An Roinn Caiteachais
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An Introduction to the Implementation of Green Budgeting in Ireland

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CLIMATE CHANGE UNIT

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IGEES

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Key Messages

- A central aim of the Paris Agreement within the United Nations Framework Convention on Climate Change (UNFCCC) is to bring national policy frameworks and financial flows into alignment with a pathway towards low greenhouse gas emissions and climate-resilient development.

- As part of Ireland's commitment to developing the policy framework necessary to achieve this low carbon transition, the Minister for Public Expenditure & Reform and Minister for Finance, Paschal Donohoe T.D., has committed to the progressive implementation of green budgeting in Ireland through the budgetary and estimates process.

- Green budgeting is the use of the budgetary system to promote and achieve improved environmental outcomes. It is an explicit recognition that the budgetary process is not a neutral process, but reflects long standing societal choices about how resources are deployed. This recognition of the nature of the budgetary process builds on the implementation of gender and equality budgeting, which is already at an advanced stage in Ireland.

- In practical terms, green budgeting is likely to involve examining the level and effectiveness of the Government expenditure devoted to addressing climate change, the unintended environmental consequences of other areas of Government spending and the environmental impact of the taxation system. It will also require an examination of the potential long term fiscal implications of Ireland's decarbonisation pathways and the development of new tools and indicators to estimate the impact of new individual measures against climate and environmental outcomes.

- Given the breadth of this task, the implementation of green budgeting will be an iterative process which will take place over several budgetary cycles. Green budgeting is a new and evolving area of budgetary governance and there are no ready-made, widely accepted templates that Ireland can adopt. Instead, Ireland will work with the OECD Paris Collaborative on Green Budgeting to research, pilot, review and implement individual initiatives.

- Decisions on the specific initiatives to prioritise early in the development of green budgeting will be based on an assessment of their ability to deliver on outcomes which include:
    - Transparency – Initiatives which can help to inform the public and policy makers about measures which are helping Ireland to make progress towards climate targets and those measures which are possibly hindering progress.
    - Effectiveness – Initiatives which can assist policy makers in identifying those measures which represent the best value for money and hence contribute to an evidence-based debate on climate change.

- The interaction with the OECD Paris Collaborative will be led by the Department of Public Expenditure and Reform. However, it is clear that the effective implementation of green budgeting will require cross-disciplinary input from a range of Departments and experts. The Department will develop a structure that facilitates this input in concert with the existing frameworks established to support the Climate Action and Low Carbon Development Act 2015.

- As a first step in implementing green budgeting, the Department of Public Expenditure and Reform has attempted to identify Exchequer climate-related expenditure planned for 2019 and has published a table of this expenditure at Appendix 11 in the 2019 Revised Estimates for Public Services Volume 2019.

- Identifying the quantum of Government expenditure dedicated to addressing climate change is a necessary first step in assessing the effectiveness of this expenditure against climate and environmental goals.

- The definition of climate-related expenditure used in the construction of this table is: *"Any expenditure which promotes, in whole or in part and whether directly or indirectly, Ireland's transition to a low carbon, climate-resilient and environmentally sustainable economy."*

- Using this definition, it is estimated that over €1.6 billion of Exchequer funds in 2019 will be allocated to programmes which can help Ireland to achieve our climate goals. This expenditure includes funding for energy efficiency, agri-environmental schemes, public transport and flood risk management along with other areas detailed in Part Two of this paper.

- In addition to the funding identified, there are also significant additional Exchequer commitments to areas such as climate finance, water services, innovation, sustainable agricultural practices and energy efficiency in educational facilities. Due to the nature of expenditure in these areas, it has not been possible at this stage to link the climate related elements of expenditure in these areas to a specific sub-head in the Revised Estimates for Public Services Volume.

- It is intended that the table of climate-related expenditure will be included in the Revised Estimates for Public Services Volume on an ongoing basis. It is the intention that the table will be refined and developed over time through Ireland's participation in the OECD Paris Collaborative on Green Budgeting.

Quality assurance process

To ensure accuracy and methodological rigour, the author engaged in the following quality assurance process.

- ☐ Internal/Departmental
  - ☒ Line management
  - ☐ Other divisions/sections
  - ☐ Peer review (IGEES network, seminars, conferences etc.)
- ☐ External
  - ☐ Other Government Departments
  - ☐ Steering group
  - ☐ Quality Assurance Group (QAG)
  - ☐ Peer review (IGEES network, seminars, conferences etc.)
  - ☐ External expert(s)
- ☐ Other (relevant details)

Purpose of this Paper

The Minister for Public Expenditure and Reform announced in Budget 2019 (9 October 2018) that Ireland has joined the OECD's Paris Collaborative on Green Budgeting. The Minister also announced that Ireland intends to track climate-related expenditure starting with the Revised Estimates for Public Services Volume 2019[1] (published on December 19th 2018).

The purpose of this brief paper is twofold. It will provide an overview of the concept of "green budgeting", explain why the Irish Government has committed to the concept, the expected outcomes it is hoped that the initiative will lead to and how the Department of Public Expenditure and Reform will lead Ireland's interactions with the OECD Paris Collaborative on Green Budgeting.

The paper will also explain the development of the table of climate-related expenditure adopted in the 2019 Revised Estimates Volume. It will set out the definition used to determine which elements of Government expenditure are considered to be climate related and will consider how the identification of climate-related expenditure will be developed over time.

Part One: Green Budgeting

What is Green Budgeting?

Green budgeting is a new concept which seeks to embed climate and environmental goals within the budgetary process. The purpose of green budgeting is to ensure that, given their importance, there is sufficient consideration of climate and environmental effects within policy making. This means not just a greater appreciation of the impacts of specific climate and environmental measures but also an appreciation of the impacts other unrelated policies may have on climate and environmental outcomes, whether these policies encompass expenditure, taxation and/or regulation.

Green budgeting recognises that budgeting is not a neutral administrative process, but that expenditure decisions, whether purposely or inadvertently, have climate and environmental impacts and that these should be taken into account when making policy decisions. Green budgeting also recognises that fiscal policies can support the transition to a low carbon economy.

Green budgeting is, as yet, in the early stages of development and hence there is no standard definition, nor single set of methodologies and/or rules to be followed in implementing a process of "greening" the budgetary and estimates process.

In general, green budgeting initiatives tend to be wide ranging and include examining the environmental impact of Government taxation and expenditure measures, reporting on these through the budgetary process alongside efforts to project the impacts of policy on a number of climate related indicators. Over the longer term, there are a number of valuable outputs that could be achieved through a green budgeting process.

[1] http://www.per.gov.ie/wp-content/uploads/Revised-Estimates-2019.pdf

These could include, for example:

- systematically examining existing and potential fiscal instruments and policies to ensure their alignment with climate and energy goals;
- breaking policies down into direct, external, embedded and induced impacts;
- mapping the full range of fiscal instruments to facilitate a low carbon transition;
- critically examining the potential long term fiscal implications of our decarbonisation pathways; and
- the development of new tools and indicators to estimate the impact of new individual measures against climate and environmental outcomes.

Given the complexity and sheer breadth of some of these tasks, introducing green budgeting practices will be an iterative process, taking place over several budgetary cycles and informed by best practice models developed through the OECD Collaborative on Green Budgeting.

Green budgeting will also meet an existing Government commitment, made as part of the National Mitigation Plan (2017), to developing *"proposals for monitoring and reporting of climate related expenditure through the Exchequer"* (Action 12).

