 2017 Call - Project 4	Effectiveness Analysis of National Policy measures in achieving Climate goals	100,000
<b>Carbon Stocks, GHG Emissions, Sinks and Management Options</b>		
Climate 2017 Call - Project 5	Quantitative approaches to Greenhouse Gas Emissions Neutrality	150,000
Climate 2017 Call - Project 6	Climate Change and Land	220,000
<b>Air science</b>		
Climate 2017 Call - Project 7	Development of an Irish pollen forecast prototype	200,000 <b>In collaboration with Met Éireann</b>
Climate 2017 Call - Project 8	Examining emerging methods for the quantification and characterisation of odour emissions from regulated activities in Ireland, particularly the non-hazardous waste sector, and their potential use in the assessment of impacts on human health due to emissions to atmosphere from this sector	350,000
Climate 2017 Call - Project 9	Health Impacts of PM10/ PM2.5 in the Irish context linking air quality data to health surveillance data	300,000

## Application Process

### Making an application online:

Applications must ONLY be made online at <https://epa.smartsimple.ie>

### Guide to the EPA online application system:

The guide to the EPA online application system, '2017 Quick guide to the EPA online portal (making an application)', is available for download at

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

### What to include in the application form:

To make the best application possible, it is recommended that you read the '2017 EPA Research guide for applicants' before drafting and submitting an application, available at:

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

### To make an application under any of the topic areas:

Applicants must choose the correct **Call Topic Reference**, as indicated in this Document from the list under the OPEN Calls heading on the homepage of SmartSimple the EPA's Grant Application and Project Management system

It is the responsibility of the **Applicants** to ensure that proposals are submitted before the **call deadline**, and of the relevant **Grant Authoriser** (i.e. Research Offices / Managing Directors for companies) to ensure that the proposals are authorised 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

### 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.

This 2017 Theme's topics aim to advance aspects of work in this area.

Two topics are included in this 2017 EPA Climate Call, under the Theme: Ireland's Future Climate, its Impacts, and Adaptation Options:

<b>Climate 2017 Call - Project 1</b>	Societal transition to low carbon, climate resilience by 2050
<b>Climate 2017 Call - Project 2</b>	Status of Ireland's climate

**Project Title: Societal transition to low carbon, climate resilience by 2050**

**Project Type: Medium-Scale Project**

*To make an application under this topic area, you must use the following Call Topic Reference:*

**Climate 2017 Call - Project 1**

### Background:

There is a need to start the process of imagining what Ireland might be like in a low carbon economy and society in 2050 – what will be different; what will remain the same. The Climate Action and Low Carbon Development Act (2015) established a National Transition Objective to ‘*achieve the transition to a low carbon, climate resilient and environmentally sustainable economy by the end of the year 2050*’. This project will look at what needs to change in Ireland for this transition to happen and can be a focal point on the National Dialogue on Climate Action for Ireland.

The goal of this research is to support the objective of a climate resilient Ireland through developing the public, policy makers and the research community understanding of what this objective means in an Irish context and how it might be achieved. This project will also support, inform and complement the National Dialogue on Climate Action.

There are two inter-related strands to this work:

- A technical piece focussed on the technical, behavioural and therefore policy requirements to achieve transition in 2050.
- A communications piece, encapsulating the 2050 vision and associated intermediate steps in visual media and other graphic tools to communicate the expected or potential realities of a low carbon climate resilient 2050.

### Objectives & Expected Outputs:

Proposals submitted under this topic could consider:

- Providing a series of scenarios for the transport, electricity generation and built environment sectors, to help plan roadmaps for their decarbonisation.
- Developing, understanding of what a climate resilient Ireland would look like and what policy pathways are needed to reach that goal.
- National transition pathways to low carbon, climate resilience.
- Visualisations of 2030 and 2050 scenarios, creating pictures of what the 2050 home, farm and urban area, etc. could look like and the stages to them.
- A climate thought-leaders’ workshop to inform development of scenarios and visualisations.

Outputs from this project **MUST** build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

### Project Structure and Funding:

This topic is a **36-month Medium Scale** project, with an **indicative** budget of up to **€350,000** (which includes a 5% provision for communication costs<sup>3</sup>). Please refer to the **2017 Guide for Applicants** for further details.

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<sup>3</sup> 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).

