SUSTAINABLE ENERGY AUTHORITY OF IRELAND

SEAI National Energy Research, Development & Demonstration (RD&D) Funding Programme

2025 Call Document

Call for Submission of Applications

Key Dates	
Call Open Date	Tuesday 6th May 2025
Deadline for Application Submission	12 noon (Irish Standard Time) Tuesday 1st July 2025

It is the responsibility of each applicant to SEAI's National Energy Research Development and Demonstration (RD&D) Funding Programme Call to ensure that they have read and fully understand all Documentation associated with this Call before making a submission, including: this Call Document (pdf); Privacy Notice; Application Form Template (word doc); SEAI RD&D Budget Policy (pdf); and the SEAI RD&D Budget Template (xls).

SEAI is funded by the Government of Ireland through the Department of the Environment, Climate and Communications. SEAI is pleased to announce that the 2025 SEAI National Energy RD&D Call involves co-funding partnerships on particular topics, with the following organisations: The Climate Change Advisory Council (CCAC) and Met Éireann..

SEAI National Energy RD&D Funding Programme

2025 Call Document

May 2025

Sustainable Energy Authority of Ireland
SEAI is Ireland's national energy authority investing in, and delivering, appropriate, effective and sustainable solutions to help Ireland's transition to a clean energy future. We work with the public, businesses, communities and the Government to achieve this, through expertise, funding, educational programmes, policy advice, research and the development of new technologies.

SEAI is funded by the Government of Ireland through the Department of the Environment, Climate and Communications.

Contents

1. Programme Description and Objectives

SEAI will be central to bringing about a low carbon economy through measures and activities focused on the transition to a smarter and more sustainable energy future. To achieve this mission, SEAI will continue to build an environment for positive change through our analysis, modelling, and support for policymaking. SEAI will catalyse direct action through our design and delivery of grant and incentive programmes and through our capacity-building processes with citizens, communities, and private and public sector organisations.

The overarching objectives of the SEAI National Energy Research Development and Demonstration (RD&D) Funding Programme are as follows:

- Accelerate the development and deployment in the Irish marketplace of competitive energy-related products, processes and systems;
- Support solutions that enable technical and other barriers to energy market uptake to be overcome;
- Grow Ireland's national capacity to access, develop and apply international class energy RD&D;
- Provide guidance and support to policy makers and public bodies through results, outcomes and learning from supported projects.

SEAI's National Energy RD&D Funding Programme supports innovative and targeted actions which assist in delivery of the Climate Action Plan, the Programme for Government, the 2030 Climate and Energy Framework, Project 2040 Ireland, Impact 2030: Ireland's Ireland Research and Innovation Strategy, DECC Research and Innovation Strategy 2030, the 2015 Department of the Environment, Climate and Communications Energy White Paper, Ireland's National Energy & Climate Plan (NECP), and the Climate Action and Low Carbon Development Bill (2021) such as it pertains to SEAI's remit.

Accelerating transformative research to deliver Ireland's clean energy and climate ambitions will require enhanced collaboration across a wide range of stakeholders and actors. Diverse approaches and engaged research methods will be required. The SEAI National Energy RD&D Funding Programme welcomes research proposals from all research disciplines, as well as collaborative projects involving multiple organisations, and multidisciplinary, transdisciplinary or interdisciplinary approaches, subject to alignment with the overall programme objectives.

The programme provides the opportunity for applicants to submit proposals to either an Open Strand or a Topic Strand (see Annex 1 of this Call Document for further details). The Open Strand provides an opportunity for applicants to pitch ideas for research proposals that are within SEAI's remit and that meet the above outlined programme objectives. The Topic Strand (Annex 1) includes 20 Topic areas which have been identified as priority areas for research. Applications to both the Topic and Open Strand compete with each other for funding.

2. Who Can Avail of the Programme

The SEAI National Energy RD&D Funding Programme is open to public and private sector organisations based in the Republic of Ireland (including Irish subsidiaries of overseas companies) who wish to carry out projects in Ireland. Applications will be accepted from companies, 3rd level educational bodies, public sector bodies and semi-state bodies who are based in the Republic of Ireland and such organisations may apply to the Programme individually or as part of a consortium. Proposals from individuals applying in their own right will not be accepted.

In some circumstances, the programme may support Irish entities/researchers to carry out work undertaken in other jurisdictions, where this is necessary for the completion of the project. Researchers based in other jurisdictions will not be funded by the programme and should partake in proposals in the role of (non-funded) collaborators.