Joining the OECD Paris Collaborative will provide a valuable resource for Ireland in achieving this commitment through access to a cross-disciplinary group of environmental, tax, budget and fiscal affairs experts. These experts will partner with countries to help them to critically assess their budgetary and fiscal policies with regards to climate resilience. This engagement will also facilitate an active exchange of ideas and expertise on green budgeting between participating countries.

The OECD Paris Collaborative on Green Budgeting

The Organisation for Economic Co-operation and Development (OECD) launched the Paris Collaborative on Green Budgeting at the One Paris Summit in Paris on 12 December 2017. The announcement was endorsed by the Environment Ministers of France and Mexico at the launch and, since then, a number of OECD Member States, including Ireland, have joined the Collaborative.

The OECD refers to Green Budgeting as "*using the tools of budgetary policy-making to help achieve environmental goals*". This includes "*evaluating environmental impacts of budgetary and fiscal policies and assessing their coherence towards the delivery of national and international commitments.*" The issues relating to green budgeting are particularly pertinent for Ireland, where it is becoming increasingly important to understand the extent to which budgetary decisions are impacting the country's ability to reach legally binding climate and energy targets.

Working Method

The Collaborative aims to "*work towards agreed definitions and methodologies that can support national approaches to green budgeting and develop outputs that can improve co-ordinated national and international policy design*" and to "*design new, innovative tools to assess and drive improvements* *in the alignment of national expenditure and revenue processes with climate and other environmental goals*."

Through the Paris Collaborative, the OECD will work closely with governments and experts to co-design practical and implementable approaches to green budgeting. The Collaborative brings together international work-streams on environmental policy and climate change, budgeting and tax policy, green accounting and inclusive sustainable growth. The Collaborative will provide a co-ordinating platform to exchange knowledge and pilot initiatives in this area and aims to build upon existing international reporting practices rather than to develop duplicative approaches.

What Will Participating in the Collaborative Mean for Ireland?

Participation in the Collaborative does not bind Ireland into accepting any specific reforms. While it is difficult at this point in time to be prescriptive about what a commitment to green budgeting will mean in practice for Ireland, it is likely to involve looking more critically at expenditure and taxation policy, in particular with respect to their climate and environmental outcomes. Some examples of potential initiatives that could be progressed in the short term include:

- A more in-depth examination of the linkages between climate expenditure measures and their climate/environmental impacts;

- The development of structured climate policy evaluation frameworks which should also allow for greater policy comparison across the relevant sectors;

- More comprehensive ex post/ex ante evaluation of the environmental impacts of climate/environmental policies;

- An increased focus on addressing the data gaps that inhibit the evaluation of climate policies and initiatives.

These measures will contribute to more informed policy debate on climate matters and increase the transparency of budgetary decision making. Ultimately, the selection of which measures to prioritise will be made in line with the best practice recommendations which will emerge from Ireland's participation in the OECD Paris Collaborative on Green Budgeting.

Participation in the Collaborative is being led by the Department of Public Expenditure and Reform, working closely with officials from the Department of Finance, and other Government Departments as necessary, through the structures established to support the delivery of the National Mitigation Plan, such as the Technical Research and Modelling Group (TRAM).

In particular, there will be a crossover with the Annual Transition Statement (ATS) required under the Climate Action and Low Carbon Development Act 2015. Each ATS includes a summary of Ireland's current and projected greenhouse gas emissions in that year, as well as compliance with Ireland's climate change obligations, both national and international. The ATS also provides an overview of all climate change mitigation and adaptation policies and measures which have been adopted in order to enable Ireland's national transition to a low-carbon economy. Hence, work to better estimate the specific climate and environmental impacts will also lead a more detailed ATS.

In addition, there will be synergies with the work being undertaken by the Irish Government Economic Evaluation Service (IGEES). Since 2017, IGEES has been conducting a series or rolling expenditure reviews. The purpose of these reviews is to help to ensure that all Government expenditure is examined with regard to the principles of efficiency, effectiveness, sustainability and impact.

The 2018 Spending Review was the second in this series, which will covering Government spending over a three year period to 2019. Through the IGEES expenditure reviews, there is a significant ex post evaluation regime which has already been applied to several climate focused expenditure programmes and, given the significant Exchequer commitment to addressing climate change in the new National Development Plan, this is anticipated to grow.

More information on the **Paris Collaborative on Green Budgeting** can be found at:
http://www.oecd.org/environment/green-budgeting/

Why is Ireland Adopting Green Budgeting?

If unabated, climate change will have a number of negative impacts on Ireland. While the specific consequences of climate change are unclear, these effects will undoubtedly pose significant fiscal and economic risks for the Exchequer. Responsible investment and financial management practices will be necessary to mitigate these risks. Investment in both mitigation and adaptation measures will be one element of reducing the Exchequer's exposure in the future.

It is the role of the Department of Public Expenditure and Reform to deliver well-managed and well-targeted public spending. This means ensuring that Ireland's climate transition is achieved at the lowest possible cost. If this objective is to be realised, establishing a regime that can provide policy makers with an evidence-based assessment of the efficiency and effectiveness of both new and existing measures which could affect climate and environmental outcomes is necessary.

The effective implementation of green budgeting will play a vital role in achieving this objective. At a very high level, it is hoped that a greater focus on green budgeting initiatives will make Government action on climate change more transparent to citizens and will raise awareness and understanding of climate policy. It will also highlight the related trade-offs between choices on taxation and expenditure policy and has the potential to induce changes to policy making that will result in improved environmental outcomes.

International Experience of Green Budgeting

Several EU Member States have made some 'green budgeting' reforms to their budgetary systems over the past three decades. The United Kingdom has undertaken departmental spending reviews and included climate related goals as part of the previously used Public Service Agreements. Portugal has introduced a number of environmental taxes[2]. The EU introduced, as part of commitments to 'mainstream' climate change across different policy areas and for at least 20 per cent of the EU budget to support climate change related activities, a common methodology for tracking and monitoring climate expenditure under the European Structural and Investment Funds for the period 2014-2020.

As previously mentioned, no international standard on how climate change-related expenditure is reported in national budgets exists. Much of the work in the green budgeting space has been focused on developing nations reporting on their use of climate finance monies received from developed countries. This reporting has proven difficult. Climate finance, while typically associated with flows of money from developed to developing countries, is a diverse concept. The United Nations Framework Convention on Climate Change[3] (UNFCCC) Standing Committee on Finance defines climate finance as "finance that aims at reducing emissions, and enhancing sinks of greenhouse gases and aims at reducing vulnerability of, and maintaining and increasing the resilience of, human and ecological systems to negative climate change impacts." In this sense it refers to all flows of funds that support climate related projects.

Climate Public Expenditure & Institutional Review (CPEIR)

Although not driven explicitly by green budgeting, a number of developing countries have started to introduce country driven initiatives for tracking climate expenditure by using tagging in their budgeting systems. In Asia-Pacific, Nepal was the first country to adopt climate change tagging, followed by Indonesia and the Philippines.

A climate budget tagging system normally consists of the following: defining and classifying climate activities, weighing their climate relevance and designing the tagging procedure. These are practices which are also undertaken as part of the United Nation's Development Programme's (UNDP's) "Climate Public Expenditure & Institutional Review (CPEIR)". The CPEIR[4] examines the linkages between policies, institutions and budgeting, with respect to climate.

The CPEIR methodology was introduced in 2011 and was an adaptation of the already existing Public Expenditure Review methodology in use by the World Bank. The idea was to use a version of this methodology for application to climate change. Public Expenditure Reviews are normally used to analyse policies ex post by comparing planned costs with what was actually allocated, spent and achieved, in relation to the objective. This later branched into institutional assessments, resulting in the development of Public Expenditure and Institutional Reviews (PEIRs).