**Project Title: Status of Ireland's climate**

**Project Type: Desk Study**

*To make an application under this topic area, you must use the following **Call Topic Reference:***

**Climate 2017 Call - Project 2**

#### **Background:**

Since its publication, the 2012 Status of Ireland's Climate<sup>4</sup> report on Global Climate Observing System (GCOS) Essential Climate Variables has been continually drawn upon by all sectors and at the local level. It drew from established networks of observational systems and data on approximately 40 climate variables. It highlighted changes and trends in aspects of Ireland's climate across the atmospheric, oceanic and terrestrial domains. These observations have been essential in understanding Ireland's Climate and building robust projections of its future climate further informing policy formulation towards appropriate mitigation and adaptation measures.

A sustainable observation system is necessary to inform actions and decisions for Ireland. The 2012 Report included an assessment of the sustainability of the Essential Climate Variables (ECV) observations systems. Since the 2012 Report publication, new information systems and analytical approaches have been developed and new datasets are available.

Research is required to provide an update on the status of Ireland's Climate, which will include an assessment of all ECV datasets relevant to Ireland, how to access them, and make recommendations to ensure the observations are made on a sustainable basis. Research is also needed to identify any new, emerging issues related to the ECV observational network, and provide a blueprint to develop and strengthen the ECV observational network for Ireland.

#### **Objectives & Expected Outputs:**

The proposed research could consider the following:

- Progress and recommendations on the progress of changes/ gap filling based on recommendations from the 2012 Report.
- An update on the status of GCOS observational systems for Ireland including new data sources , such as, but not limited to, European Space Agency observational data.
- Review, update and reassess the observational information and data for GCOS defined ECVs relevant to Ireland identified in the 2012 and since.
- Highlighting changes and trends in ECVs relevant to Ireland.
- Identifying new, emerging issues for the observational network and its status, including scoping on developing a sustainable long term ECV observation network.

An output from the proposed research will be an updated report on the status of Ireland's Climate. Outputs from this project **MUST** build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

#### **Project Structure and Funding:**

This topic is a **24-month Desk Study**, with an **indicative** budget of up to **€200,000** (which includes a 5% provision for communication costs<sup>5</sup>). Please refer to the **2017 Guide for Applicants** for further details.

**This topic was prepared in collaboration with the Marine Institute.**

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<sup>4</sup> [The Status of Ireland's Climate - Environmental Protection Agency 2012](#)

<sup>5</sup> 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).

## 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’<sup>6</sup> research report (O'Reilly, O'Brien et al, 2012), ‘Irish TIMES Energy Systems Model’<sup>7</sup> (Ó Gallachóir et al, 2013) and ‘Ireland and the Climate Change Challenge; Connecting ‘How much’ to ‘How to’<sup>8</sup> (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.
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.

This 2017 Theme’s topics aim to advance aspects of work in this area.

Two topics are included in this 2017 EPA Climate Call, under this Theme: Ireland's Future Climate, its Impacts, and Adaptation Options:	
<b>Climate 2017 Call - Project 3</b>	Climate Change Mitigation in the land use Sector: Synergies and trade-offs with biodiversity and amenity objectives
<b>Climate 2017 Call - Project 4</b>	Effectiveness Analysis of National Policy measures in achieving Climate goals

<sup>6</sup> [Addressing Climate Change Challenges in Ireland – Environmental Protection Agency 2012](#)

<sup>7</sup> [Irish TIMES Energy Systems Model – Environmental Protection Agency 2012](#)

<sup>8</sup> [Ireland and the Climate Change Challenge: Connecting ‘How Much’ with ‘How To’ NESC 2012](#)

<b>Project Title:</b>	<b>Climate Change Mitigation in the land use Sector: Synergies and trade-offs with biodiversity and amenity objectives</b>
<b>Project Type:</b>	<b>Desk Study</b>
<i>To make an application under this topic area, you must use the following <b>Call Topic Reference: Climate 2017 Call - Project 3</b></i>	

### Background:

Much research on land use and land use mitigation measures focuses on agricultural-silviculture costs and benefits. There has been little research to date in Ireland on how land use mitigation measures affect other land uses or objectives, such as biodiversity and amenity. This project will address that gap in our understanding.

This desk study could review literature on what are land use mitigation measures, and explore their impacts on biodiversity. Focus could be on:

- Wetland restoration, forestry and agricultural land use management trends and measures that impact greenhouse gas (GHG) emissions from agriculture and land use.
- Land use and land use change impacts.
- Co-benefits, negative externalities and also coherence of policies.