In exceptional cases, funding of work in other jurisdictions (e.g., where it is not possible for a component of work to be carried out in Ireland) may be supported where there is a demonstrable contribution to resolving issues directly relevant to Irish requirements.

3. Definition of Project Roles

Lead Applicant: The Lead Applicant is a budget holder and will hold responsibility and accountability for management of the proposed project. They will be responsible for the technical direction, progress monitoring, budgeting, reporting, dissemination and other management duties associated with the proposed project in-line with SEAI policies. The Lead Applicant is responsible for ensuring that all project partners and stakeholders are kept fully informed on all matters relating to the project. The Lead Applicant will act as the primary contact point for SEAI. Each application may list only one Lead Applicant. The Lead Applicant must hold a contract covering at least the duration of the proposed project or agreement from their employer that their employment will be extended to cover at least the period of the proposed project.

Please note, for 3rd level Educational Bodies, the named Lead Applicant must be a core funded member of academic staff or a member of academic staff with a fixed-term contract and is therefore ineligible to receive salary funding through the SEAI National Energy RD&D Funding Programme. Postdoctoral Researchers or Research Fellows may not be listed as the Lead Applicant.

Partner Applicant(s): Partner Applicants may form part of the proposed project team, along with the Lead Applicant and are responsible for supporting the Lead Applicant to achieve the goals of the proposed project. The role of the Partner Applicant(s) should be well-defined within the application. Partner Applicants can be funded by the SEAI in a proposed project.

Collaborators: Collaborators are organisations who are committed to providing a valuable intellectual, technical or financial contribution to the proposed project. Collaborators are not funded by SEAI in a proposed project.

End-Users: A research end-user is defined as an individual, community, or organisation, that will directly use or directly benefit from the output, outcome or results of the proposed research.

4. Project Duration and Funding Available

Applicants are asked to propose the appropriate budget for their project and expected project duration. Project duration should be between 12 to 48 months, depending on the specific needs and structure of the project. Applicants can propose project durations of no longer than 48 months. Proposals intending to recruit PhD students must apply for a 48-month project duration.

The maximum SEAI funding available per project is €1,250,000, inclusive of Overheads; please see SEAI RD&D Budget Policy for further details. Applicants are reminded that budget and value for money will be assessed as part of the evaluation process. Please see Section 8 of the Call document on evaluation process and criteria.

Note: for some particular thematic Topics, indicative maximum funding amounts or project durations may apply - please refer to each Topic description (Annex 1) for details.

5. Funding Rate

European Union (EU) state aid rules stipulate what types of research activities are eligible for support, which costs relating to these activities may be covered in part or in full (ranging from 25% up to 100%), and the maximum aid intensity that may be granted for the various activities. Applicants should refer to the SEAI RD&D Budget Policy for additional information in relation to which category their project falls under.

The Categories below represent the maximum level of support that are available within the 2025 SEAI National Energy RD&D Call. Additional information is provided in the SEAI RD&D Budget Policy.

RD&D activities subject to EU State Aid Regulations					
Research Category	**Base Level**	**Type of Company**		**Effective Collaboration**	**Maximum Support**
		Small Enterprise	**Medium Enterprise**		
Industrial Research	50% of approved itemised eligible costs	+20%	+10%	+15%	80%
Experimental Development	25% of approved itemised eligible costs	+20%	+10%	+15%	60%
RD&D activities not subject to State Aid Regulations					
Non-economic Public Good Research					100%

6. What Projects are Eligible

Eligible project proposals include projects that address the overarching programme objectives (see Section 1), that are submitted by eligible organisations (see Section 2), with full complete applications (see Checklist in Annex 3), submitted in advance the call deadline of **12 noon (Irish Standard Time) Tuesday 1st July 2025**. The 2025 SEAI National Energy RD&D Funding Programme provides the opportunity for applicants to submit proposals to either a topic strand or an open strand.

Open Strand - The open strand of the call provides an opportunity for applicants to propose projects within SEAI's remit that directly address the aims and objectives of the SEAI National Energy RD&D Funding Programme Call.

Topic Strand - The topic strand of the call provides an opportunity for applicants to submit proposals that address the requirements of the topics outlined in Annex 1. These topics have been developed by SEAI and relevant stakeholder organisations. In some cases, successful proposals to the topic strand of the call will be partially funded by co-funding partners. The table below provides an overview of the topics which form part of this call. Please refer to Annex 1 of this document for full topic details.