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[2] https://www.eea.europa.eu/highlights/fiscal-reform-can-create-jobs

[3] https://unfccc.int/files/cooperation_and_support/financial_mechanism/standing_committee/application/pdf/2014_biennial_assessment_and_overview_of_climate_finance_flows_report_web.pdf

CPEIR's provide countries with the opportunity to actively identify and label those activities within their budgets which directly and indirectly address climate change adaptation and mitigation, but which are rarely explicitly categorised as such. As well as a policy and institutional analysis, the CPEIR includes Climate Public Expenditure Analysis.

This pillar quantifies the climate relevant expenditure out of the total national budget and measures fiscal policies, such as tax incentives and subsidies, as part of climate financing instruments. Elements of the CPEIR often include a definition and/or typology used to identify climate change relevant expenditures for the Review; An analysis of recent trends on budget allocations and/or public expenditures that appear relevant to climate change; and recommendations on improving the relevance and impact of public expenditure for both mitigation and adaptation.

The CPEIR is a methodological tool that allows policy makers to assess the present status of the national response to climate change. The intention of a CPEIR is to identify the actions that will be required to strengthen a countries approach in responding to climate change. Through its examination of the 3 spheres of climate policy[5], the CPEIR aims to ensure broad coherence across these elements of climate policy. Over the longer term there are a number of elements of the CPEIR that could beneficially be applied to developed countries to ensure national structures for tackling climate change are optimal.

[5] Policy Analysis, Institutional Analysis & Climate Public Expenditure Analysis

European Structural and Investment Funds

The European Union budget has an important role to play in supporting the transition to a low carbon economy, both through encouraging the investments needed to meet climate targets, as well as promoting climate action across all sectors of the European economy.

In November 2013, the European Council agreed that climate related expenditure should make up at least 20% of the EU budget in the period 2014-2020 and that this should be reflected in the appropriate instruments.

The European Structural and Investment Funds (ESIF) are one such instrument and consist of five funds which work to support economic development across the EU:

1. European Regional Development Fund;
2. Cohesion Fund;
3. European Social Fund;
4. European Agricultural Fund for Rural Development; and
5. European Maritime and Fisheries Fund.

Together the five funds make up more than 43% of the EU budget over the period 2014-2020 and approx. 25% of the ESIF budget has been earmarked for climate action.

The Commission prepared a set of fund fact sheets which provide guidance on mainstreaming and assessment of climate action under the ESIF[6]. They also developed a methodology for tracking and monitoring climate related expenditure across all five funds[7]. Expenditure is tracked at every stage of the programming cycle (i.e. programming, implementation, monitoring and review).

The methodology builds on the existing OECD Rio Markers methodology which was already in use by the Commission to track climate finance related spending. A modified version of this Rio Markers methodology is used for the funds and climate markers are applied to all expenditure as follows:

- **100% Climate Marker** - where the primary objective is to support climate action e.g. wind farms, energy efficiency
- **40% Climate Marker** – where the expenditure is significantly climate related but is not the primary objective e.g. air quality measures, biodiversity
- **0% Climate Marker** – where the expenditure is not targeted towards climate action e.g. motorways and roads.

Advantages of Climate Marker Methodology

The climate marker methodology is a simple and transparent method which does not impose significant additional administrative burden on Member States or the Commission. As it is based on the existing OECD Rio Marker methodology some national administrators already have experience applying the methodology.

[6] https://ec.europa.eu/clima/publications_en#Mainstreaming

[7] The common methodology for tracking of climate expenditure is adopted by the Commission Implementing Regulation (EU) No 215/2014 of 7 March 2014 and amended by the Commission Implementing Regulation (EU) No 1232/2014 of 18 November 2014.

Disadvantages of Climate Marker Methodology

The methodology estimates the amount of climate expenditure based on stated policy objectives which means that while the markers do give an approximation of spending, they do not allow for an exact quantification. In addition, while there are definitions and eligibility criteria associated with climate spending, these can often be quite broad and can be interpreted very differently depending on the person carrying out the assessment which can lead to very different estimates of climate spending.

Part Two: Climate-Related Government Expenditure

The National Mitigation Plan[8], published in 2017, called on the Department of Public Expenditure and Reform to develop proposals for the monitoring and reporting of climate related expenditure through the Exchequer (Action 12). In addition, in October 2018 the National Treasury Management Agency (NTMA) successfully launched the first ever Irish Sovereign Green Bond. Under the terms of this bond, any proceeds raised can only be devoted to eligible "green" expenditure and the Government must report to investors through an annual allocation report on the disbursement of these sums.

These commitments mean it is necessary for Ireland to begin to track all Government expenditure on climate related matters on an ongoing basis. In fulfilment of this requirement, for the first time, the Revised Estimates for Public Services Volume includes a table which seeks to identify Exchequer climate-related expenditure through the sub-heads under which individual Departments classify their expenditure.

As noted at the outset of this paper, identifying Government expenditure on climate-related matters is also a necessary first step to begin the implementation of green budgeting in Ireland.

This section of this paper details how the table of climate-related expenditure was derived, the limitations of this approach and how this work will be built upon in future iterations of the Revised Estimates Volume. It also provides details on each of the programmes listed in the table contained in the 2019 Revised Estimates Volume and a section on other areas of Exchequer climate related expenditure which can't be neatly categorised in such a table.

About the Revised Estimates for Public Services (REV)

Article 28 of the Constitution of Ireland requires the Government to prepare Estimates of the Receipts and Estimates of the Expenditure of the State for each financial year, and present them to Dáil Éireann for consideration. To meet this requirement, as part of the annual budgetary process, a report on expected expenditure allocations and measures for the following year is published alongside the Budget.

Over the weeks following the Budget these estimates are refined by the Department of Public Expenditure and Reform, working with all other Departments, and before the end of the year a Revised Estimates Volume is published. The Revised Estimates Volume provides more up to date figures and includes additional details and information in relation to the expected allocations to each Department for the following year as well as outputs.

After the publication of the Revised Estimates Volume, the expenditure allocations for each Department are referred by the Dáil to the relevant Select Committees for consideration. Once this process is complete, the Dáil may approve the Estimates by way of Financial Resolutions, whereupon expenditure in accordance with those resolutions is possible.

Since it explicitly permits the inclusion of additional information of public importance and since the expenditure estimates it includes are the most up to date assessment of expenditure for the following year, the Revised Estimates for Public Services Volume was deemed to be the most appropriate vehicle through which to identify and highlight Exchequer climate-related expenditure.

[8] https://www.dccae.gov.ie/documents/National%20Mitigation%20Plan%202017.pdf

Why Track Climate Related Expenditure?

Aside from the commitments made by the Government to track climate-related expenditure, there are a number of benefits to identifying and tracking expenditure considered to be explicitly climate-related. These are linked to the general benefits of implementing green budgeting.

In the first instance, since Ireland faces challenging and legally binding climate and energy targets, tracking the level of public expenditure will bring more transparency to the scale of the Government's actions to addressing climate change.

Identifying climate-related expenditure is a necessary first step to enable the development of impact indicators to estimate how effective individual programmes are at addressing climate and environmental outcomes. The use of common impact indicators can then enable the comparison of the relative effectiveness of programmes which operate across a wide variety of sectors.

This, in-turn, provides information which can be used by policy makers, stakeholders and the wider public to enable an evidence-based debate on the level, structure and effectiveness of the Government's response to climate change.