The research could fill the gaps and complement work on the agricultural land use modelling that has recently been funded by the Department of Agriculture Food and the Marine (DAFM)<sup>9</sup>. Where relevant, the process could use common metrics with other research on land-use, e.g. by Teagasc.

### Objectives & Expected Outputs:

The proposed research could consider the following:

- Collation of mitigation measures in the agricultural, wetland and forestry land uses with impacts on biodiversity and amenity objectives.
- Identification of trade-offs and synergies.
- Identification of strategies and measures that can enhance synergies or produce win-wins for mitigation and biodiversity objectives.

Outputs from this project **MUST** build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

### Project Structure and Funding:

This topic is a **12-18-month Desk Study**, with an **indicative** budget of up to **€120,000** (which includes a 5% provision for communication costs<sup>10</sup>). Please refer to the **2017 Guide for Applicants** for further details.

**This topic is cofunded with the Department of Agriculture, Food and the Marine.**

<sup>9</sup> [Minister Creed announces grant awards of over €28m for Agri-Food, Marine and Forest Research – Merrion Street.ie](#)  
15 December 2016

<sup>10</sup> 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).

**Project Title:** Effectiveness Analysis of National Policy measures in achieving Climate goals  
**Project Type:** Desk Study  
*To make an application under this topic area, you must use the following **Call Topic Reference:***  
**Climate 2017 Call - Project 4**

### Background:

The purpose of this research is to perform structured analysis and evaluation of past and current (1996 to present) National Environmental policies as these relate to climate goals and adaptation. To attribute and link changes in the state of the environment, as well as changes in compliance, awareness, behaviours, and the market, to specific policies (including Plans, Statute, Awareness Campaigns, Reviews, and Regulation).

The proposed ex-post evaluation is a backward looking exercise, which aims to appraise national climate policies with regard to their impact, specifically their effectiveness, efficiency, coherence and relevance. The evaluation framework utilised should align with standard evaluation criteria and procedures used in ex-post evaluations of EU policies.

With the agreement of the UN Framework Convention on Climate Change in 1992 and subsequent Kyoto Protocol, Ireland has undertaken specific commitments to address climate change. Furthermore with the Climate Action and Low Carbon Development Act (2015) and the Paris Agreement 2015, it is timely to investigate the legacy of past policies and incentive schemes, both in terms of any measureable impact on environment, and also changes in our behaviours and attitudes through engagement in the schemes.

### Objectives & Expected Outputs:

The proposed research could consider the following:

- To perform an ex-post impact and effectiveness analysis of National Climate Policies in Ireland since 1996.
- Improved understanding of National Climate policy development.
- To identify the sustainability (social, economic, environmental and governance) gains of this policy programme, and generate evidence to inform future policy interventions.

In gathering relevant and necessary data for assessment of national climate policies, the proposed project would develop a comprehensive and extensive data resource using information from existing literature, as well as key stakeholder and data providers within the policies areas of focus. Based on a critical and comprehensive analysis of success and failure within previous national policies (e.g. achievements, what worked well, what did not work well, unintended consequences, market failure, lost opportunities, etc.), it is expected that the project would provide clear insight and understanding and recommendations to ensure smart, effective and timely achievement of, and adherence to, current and future national climate policies.

Outputs from this project **MUST** build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

### Project Structure and Funding:

This topic is a **12-18-month Desk Study**, with an **indicative** budget of up to **€100,000** (which includes a 5% provision for communication costs<sup>11</sup>). Please refer to the **2017 Guide for Applicants** for further details.

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<sup>11</sup> 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).

## 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.

This 2017 Theme's topics aim to advance aspects of work in this area.

Two topics are included in this 2017 EPA Climate Call, under this Theme: Carbon Stocks, GHG Emissions, Sinks and Management Options:

<b>Climate 2017 Call - Project 5</b>	Quantitative approaches to Greenhouse Gas Emissions Neutrality
<b>Climate 2017 Call - Project 6</b>	Climate Change and Land



**Project Title: Quantitative approaches to Greenhouse Gas Emissions Neutrality**

**Project Type: Research Fellowship**

*To make an application under this topic area, you must use the following Call Topic Reference: **Climate 2017 Call-Project 5***

### 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, forestry and land use whilst retaining capacity for sustainable food production. However, neither process provides robust definitions of these concepts. It is important that critical investments in mitigation are targeted on the appropriate sectors and activities.

This study would explore science based approaches to define neutrality in terms of the long term impacts on climate of contemporary emissions and removals of the suite of greenhouse gases; and provide an assessment of related discussions under UNFCCC<sup>12</sup> and at EU level post-Paris. 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-CO<sub>2</sub> emissions across all sectors.

### Objectives & Expected Outputs:

The research will provide a broad perspective on the historical, current and projected emissions profile for Ireland in the context of wider EU and global actions to reduce GHG emissions. The analysis will focus on the possible impact of different comparative metrics on the assessment of costs and benefits of mitigation options. The study would 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 out in close cooperation with the EPA and other bodies in Ireland that are working on analysis of GHG emissions and removals.

Outputs from this project MUST build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

### Project Structure and Funding:

This topic is a **24-month Research Fellowship**, with an **indicative** budget of up to **€150,000** (which includes a 5% provision for communication costs<sup>13</sup>). Awards will be made in line with the Irish Universities Association recommended salary scales. Please refer to the **2017 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.**

<sup>12</sup> UNFCCC: United Nations Framework Convention on Climate Change

<sup>13</sup> 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).



**Project Title: Climate Change and Land**

**Project Type: Research Fellowship**

*To make an application under this topic area, you must use the following Call Topic Reference: **Climate 2017 Call - Project 6***

#### Background:

The work of the Intergovernmental Panel for Climate Change (IPCC) is central to assessment of a broad range of climate change related research and the communication of key issues and challenges including policy options. The IPCC is to produce a Special Report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems<sup>14</sup> also known as the Special Report on Climate Change and Land (SRCCL) as part of its 6<sup>th</sup> Assessment Cycle.

Many of topics within the scope of the Special Report are of direct relevance for Irish land use, food production and Climate Change actions. The Special Report will progress through a number of drafting stages and Lead Author Meetings (LAM). The SRCCL will be submitted to the IPCC for approval by August 2019, with the detailed timetable for the drafting published on the IPCC website<sup>14</sup>.

This research could focus on co-benefits and trade-offs between mitigation of GHG emissions, and enhancing carbon removals from the atmosphere and other sustainable development objectives. The aim of this proposed research project is identify gaps in knowledge including tools for land use management planning and policy development.

Applicants are invited to propose research to identify gaps in knowledge including tools for land use management planning and policy development. This research could focus on co-benefits and trade-offs between mitigation of GHG emissions, and enhancing carbon removals from the atmosphere and other sustainable development objectives. The fellow will need to keep abreast of the latest research informing the SRCCL drafting progress and the implications of the international research for Ireland.

#### Objectives & Expected Outputs:

The proposed research could consider the following:

- Providing information to assess integrated mitigation and adaptation options which have potential for adoption in Ireland.
- Providing strategic co-benefits with respect to other environmental objectives such as enhance biodiversity and water resource management water quality.
- Identify gaps in knowledge including tools for land use management planning and policy development.
- It will ensure that Ireland has the most up to date knowledge of global and regional emissions and removals of GHG associated with land use and land management.

It is expected that the Research Fellow would work closely with the EPA, DAFM and other stakeholders, including the Technical Support Unit of the IPCC Working Group 3<sup>15</sup>, as appropriate.

**It is recommended that researcher consult with the IPCC Technical Support Unit (TSU) to ensure that their proposal is feasible (Please email your query to [research@epa.ie](mailto:research@epa.ie), who will then liaise with the IPCC Technical Support Unit) for Working Group III in the preparation of a proposal.**

Outputs from this project MUST build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

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<sup>14</sup> [IPCC special report on climate change, desertification, land degradation, sustainable land management, food security, and greenhouse gas fluxes in terrestrial ecosystems](#)

<sup>15</sup> [Working Group III Mitigation of Climate Change](#)

### Project Structure and Funding:

This topic is a **36-month Research Fellowship**, with an **indicative** budget of up to **€220,000** (which includes a 5% provision for communication costs<sup>16</sup>). Awards will be made in line with the Irish Universities Association recommended salary scales. Please refer to the **2017 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.**

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<sup>16</sup> 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).

## 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, the objectives of this theme are:

1. To advance analyses of emissions, transport and removal of air pollutants and increase understanding and awareness of the impacts of air pollutants;
2. To improve national inventories and projections of emissions over a wide range of pollutants including heavy metals and POPs;
3. 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.