While it is clear that further development of the analysis of Government climate-related expenditure will be necessary, this work will be progressed through Ireland's participation in the Paris Collaborative on Green Budgeting as part of an integrated approach to green budgeting.

What Constitutes Climate Related Expenditure?

The first task in tracking climate-related expenditure is defining what is meant by climate-related expenditure. Since the concept of green budgeting is a relatively new there is no generally accepted standard of what constitutes climate-related expenditure.

As a first attempt, in the 2019 edition of the Revised Estimates Volume, it has been decided to apply the definition used in the recent development of the Irish Sovereign Green Bond. This definition is based on the definition of green expenditure that has been developed by the International Capital Markets Association[9].

Using this definition, climate-related expenditure is considered to be:

Any expenditure which promotes, in whole or in part and whether directly or indirectly, Ireland's transition to a low carbon, climate-resilient and environmentally sustainable economy.

This broad definition has been adopted as there are few items of Government expenditure which can be neatly characterised as designed to deliver a singular objective, whether climate or otherwise. Rather the policy making process typically results in policies that are designed to deliver multiple objectives and have a number of direct and indirect outcomes.

[9] https://www.icmagroup.org/assets/documents/Regulatory/Green-Bonds/June-2018/Green-Bond-Principles---June-2018-140618-WEB.pdf

This is particularly true when it comes to Government action on climate change. While there are some policies that have been developed with the specific and primary aim of reducing greenhouse gas emissions or delivering improved environmental outcomes, these are in the minority. The majority of Government programmes which contribute to achieving Ireland's climate goals have evolved over time, with directly reducing greenhouse gas emissions a significant priority but by no means the only overriding objective.

For example, Exchequer investment in energy efficiency was significantly accelerated at a time (2010-2012) when Ireland's emissions were falling. At the time, a significant co-motivating factor for the schemes was to address the very significant unemployment in the construction sector.

Investment in public transport is also made to support multiple objectives. It reduces congestion in urban areas and offers alternative means of transportation to those with limited financial means. However, since public transport moves more people in less vehicles, even fossil fuel based public transport significantly reduces greenhouse gas emissions.

As such, it is this paper's contention that expenditure on programmes with multiple objectives can constitute climate-related expenditure if the scheme results in improved climate or environmental outcomes. However, the Department has adopted a precautionary approach to the practical application of this definition of climate-related expenditure.

Programmes have been selected for inclusion in the table of climate-related expenditure only where it is evident that all, or at least the majority of investment in the programme in question, will support improved climate and environmental outcomes. Where elements of a programme may support improved climate and environmental outcomes but it is clear that this represents only a minority of investment, the programme in question has been excluded from the table of climate-related expenditure.

To provide a complete picture of the Exchequer commitment to climate change, the Department has attempted to disaggregate the climate-related elements of certain programmes, for example, the commitment to climate and environmental research funded through Science Foundation Ireland's research and innovation programme.

Limitations

It is acknowledged that simply identifying Government climate-related expenditure does little to help inform policy makers or the public as to whether the Exchequer commitment identified is sufficient to allow Ireland to reach climate and energy targets, or indeed whether such allocations represent the best method of achieving targets. However, identifying climate-related expenditure is the necessary first step on the road to green budgeting.

Using the Revised Estimates Volume to identify climate-related expenditure has strengths and weaknesses. The Revised Estimates Volume is approved by Government and each Department's expenditure detailed in the volume is referred to that Department's Select Committee. Hence, all climate-related funding detailed in the Revised Estimates Volume can be linked to a specific Department which is directly accountable to the Oireachtas for the delivery of the expenditure as detailed therein.

However, it poses a difficulty where funding for particular climate initiatives is delivered through multiple schemes, or where a particular sub-head may cover several programmes, some of which may be climate-related, while others are not.

To overcome this limitation, the Department considered a number of options including the potential use of systems such as the Rio Markers[10]. This would apply a simple percentage to each area of expenditure, based on the degree to which the programmes may have climate-related objectives within their remit. This is the approach used by the European Commission to assess the level of climate finance funding provided through external aid and is also used to assess the amount of Structural Funds which are devoted to climate purposes.

However, the Rio Marker system is rather rigid and there are only three levels in use (typically 100%, 50/40% and 0%). Applying this system to particular areas of Irish Exchequer expenditure, e.g. overseas development aid, Exchequer investment in water or capital investment in schools infrastructure, tends, in the view of DPER, to overestimate the degree of climate-related funding within these sub-heads. Therefore for those complex areas of Government expenditure, a precautionary approach has been adopted and the sub-heads in question were excluded from the table of climate-related expenditure.

This means that the table presented in the 2019 Revised Estimates Volume likely significantly underestimates the level of climate-related expenditure taking place across Government. In an initial attempt to identify the expenditure which cannot be linked to individual sub-heads in the Revised Estimates Volume, a narrative explanation has been provided for each area of expenditure.

Deriving the table of Climate Related Expenditure

The table of climate-related expenditure included in the Revised Estimates Volume was developed by the Climate Change Unit of the Department of Public Expenditure and Reform, working with other Departments.

After the selection of an appropriate definition, the Department engaged in an initial review of all expenditure programmes and selected those it was considered may meet the definition of climate-related expenditure. After the conclusion of this exercise, the Department contacted Government Departments with a series of questions to validate the areas of expenditure selected, to highlight any items of expenditure which were missed in the initial exercise and to flag any new areas of climate-related expenditure planned for 2019. This process enabled the Department of Public Expenditure and Reform to develop the table of climate-related expenditure included in the 2019 Revised Estimates Volume. The discussions with Departments also highlighted the challenges associated with identifying climate-related expenditure in certain areas of expenditure where it is not attributable to a single sub-head or programme.

This is very much a first attempt to identify what constitutes Exchequer climate-related expenditure. The table will become a permanent inclusion in the Revised Estimates Volume but will be subject to revision each year as the implementation of green budgeting progresses and develops in Ireland.

[10] https://www.oecd.org/dac/environment-development/Revised%20climate%20marker%20handbook_FINAL.pdf

Revised Estimates for Public Services 2019, Climate Related Expenditure, Department by Department

The following tables outline the programmes operated by Government Departments which are considered to meet the definition of climate related expenditure as outlined in the preceding section.

This table is published in the Revised Estimates for Public Services 2019 as Appendix 11: Climate Related Expenditure.

Department of Transport, Tourism & Sport

Programme/Scheme	**Subhead**	**2019 €,000**
Carbon reduction	B.6	7,000
Public service provision payments	B.7	302,363
Public and sustainable transport investment programme	B.8	480,755
Greenways	E.7	13,300
Total		**803,418**

Department of Agriculture, Food & Marine

Programme/Scheme	**Subhead**	**2019 €,000**
Agri-environmental schemes	B.3	229,500
Beef sustainability schemes	B.6	67,800
Forestry and bioenergy	B.10	81,428
Total		**378,728**

Department of Communications, Climate Action & Environment

Programme/Scheme	**Subhead**	**2019 €,000**
SEI admin and general expenses	C.3	17,504
Sustainable energy programmes	C.4	141,110
Energy research programmes	C.5	9,700
Environmental Protection Agency	F.3	36,921
Carbon fund	F.4	5,605
International Climate Change Commitments	F.5	2,500
Landfill Remediation	F.6	9,000
Climate Initiatives	F.7	1,850
Climate Action Fund	F.11	15,000
Total		**239,190**

Department of Culture, Heritage & Gaeltacht

Programme/Scheme	Subhead	2019 €,000
National heritage (NPWS)	B.5	13,852
Peatlands restoration and management	B.8	3,000
Total		**16,852**

Department of Housing, Planning & Local Government

Programme/Scheme	Subhead	2019 €,000
Water Quality Programme	B.3	23,149
Rural Water Programme	B.4	47,000
Estate Regeneration – Social Housing Improvements	A.16	30,454
Total		**100,603**

Office of Public Works

Programme/Scheme	Subhead	2019 €,000
Flood risk management (OPW)	A.5	76,127
Total		**76,127**

Total Direct Climate Related Exchequer Expenditure Projected in 2019 €1,614,918,000

Department of Transport, Tourism & Sport (DTTAS)

The Department of Transport, Tourism and Sport is responsible for, among other things, land transport, aviation and maritime policy. One of the specific objectives of the Department is to reduce emissions and build a climate resilient low carbon transport sector by 2050[11].