Three topics are included in this 2017 EPA Climate Call, under Theme 4: Air Science:

<b>Climate 2017 Call - Project 7</b>	Development of an Irish pollen forecast prototype
<b>Climate 2017 Call - Project 8</b>	Examining emerging methods for the quantification and characterisation of odour emissions from regulated activities in Ireland, particularly the non-hazardous waste sector, and their potential use in the assessment of impacts on human health due to emissions to atmosphere from this sector
<b>Climate 2017 Call - Project 9</b>	Health Impacts of PM10/ PM2.5 in the Irish context linking air quality data to health surveillance data

**Project Title: Development of an Irish pollen forecast prototype**

**Project Type: Research Fellowship**

*To make an application under this topic area, you must use the following **Call Topic Reference:***

**Climate 2017 Call - Project 7**

#### **Background:**

The current pollen forecast provided in the Republic of Ireland is based on UK pollen data and UK region specific meteorological data, using a proven UK model. The aim of this project is to develop an Irish pollen forecast tool using Irish pollen and meteorological data. Such a tool could provide a service that is significantly better than that currently provided to the Irish public.

The proposed research should include the following:

- Appraisal of all options for the development of a national pollen forecast tool (not limited to the UK model).
- Initial development of an Irish pollen forecast prototype using a model and available pollen data identified in the aforementioned appraisal, but using Irish region-specific meteorological data.
- A costed and scheduled proposal for the establishment of a national network of real time monitoring of pollen, with consideration as to how it might be incorporated into the forecast prototype as mentioned above. The work should consider the wider EU context and monitoring network requirements.
- Recommendations for the operation, maintenance and further development of the prototype.

The proposed research should also link to the outputs of the existing and on-going On-line Monitoring of Bioaerosols (OLBAS) project, EPA ref. 2014-CCRP-MS.19, due to be completed 02/07/2017. OLBAS assessed on-line (real-time) instrumental approaches to the detection of bio-aerosols at composting sites in Ireland. In addition, in order to assess the possibility of developing a national pollen monitoring service in Ireland, the on-line instrumentation has been co-deployed with a Hirst-type/Burkard impaction device at the Met Éireann Valentia Observatory site. Further details can be found at: <https://www.ucc.ie/en/crac/research/olbas/>. The EPA will facilitate linkages with the OLBAS project, e.g. by including similar steering committee members for both projects.

#### **Objectives & Expected Outputs:**

Proposals submitted under this topic could provide:

- A review of options for the development of a national pollen forecast tool.
- A model ready for operational deployment: (i) development of a national pollen forecast prototype using Irish region-specific meteorological data; (ii) further development of a national pollen forecast prototype that is ready to incorporate national pollen data. Any prototype/model developed must be fully transferable to the EPA/Met Éireann IT systems by the completion date of the project in accordance with the Research Call Terms and Conditions and Guide for Applicants.
- A compatible and tested measurement system for pollen ready for roll out operationally.
- Recommendations for development of the national pollen forecast prototype and monitoring network.

Outputs from this project MUST build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

### Project Structure and Funding:

It is expected that this project will be a **24 month Fellowship**, with an **indicative** budget of up to **€200,000** (which includes a 5% provision for communication costs<sup>17</sup>). Please refer to the **2017 Guide for Applicants** for further details.

**This topic was prepared in collaboration with Met Éireann.**

**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.**

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<sup>17</sup> 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).

<b>Project Title:</b>	<b>Examining emerging methods for the quantification and characterisation of odour emissions from regulated activities in Ireland, particularly the non-hazardous waste sector, and their potential use in the assessment of impacts on human health due to emissions to atmosphere from this sector</b>
<b>Project Type:</b>	<b>Medium-Scale Project</b>
<i>To make an application under this topic area, you must use the following <b>Call Topic Reference:</b></i>	
<b>Climate 2017 Call - Project 8</b>	

## Background

The main aim of this research project is to quantify and characterise odour emissions from the non-hazardous waste sector in Ireland. Non-hazardous waste is heterogeneous and its composition particular to the region where it is generated. It can contain significant but variable quantities of biodegradable waste so its potential for generating odour emissions is variable. This project also aims to consider the potential impacts on human health due to emissions to atmosphere from this sector.

This research will deliver evidence and techniques that supports licensing and enforcement work in relation to the EPA-licensed activities (e.g. landfills, waste transfer stations, etc.) with the potential to generate odorous emissions. The outputs from this project could feed into the Best Available Techniques process of the Industrial Emissions Directive. The research will also inform the approach to communications between the EPA and residents living in the areas around non-hazardous waste facilities. The research also aims to consider/recommend how the findings of the research could be applied to odour issues in other areas, such as Local Authority complaints relating to the food sector.

## Objectives & Expected Outputs:

Proposals submitted under this topic could consider including the following:

- **Literature review** examining emerging methods for the quantification and characterisation of odour emissions; and emissions abatement systems in the non-hazardous waste sector. This literature review should cover:
  - The expected range of odour emission rates from the key activities (primarily waste and food processing activities) which are licensable by the EPA and which have significant potential for the generation of odorous emissions.
  - The individual components of emissions to atmosphere from an activity that cause odour.
  - Typical emission rates for each component, including addressing channeled emissions and fugitive emissions where applicable; as well as
  - Details of the most appropriate abatement technologies.

The literature review should similarly consider odour emissions and abatement for the local authority regulated food sector.

- **Ireland-specific data** in relation to non-hazardous waste processing activities, including:
  - Quantification and characterisation of emissions from Irish non-hazardous waste processing, including facilities that store waste temporarily, facilities which process waste and organic waste composting facilities. The method(s) chosen for this work would be based on the recommendations from the literature review.
  - A review of existing monitoring completed by operators; as well as
  - Field work to monitor emissions from a number (up to 6) of different facilities (e.g. composting, non-hazardous waste transfer stations, etc.) in Ireland. Monitoring should include assessment of odour emission rates, as well as more detailed analysis to provide information on the composition of the emissions. Compositional elements would also include assessment of particulate and bio-aerosol emissions from the activity as well as gaseous species.

- Review of **links between odour, and other emissions from non-hazardous waste treatment, and human health**. This research entails a review of existing literature and research to identify links, if any, between human health and odour, as well as other emissions to atmosphere, from the types of facilities investigated above. The research should also seek to collate any available data on the **health impacts of odour neutralising agents** which may be used by waste facilities. The project should thus estimate the extent, if any, of the risk to human health posed by air emissions (including odour) arising from these waste facilities.
- **Governance**. The project could also review all aspects of existing governance (e.g. planning issues, environmental regulations, etc.) of unlicensed odour generating facilities (e.g. local authority regulated food sector), and make recommendations in line with international best practice.

Outputs from this project MUST build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

#### **Project Structure and Funding:**

It is expected that this project will be a **36 month Medium-Scale** project, with an **indicative** budget up to **€350,000** (which includes a 5% provision for communication costs<sup>18</sup>). Please refer to the **2017 Guide for Applicants** for further details.

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<sup>18</sup> 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).

<b>Project Title:</b>	<b>Health impacts of PM<sub>10</sub>/PM<sub>2.5</sub> in the Irish context linking air quality data to health surveillance data</b>
<b>Project Type:</b>	<b>Medium-Scale Project</b>
<i>To make an application under this topic area, you must use the following <b>Call Topic Reference:</b></i>	
<b>Climate 2017 Call - Project 9</b>	

#### Background:

There are no recent studies published linking Irish health surveillance data to air quality data. This project will involve a research team formed including air quality and public health specialists. Sound Irish data and statistics outlining the health impacts of elevated pollutant levels on the Irish population can assist in policy formation and drive positive change for human health and the environment.

The proposed research could consider establishing a system for collecting and collating the relevant human health and air quality data in a manner that allows sensible interrogation so that links between human health and air quality can be identified.

In particular the project, which initially will focus on particulate matter (PM) pollution, could include the following:

- Consider how data measuring health impact of air quality, and PM in particular, is collected in other countries.
- Identify the relevant data and statistics for assessing the health impact of elevated PM levels on the Irish population.
- Determine how best to collect and collate the relevant health and air quality data and define infrastructural requirements for developing appropriate systems in Ireland with capacity to interrogate routine health service utilization data and identify linkages between human health and air quality.
- Provide recommendations for health and other relevant national agencies on how to develop a comprehensive operational system to link health and air quality data, in line with international best practice, including how to provide an estimate of the economic cost of the health impact from poor air quality.