Delivering a sustainable transport system is a vital part of achieving the transition to a low carbon economy and DTTAS will play an important role in the national objective to achieve a cost-effective way of reducing emissions out to 2050. Ensuring transport infrastructure and services adapt to the challenges of climate change is also a major objective of the Department.

Climate Related Expenditure 2019

Programme/Scheme	**Subhead**	**2019 €,000**
Carbon reduction	B.6	7,000
Public service provision payments	B.7	302,363
Public and sustainable transport investment programme	B.8	480,755
Greenways	E.7	13,300
Total		**803,418**

B.6 - Carbon reduction

This includes expenditure on two recently announced DTTAS schemes. Firstly, the Electric Vehicle Small Public Service Vehicles (SPSV) (i.e. taxi/hackney/limousine) grant scheme which provides grants of €7,000 for the purchase of battery electric vehicle (BEVs), and up to €3,500 for plug in hybrid vehicles (PHEVs). Secondly, the Reduced Toll Fares for Electric Vehicles scheme which offers discounts of up to 50% off toll rates for BEVs and a 25% toll discount for PHEVs.

In addition, the Carbon Reduction Programme provides funding towards the cost differential for pilots and trials of low emission technology in the Public Service Obligation sector (such as the Low Emission Bus Trial) as well as supporting research into additional carbon reduction transport measures.

B.7 - Public service provision payments

This is the funding that the Exchequer provides to support the continued operation of public transport services provided by public transport operators for the provision of socially necessary but financially non-viable, transport services. It also includes funding for local link services under the Rural Transport Programme which is managed by the National Transport Authority.

To note: This does not include payments to support the Essential Air Services Programme (i.e. the Public Service Obligation for air routes).

B.8 - Public and sustainable transport investment programme

This represents the State investment in public transport initiatives. The figure presented is split between investment in Dublin Bus, Bus Éireann, Iarnród Éireann and the LUAS. It also funds cycling and walking initiatives and sustainable urban transport measures in cities.

[11] http://www.dttas.ie/sites/default/files/content/corporate/english/general/statement-strategy-2016-2019/statement-strategy-english-version-2016-2019.pdf

To note: Elements of funding within this sub-head are co-funded. EIB funding has been provided to support the Luas Cross City project. EU Connecting Europe Facility supports Heavy Rail Capital Investment and INTERREG funding has been provided for the Derry Multimodal Hub & cross border Greenways.

E.7 - Greenways

This programme provides support for the development of mixed-use trails for walkers, cyclists and other non-motorised transport in Ireland. A national strategy for greenways was published in July 2018 and provides further detail on planned development of this programme:

http://www.dttas.ie/sites/default/files/publications/tourism/english/strategy-future-development-national-and-regional-greenways/greenways-strategy.pdf

Department of Agriculture, Food & the Marine (DAFM)

The Department of Agriculture, Food and the Marine is responsible for agricultural policy, the development and implementation of national and EU schemes in support of Agriculture, Food, Fisheries, Forestry and Rural Environment and the regulation of the agriculture, fisheries, and food industries.

Agriculture is the largest contributor to Ireland's annual greenhouse gas emissions profile while climate change is predicted to have significant impacts on agricultural productivity at a global level including Ireland. The effects of climate change will primarily influence agriculture via alterations in weather patterns such as rainfall and temperature affecting water availability and influencing plant and animal productivity.

The Department's response to climate change focuses on abatement, sequestration, displacement and substitution. Abatement reduces emissions of methane, nitrous oxide and carbon dioxide from the sector insofar as it is possible. Sequestration takes carbon out of the atmosphere through forestry and other land use mechanisms. Finally, there is the displacement and substitution of fossil fuels and energy intensive materials with renewable energy sources.

Climate Related Expenditure 2019

Programme/Scheme	Subhead	2019
Agri-environmental schemes	B.3	229,500
Beef sustainability schemes	B.6	67,800
Forestry and bioenergy	B.10	81,428
Total		**378,728**

B.3 - Agri-environmental schemes

The sub-head is primarily comprised of investment in the Green, Low-Carbon, Agri-environment Scheme (GLAS). This scheme aims to encourage farmers to promote biodiversity, protect water quality, and combat climate change. It does this by providing support for the maintenance of traditional hay meadows and low-input pastures, the retention of the carbon stocks in soil through margins, habitat preservation and practices such as minimum tillage.

It also promotes agricultural actions, which introduce or continue to apply agricultural production methods compatible with the protection of the environment, water quality, the landscape and its features, endangered species of flora and fauna and climate change mitigation.

B.6 - Beef sustainability schemes

This sub-head includes two schemes. The Beef Data and Genomics Programme (BDGP) is designed to encourage better uptake of efficient breeding strategies by beef farmers with an emphasis on breeding traits that deliver more climate efficient animals, and consequently, reduce greenhouse gas emissions.

In order to achieve these objectives, participants must undertake a range of actions to ensure compliance including a mandatory training course. A key component of the BDGP is to engage with the Carbon Navigator online tool that captures the actual carbon footprint of the farm to encourage more awareness in the sustainability of production systems. A centralised database is key to the programme with data feeding into a genomics based star based breeding index. Animals are ranked according to their efficiency on a scale of 1 to 5 with a 5 star being most efficient.

The second scheme is a new pilot scheme, the Beef Environmental Efficiency Pilot (BEEP), which will be introduced in 2019. It is specifically aimed at further improving the carbon efficiency of beef production. It will improve the carbon efficiency of beef production by measuring the weaning efficiency of suckler cows. This data will then be utilised by farmers to identify the most productive cows in their herd, allowing them to breed only those most efficient animals.

B.10 - Forestry and bioenergy

Funding under this sub-head primarily provides funding for the afforestation scheme. This scheme provides grants and annual premia payments to farmers (for 15 years) in exchange for planting trees. Following the mid-term review of the Forestry Programme, the Government approved significant improvements in grant and premium rates for planting forests. Details on the scheme and the grant rates available can be found at:

https://www.teagasc.ie/crops/forestry/grants/establishment-grants/afforestation/

Department of Communications, Climate Action & Environment (DCCAE)

The Department of Communications, Climate Action and Environment is responsible for the co-ordination of the overall Government response to climate change and the delivery of policies and programmes in a number of areas including energy, natural resources, climate change, waste management, air quality and environmental policy.

The department also oversees 17 commercial, non-commercial and regulatory bodies, including the Sustainable Energy Authority of Ireland (SEAI) and the Environmental Protection Agency (EPA).