The project should add to what has been done before in this area and there should be links to the project on the *Impact of NO<sub>2</sub> on health with particular emphasis on vulnerable groups* (EPA Ref. 2016-CCRP-MS.42), due to begin later this year. Research project 2016-CCRP-MS.42 will examine the implications for Ireland of recent indications of associations between NO<sub>2</sub> and health impacts by 1) reviewing literature including the studies in the COMEAP (Committee on the Medical Effects of Air Pollutants) review 2) assessing the future trajectories of drivers causing increased NO<sub>2</sub> levels, and 3) estimating the vulnerabilities of the population by analysing health databases. The EPA will facilitate linkages with this project, e.g. by including similar steering committee members for both projects.

The project should facilitate the formation of linkages between air quality and health professionals and provide an impetus for further research in this area.

#### Objectives and Expected Outputs:

Proposals submitted under this topic could provide:

- Preliminary assessment of links between air quality and human health.
- Capacity analysis of current systems of air quality measurement and routine health information systems in Ireland for assessing health impact of air quality.
- System for collecting, collating and interrogating air quality and human health data to support both epidemiological studies and health impact assessment of recent events.
- Recommendations for future development of above system, including addressing sensitivities related to collection of human health data.



Outputs from this project MUST build on existing research and information available. Please refer to [Section 3](#) for more information regarding EPA-funded expected outputs.

**Project Structure and Funding:**

It is expected that this project will be a **36-month Medium Scale Study** project, with an **indicative** budget of up to **€300,000** (which includes a 5% provision for communication costs<sup>19</sup>). Please refer to the **2017 Guide for Applicants** for further details.

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<sup>19</sup> 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. Expected Outputs

For all projects submitted under the 2017 Climate Call, **expected outputs include, but are not limited to:**

- **Final Report**, which should provide a clear and detailed account of all the steps and methodologies used during the project and ensure that the objectives, set out above, are met – including recommendations.
- **Synthesis Report** (20-30pp), which provide a clear non-technical summary of the research and of the recommendations.
- **Dissemination 2-pager**, which will be used to disseminate the findings of the research to the key stakeholders.
- **Workshop/Dissemination event(s)** 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. Please consult the **2017 Guide for Applicants, 2017 Guide for Grantees** and the **EPA Terms and Conditions of award** for the full list of interim and final reporting requirements.

In addition for the topic cofunded with the Department of Agriculture, Food and the Marine (DAFM), the successful project will be required to fully acknowledge the sources of funding, as well as clearly use the funders' logos on all outputs.

A **dedicated website/webpage/Twitter account** should be created and maintained, presenting the project and work carried to-date.

It is also expected that a number of **dissemination outputs**, such as posters, leaflets, newsletters, policy briefs, peer-reviewed publications and presentations, will arise from the projects.

It is essential that applicants clearly demonstrate, in their proposal, the **policy-relevance** of the outputs of their proposed research; the **applicability** of their findings; and how these outputs address a knowledge-gap and can be **efficiently transferred/applied to the implementation** of water-related policies and the protection of our water resources.

## 4. Indicative Timeframe

<b>5<sup>th</sup> May 2017:</b>	<b>Call Opening</b>
<b>26<sup>th</sup> June 2017 (5pm):</b>	<b>Deadline for queries relating to the technical contents of this call</b>
<b>3<sup>rd</sup> July 2017 (5pm):</b>	<b>Deadline for submission of applications by applicants</b>
<b>14<sup>th</sup> July 2017 (5pm):</b>	<b>Organisation Approval Deadline</b> for authorisation by Research Offices
<b>July/September 2017:</b>	<b>Evaluation Process</b>
<b>September/October 2017:</b>	<b>Negotiation<sup>20</sup></b>
<b>November 2017:</b>	<b>Grant Award</b> of Successful Projects

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<sup>20</sup> The EPA may consider calling the shortlisted applicants for interview at this stage.

## 5. 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](http://www.epa.ie/researchandeducation/research)).

Alternatively, for further information on this call, please contact [research@epa.ie](mailto: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:

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

- *2017 EPA Research Guide for Applicants*
- *2017 EPA Research Guide for Grantees*
- *2017 EPA Research Terms & Conditions for Support of Grant Awards*
- *2017 Quick guide to the EPA on-line portal (How to make an application)*
- *EPA's Open Data and Open Access Rules*

**All queries MUST be submitted to [research@epa.ie](mailto:research@epa.ie) .**

**All queries, other than on the submission process, should be submitted by the 26<sup>th</sup> June 2017, 5pm at the latest. No queries will be entertained afterwards.**