Climate Related Expenditure 2019

Programme/Scheme	Subhead	2019 €, 000
SEI admin and general expenses	C.3	17,504
Sustainable energy programmes	C.4	141,110
Energy research programmes	C.5	9,700
Environmental Protection Agency	F.3	36,921
Carbon fund	F.4	5,605
International Climate Change Commitments	F.5	2,500
Landfill Remediation	F.6	9,000
Climate Initiatives	F.7	1,850
Climate Action Fund	F.11	15,000
Total		**239,190**

C.3 - SEI admin and general expenses

This funding is provided to support the operation of the Sustainable Energy Authority of Ireland (SEAI). SEAI is Ireland's national sustainable energy authority. The agency undertakes a wide variety of tasks including administering and operating a wide variety of energy efficiency grant schemes, public education programmes on sustainability and climate change to providing policy advisory and technical support roles for energy policy development and delivery.

C.4 - Sustainable energy programmes

The sub-head supports a number of energy efficiency grant programmes to assist homes, farms, businesses and communities to reduce their energy usage. Specifically, the Better Energy Homes scheme offers a range of energy efficiency grants to homeowners. The Warmer Homes scheme offers free energy efficiency upgrades to households in energy poverty. The Better Energy Communities scheme encourages communities to apply for energy efficiency funding to improve a range of buildings in a particular community. It also includes the Warmth and Wellbeing scheme which provides extensive energy efficiency upgrades to those in energy poverty who are living with chronic respiratory conditions.

C.5 - Energy research programmes

This funding supports the energy policy statistical support unit, who compile Irish national energy statistics, an energy research programme administered by SEAI and provides support for renewable energy technologies which are not yet ready for market deployment. A practical example of this is the ocean energy programme: https://www.seai.ie/sustainable-solutions/renewable-energy/ocean-energy/

F.3 - Environmental protection agency

The funding is provided to support the operation of the Environmental Protection Agency (EPA). The EPA is an independent public body established under the Environmental Protection Agency Act, 1992. It has a wide variety of functions relating to the protection of Ireland’s environment, ranging from the enforcement of environmental law, monitoring, analysing and reporting on the environment, waste management and radiological protection. A full description of the Agency’s activities can be found at: https://www.epa.ie/pubs/reports/other/corporate/epa-whoweare-whatwedo.html

F.4 - Carbon fund

This sub-head represents funds made available to DCCAE to reimburse the National Treasury Management Agency’s Carbon Fund which was established to meet Ireland’s climate commitments under the Kyoto Protocol and Effort Sharing Decision.

F.6 - Landfill remediation

Ireland has significantly reduced the amount of waste that goes to landfills. As a result, the Landfill Remediation Grant Scheme was established in order to deal with the remediation of closed, licensed, local authority-operated landfills. This is in recognition of the fact that local authorities would not have sufficient resources to fund the full cost of this remediation from their own resources.

F.7 – Climate Initiatives

Funding provided under this programme to engage research work to support the delivery of the actions contained in the National Mitigation Plan (2017). It also provides funding to support the National Dialogue on Climate Action. The aim of the dialogue is to raise awareness, engagement and motivation to act on the challenges presented by climate change, to help people to discuss, deliberate and maximise consensus on appropriate responses to the climate challenge and to establish networks for people to meet periodically to consider evidence-based inputs on the economic, social, behavioural, environmental and public aspects of climate and energy policy.

F.11 – Climate Action Fund

The Climate Action Fund is one of four funds established under the National Development Plan 2018-2027 as part of Project Ireland 2040. The fund will support initiatives that contribute to the achievement of Ireland's climate and energy targets in a cost effective manner. It offers the potential for innovative interventions which, in the absence of support from the Fund, would not otherwise be developed. In November 2018 it was announced that seven major climate change projects will share €77 million Government funding, leveraging a total investment of €300 million in round one of the scheme’s operations.

Department of Culture, Heritage & the Gaeltacht (DCHG)

The Department of Culture, Heritage and the Gaeltacht is responsible for overseeing the protection and presentation of Ireland's heritage and cultural assets and facilitating the sustainable development of island communities.

One of the Department's high level goals is *"To conserve, protect, manage and present our built and natural heritage for its intrinsic value and as an inspiration to creativity and environmental appreciation as well as a support to local communities, regional economic development and sustainable employment."* The Department also funds a number of State Bodies and Agencies, including Waterways Ireland, Údarás na Gaeltachta and the National Parks and Wildlife Service (NPWS).

Climate Related Expenditure 2019

Programme/Scheme	Subhead	2019 €,000
Natural Heritage (NPWS)	B.5	13,852
Peatlands Restoration, Conservation and Management	B.8	3,000
Total		**16,852**

B.5 - Natural Heritage (NPWS)

This funding is provided to support the operation of Ireland's National Parks and Wildlife Service which manages the Irish State's nature conservation responsibilities. This includes managing the national parks, nature reserves, the designation and protection of Natural Heritage Areas, Special Areas of Conservation and Special Protection Areas.

B.8 - Peatlands Restoration and Management

This expenditure supports the management, conservation, revitalisation and restoration of Ireland's peatlands. In practical terms this means protecting currently active raised bogs in the Special Area of Conservation and Natural Heritage Area networks and restoring any degraded raised bog habitat to active raised bog habitat. This funding is provided in line with the National Raised Bog Special Areas of Conservation Management Plan 2017-2022 (approved by the Government and published in December 2017):

https://www.npws.ie/sites/default/files/files/FOR%20UPLOAD%20Plan(WEB_English)_05_02_18%20(1).pdf

Department of Housing, Planning & Local Government (DHPLG)

The Department of Housing, Planning and Local Government is responsible for housing and planning policy in Ireland. The Department also supports local government in their work. DPHLG also has a number of State Bodies and Agencies under its aegis including An Bord Pleanála, Ervia, Irish Water, Gas Networks Ireland and Met Éireann.

A core objective of DHPLG is to deliver housing in a way that meets current needs while contributing to wider objectives such as the need to support sustainable urban and rural development and communities and maximise the contribution of the built environment to addressing climate change. The Department is also responsible for the sustainable management of water resources from source to sea.

Climate Related Expenditure 2019

Programme/Scheme	Subhead	201
Water Quality Programme	B.3	23,149
Rural Water Programme	B.4	47,000
Estate Regeneration – Social Housing Improvements	A.16	30,454
Total		**100,603**

B.3 - Water quality programme

The funding provided under this programme support a range of initiatives which are aimed at enhancing water quality. The funding has a particular focus on the implementation of the EU Water Framework Directive, where the priority is to ensure the achievement of 'Good Status' on water quality generally and to retain 'High' and 'Good Status' where such already exists.

B.4 - Rural water programme

This sub-head covers six programmes which are all aimed at environmentally sustainable outcomes. Measure 1 supports the amalgamation of group water schemes to improve efficiency. Measure 2 funds water conservation. Measure 3 supports new group water schemes as these are more energy efficient than multiple individual supplies. Measure 4 supports water conservation practices. Measure 5 supports innovation and research to develop the efficiency of the rural water sector etc. Measure 6 supports the improvement of individual waste water treatment systems to reduce pollution.

A.16 - Estate regeneration – social housing improvements

The Social Housing Capital Investment Programme spans a range of Exchequer and local authority funded programmes and initiatives designed to maintain and improve the local authority housing stock of approx. 130,000 units. A portion of the funds allocated to these schemes are dedicated to an ambitious estate regeneration programme which provides energy efficiency works to housing stock in need of remedial works. Through upgrading the energy efficiency of the social housing stock, this programme helps to reduce Ireland's national emissions, lowers energy bills and allows families in social housing to live in warmer, more comfortable homes.

Office of Public Works (OPW)

The OPW is responsible for state portfolio management including heritage services and flood Risk management. The OPW, as the leading agency for flood risk management in Ireland, minimises the impacts of flooding through sustainable planning. The organisation also manages and procures accommodation for Government departments and agencies and maintains OPW properties. The organisation is also responsible for the introduction of Optimising Power @ Work, an energy awareness campaign, which runs in all large Civil Service buildings and some Government agencies throughout the State.

Climate Related Expenditure 2019

Programme/Scheme	Subhead	2019 €,000
Flood risk management (OPW)	A.5	76,127

A.5 - Flood risk management (OPW)

Given the effects of climate change, it is highly probably that Ireland will see an increase in flooding over the coming years. This expenditure supports the OPW investment in major flood works. These funds will provide for the ongoing development of structural and non- structural measures to mitigate the impact of flooding on society, households and businesses. A current list of the projects supported through these funds is available at:

https://www.opw.ie/en/media/171130_November_December Website Material.pdf

Other subheads which the OPW have identified as potentially falling in part within the definition of green expenditure include drainage maintenance, hydrometric & hydrological investigation & monitoring, new works, alterations & additions, heritage services and the administrative subheads which support the activities of the OPW. These matters will be considered by the Department of Public Expenditure and Reform and a revised estimation of OPW expenditure provided in the near future.

Other Areas of Climate Related Expenditure

There are other areas of Exchequer climate-related expenditure that are not currently amenable to tracking through tables in the Revised Estimates Volume. These include areas of expenditure which are financed by multiple Departments through a variety of sub-heads, or those areas of expenditure where climate-related expenditure is only a portion of the particular sub-heads total expenditure.

This section highlights some of these areas of expenditure and attempts to provide an explanation of the climate related activities taking place in these areas. It will be a priority in the implementation of green budgeting to improve the classification of climate related expenditure in these areas.

Climate Finance

The term "climate finance" is generally used to describe financial flows from developed countries to developing countries to help the latter respond to climate change through mitigation and/or adaptation. Developed countries committed through the United Nations Framework Convention on Climate Change (UNFCCC) to a goal of mobilizing jointly USD $100 billion a year by 2020 from public and private sources to support climate action in developing countries. The Paris Agreement, which entered into force in November 2016, extended this commitment at least to 2025.

In 2015, the Taoiseach committed that Ireland would make its contribution to this goal by providing at least €175m in public funding for climate finance by 2020. Ireland also committed to increasing contributions to the Least Developed Countries Fund, to commence contributions to the Green Climate Fund and to explore avenues to mobilise private climate finance.

Progress towards these commitments is tracked by the Department of Public Expenditure and Reform who report to the European Commission and, through it, to the United Nations on an annual basis on the total climate finance provided during the previous year i.e. in 2018 Ireland reported on climate finance contributions during the 2017 period.

This data is provided in arrears as deriving an accurate figure requires all contributions to individual projects/programmes/organisations which could be defined as climate finance to be identified, tagged and collated. This work is undertaken each year through an inter-Departmental working group on climate finance which is a sub-group of Ireland's delegation to the United Nations Framework Convention on Climate Change.

Eligible projects and programmes arise across several Departments, through a variety of sub-heads. For Ireland, the bulk of climate finance flows are through Overseas Development Aid projects which support climate initiatives in agriculture, food and energy systems, and help to strengthen the resilience of vulnerable households, primarily in sub-Saharan Africa. Ireland's climate finance is almost entirely grant funded, with the majority supporting adaptation goals for Least Developed Countries. It also comprises contributions to multilateral climate change funds as well as certain contributions to specialised United Nations bodies and multilateral financial institutions dedicated to climate change.

It is not possible at this point in time to provide indicative climate finance figures for 2018 or 2019 as the detailed work to determine which projects could be considered to be climate-related only takes place after the expenditure has taken place.

In 2017, Ireland reported climate finance totalling €64.47m, an increase on the €52.7m that was provided in 2016 – see the table hereunder:

Provision of public climate finance support 2016 & 2017

	2016 €, 000	**2017 €, 000**
Adaptation	39,968	35,432
Cross-cutting (Projects combining elements of adaptation & mitigation)	12,728	29,039
Total	**52,696**	**64,471**

Ireland is on track to meet its commitments made at the 21st Conference of the Parties in Paris to scale up climate finance, with direct grant support to Least Developed Countries likely to remain the largest component of the Government commitment to climate finance.

Support for Innovation through the Department of Business, Enterprise and Innovation

The Department of Business, Enterprise and Innovation, directly and through its agencies, operates a number of schemes where a portion of the Exchequer funds allocated to these schemes is used to support climate action. This is primarily through the Department's support for research and innovation where energy, climate action and sustainability, decarbonising the energy system and sustainable living are all Government-approved priority research areas.

However, as this expenditure in support of research and innovation is split across multiple schemes and agencies it is not possible to be definitive as to the quantum of funding that is specifically climate related.

Some illustrative examples can however be provided. Science Foundation Ireland (SFI) will receive €172m in capital funding in 2019 to support research and innovation. This funding will support a number of significant and specifically climate-related projects. In particular, through the Research Centres Programme, SFI funds the MaREI centre for marine and renewable energy research and the BEACON bioeconomy research centre.

It is estimated that of the capital funding allocated to SFI, at least €22million will be awarded to projects which are directly linked to delivering improved climate outcomes. If a broader definition is considered, up to €140m of SFI's programmatic spend could be considered to have some links to climate related expenditure. SFI expect to increase investment to build further capacity in focussed areas of climate action, in particular on earth and ocean observation, in the coming years.

An additional significant area of expenditure is the Disruptive Technology Innovation Fund. This Fund is one of the four headline funds in the National Development Plan 2018-2027 as part of Project Ireland 2040. The Fund, which will involve total investment of €500m over the lifetime of the Plan, will focus on the development and deployment of disruptive innovative technologies and applications targeted at tackling national and global challenges period to 2027. Funding of €20m is being provided in 2019 to roll out the first phase of the Fund.

The Scope of the first call under the Disruptive Technologies Innovation Fund is informed by the Government-approved Research Priority Areas 2018-2023, this includes; Energy, Climate Action and Sustainability - Decarbonising the Energy System and Sustainable Living.

Irish Water

Funding for Irish Water is provided by the Exchequer through the Department of Housing, Planning and Local Government. Funding is provided for the subvention of domestic water charges along with an additional capital contribution.

Exchequer investment in Irish water supports a number of climate and environmental sustainability objectives. Providing clean drinking water to households and recycling wastewater entails a significant energy consumption. To reduce this energy consumption, Irish Water has developed a Sustainable Energy Strategy. By 2017, the company had achieved a 22.4% improvement in energy efficiency performance with an estimated saving of over 51,000 tonnes of carbon.

Over the 2019 to 2024 period, Irish Water anticipate a total capital spend of €6.1bn. Of this at least €700m will be devoted to conservation initiatives aimed at prioritising resource management, leakage reduction, adapting water services to withstand the impact of climate change and continued improvement the energy efficiency of Irish Water's operations. This will be invested in:

- Implementation of Irish Water's sustainable energy policy and strategy;
- Improving energy efficiency via the upgrading and replacement of inefficient plant and processes;
- Designing, building and operating assets to ensure energy efficiency;
- Utilising energy from renewable sources where feasible;
- Reducing our demand for energy by reducing leaks and regulating discharges to our sewers.

In total, the investment is expected to save 245 million litres of water per day, this along with investment in energy efficiency improvements will enable a reduction in energy consumption of 39 GWh per annum, with a consequent reduction in greenhouse gas emissions.

In 2019, Irish Water anticipate a capital investment of approximately €146m in conservation initiatives.

Capital investment will also be devoted to the challenge of adapting water services to deal with some of the projected consequences of climate change. Reduced rainfall with a growing population and economy will put increased pressure on water supplies and receiving waters. The wastewater network and treatment plants will also be tested as Ireland experiences more regular storms with rising sea levels and more intense rainfall leading to increasing likelihood of flooding.

Additional Agricultural Sustainability Initiatives

In addition to the directly identifiable climate-related measures highlighted in the 2019 Revised Estimates Volume, the Department of Agriculture, Food and Marine funds other areas of activity which have a strong climate dimension. Each of these programmes is geared towards improving the sustainability of Irish agriculture.

For example, the Areas of Natural Constraints Scheme has been allocated €250m in 2019. This funding will support famers in areas of the country objectively determined to be constrained under various bio-physical criteria. The continuation of low intensity grass based production in such areas is central to Ireland's sustainable food production system.

The Knowledge Transfer Programme has a €25m allocation for 2019. The objective of the Knowledge Transfer Programme is to up-skill Irish farmers, to encourage efficiency and effectiveness of work and ensure they engage in a process of continuous improvement. The environmental sustainability of farming practices is one of the key focus points of this programme.

The Targeted Agricultural Modernisation Scheme (TAMS) supports on-farm capital investment and has been allocated €70m in capital funding for 2019. Investment options available under this scheme include low carbon alternatives such as biomass boilers, air-source heat pumps and it also includes support for low emission slurry spreading equipment.

A further significant area of climate-related expenditure is the Department's support for research and innovation in the agricultural sector. Under the Research Certification and Quality programme, at least €17.6m in capital expenditure will be provided in 2019. This will support competitive funding programmes in which environmental sustainability will be a key theme.

Environmental and climate sustainability is also fundamental to the range of activities funded through the €141m provided to Teagasc for its Research Advisory and Training programmes. Together with Bord Bia, and particularly the Beef and Lamb Sustainability Assurance Scheme for which €6.4m is provided, Teagasc is promoting change at farm level through the provision of research and advisory services and carbon audits.

Finally, research and innovation on sustainability is critical in the marine sector and is led by the funding provided to the Marine Institute and Bord Iascaigh Mhara.

Energy Efficiency Improvements to Educational Facilities

The Department of Education and Skills has a significant capital budget which is invested in primary, post-primary and third level infrastructure. In energy matters, this investment is informed by the Department's Energy Research Programme, which has been in place since 1997, and has been recognised nationally and internationally with sustainable energy awards.

The Department's Technical Guidance Documents set a benchmark for sustainable design in school buildings, with a focus on energy efficiency, based on energy research projects. This is supported by a research programme, with forty eight research projects at various stages of development.

New schools must achieve a minimum A3 Building Energy Rating. All new technologies and approaches are tested to ensure compatibility with school design and operational requirements. Successful and repeatable results are then incorporated into all new school designs and refurbishments.

The Department previously provided 100% funding for insulation and water conservation and energy upgrade works are an integrated feature in the Summer Works Scheme. In 2019, it is anticipated that around €100m will be provided in 2019 for upgrades to schools under the programme. This is solely for upgrade works (of which energy efficiency are a portion of the total expenditure) and does not include investment in new build.

Going forward, a deeper upgrade of the energy efficiency of existing schools will be required to meet energy efficiency and climate change targets. Project Ireland 2040 provides €11.9 billion in capital investment for education infrastructure. This includes an indicative envelope of €2.5 billion to advance a strengthened focus on refurbishment of existing school stock over the next 10 years which will include energy efficiency retrofits.

The Department of Education and Skills, with DCCAE and the Sustainable Energy Authority of Ireland (SEAI) commenced a pilot programme in 2017 for the energy upgrade of existing schools. The aim of this scheme is to establish opportunities and innovative delivery models, as well as a menu of best practice retrofit options. This pilot will be continuing in 2019 with matching funding. The aim of the pilot is to develop a scalable model of energy efficiency retrofits in the school sector to be rolled out for energy upgrades of schools built before 2008.

This collaboration and research is helping to shape the future direction of energy efficiency in schools, and will continue, with a view to delivering a programme of retrofits commencing from 2022 as NDP funding permits.

The Department also allocates a significant sum each year to providing transport services to students in remote locations through the School Transport Services programme. The majority of journeys funded by this scheme are on public transport which likely displaces a number of road vehicle journeys which would otherwise take place and thus at least a portion of this funding could be considered to be climate related.

Appendix One: Summary of the Parliamentary Budget Office Report on Green Budgeting

An Overview of the Green Budgeting Initiative
Parliamentary Budget Office - Note 24 of 2018

The Parliamentary Budget Office (PBO) published a short note on green budgeting on 13 November 2018 to inform Members of the Oireachtas about the new OECD Paris Collaborative on Green Budgeting. The note was broken down into three main sections:

1. Green budgeting and the rationale behind it

There has been increasing emphasis internationally on the need to better embed climate and environmental considerations into national budgetary frameworks. Climate change is recognised as a major risk which could impose significant long term costs on governments around the world. However, given the many competing government priorities it can be difficult for governments to prioritise climate and environmental considerations when making budgetary decisions.

Green budgeting seeks to embed climate and environmental goals within the budgetary process to ensure these objectives are given due consideration by governments and policy makers. It can contribute to more informed policy debate and increase transparency around budgetary decision making. It can also give an indication as to whether existing or proposed government policies are consistent with climate and other environmental goals.

2. The main objectives and commitments associated with the OECD's green budgeting initiative

The OECD launched the Paris Collaborative on Green Budgeting in December 2017. The aim of the initiative is to design new, innovative tools which can help to mainstream climate and environmental goals into the budgetary process.

Green budgeting is at an early stage internationally and the collaborative will provide a co-ordinating platform for participating countries to work closely with the OECD and its experts to identify research priorities, share best available data, expertise and information, and develop cross-national indicators of progress towards environmental goals and commitments.

The outputs of the Collaborative have yet to be defined and agreed upon but participation in the Collaborative does not bind Ireland into accepting any specific reforms. Ireland will, however, be expected to participate in regular meetings and contribute to the analytical work of the group, including the development of green budgeting tools.

The report noted that the OECD Secretariat is currently preparing a "*Roadmap towards Green Budgeting*" which aims to provide guidance to countries who are looking to implement green budgeting.

3. Future developments and next steps

The PBO welcomed the announcement that Ireland would join the Paris Collaborative and the commitment by Government to publish a list of climate-related Exchequer expenditure as part of the Revised Estimates for Public Service 2019. They also emphasised that consideration should be given to the role that the Oireachtas could play in supporting these initiatives.

The report noted that green budgeting would be an iterative process and that the specific tools and methodologies which would be implemented within Ireland would depend on engagement with the OECD. To this end, the report noted that the Department of Public Expenditure and Reform and the Department of Finance will be engaging in discussions with the OECD during the course of 2019.

Reference was also made to a previous PBO note[12] which researched how other countries were using a variety of approaches, including green budgeting, to incorporate climate-related considerations into national budgetary frameworks.

[12] *An Approach to Better Incorporate Climate-related Considerations into the Budget Process* - PBO Briefing Paper 12 of 2018. Link: https://data.oireachtas.ie/ie/oireachtas/parliamentaryBudgetOffice/2018/2018-09-18_an-approach-to-better-incorporate-climate-related-considerations-into-the-budget-process_en.pdf