Each topic description in Annex 1 outlines suggested project objectives and expected outputs. Please note that proposals submitted to these topics are not necessarily expected to address every objective and output listed in all cases. Applicants should clearly outline which of the suggested objectives and expected outputs they intend to address/deliver as part of their proposed project and may propose additional objectives/outputs. All proposals should build upon existing research and information available.

No.	Title
1	Understanding the potential opportunity and pathways to reduce emissions in short distance maritime transport
2	Decarbonisation of Ireland's passenger vehicle fleet *(co-funded with CCAC)*
3	Optimizing Household Energy Use: Contributions to Grid Flexibility and Security
4	Analysis of Building Automation & Control Systems (BACs) in various non-residential building categories to inform and assist the practical role out of requirements for these systems under Energy Performance in Buildings Directive (EPBD).
5	Assessment of Ventilation and Indoor Environmental Quality in post occupancy dwellings
6	Co-design of energy poverty supports
7	The impact of climate change on Ireland's renewable energy resource potential (*co-funded with Met Éireann*)
8	Hydrogen & other dispatchable flexible grid support technologies
9	Demonstration of Grid Forming Inverters for greater stabilisation
10	Strategic research priorities for development of the offshore renewable energy sector in Ireland
11	Heat Loss and heat performance in dwellings in Ireland and the EU
12	Underground thermal energy storage potential in Ireland
13	The potential role of geothermal energy in the Irish energy system
14	Exploration of innovative models for the development of Heat as a Service in the residential sector.
15	Industrial Heat Decarbonisation and Hydrogen Integration with District Heating Systems
16	Solutions for collaborative approaches to establish and operate AD plants and biorefinery facilities in Ireland
17	Farm level assessment to enhance forage yields and quality of the grass/crops as a feedstock for AD plants and/or integrated AD & biorefinery facilities to meet the Renewable Energy Directive sustainability criteria
18	Addressing sustainable supply and demand for critical raw materials in the renewable energy sector

19	A system-based evaluation of post-growth policy alternatives using multi-criteria or sufficiency-orientated frameworks, with an emphasis on positive social and ecological outcomes supported by economic instruments
20	Exploring the Expansion and Impact of Energy Cooperatives in Ireland.

Co-funding Partner Profile

SEAI is pleased to announce that the 2025 SEAI National Energy RD&D Funding Programme Call involves a co-funding partnership with the organisations outlined below:

The Climate Change Advisory Council The Climate Change Advisory Council was established under the Climate Action and Low Carbon Development Act 2015. The Climate Change Advisory Council is an independent advisory body tasked with assessing and advising on how Ireland can achieve the transition to a low carbon, climate resilient and environmentally sustainable economy. The Council are mandated by legislation to undertake review of progress on addressing climate issues and produce an Annual Review. The Climate Action and Low Carbon Development Act 2015 (as amended) sets out the requirements for the Annual Review and Report under Section 12 of the legislation. The Act as amended sets out the Council's role in the production of advice on Carbon Budgets. The Council has also established an Adaptation Committee that is tasked to provide advice and guidance to the Council for consideration on matters relating to climate change adaptation. The Council is made of 14 members, including a Chair. For more information about the Council, please see: https://www.climatecouncil.ie/aboutthecouncil/theclimatechangeadvisorycouncil/	
Met Éireann Met Éireann, Ireland's National Meteorological Service, plays a crucial role in advancing the scientific understanding of weather, climate, and environmental systems. As a key contributor to national and international research efforts, Met Éireann supports innovative strategies aimed at addressing climate change, extreme weather events, and environmental sustainability. Through its Weather and Climate Research Programme, Met Éireann is instrumental in Ireland's research capacity building efforts, addressing vital scientific questions and building resilience against climate challenges. For more information, please see: https://www.met.ie/science	

SEAI may enter further co-funding arrangements with other funders, who may have an interest in certain Call topics. If deemed appropriate, SEAI may approach other potential funders, at any stage during the Call process, up to and including during the contract negotiation stage.

7. Submitting your application

Applications to the 2025 SEAI National Energy RD&D Funding Programme should be made through SEAI's online application platform, PEP (Project Evaluation Platform).

The PEP Application Portal is available at the following link: https://pepportal.seai.ie/

Further detailed PEP application guidance can be found within the PEP Application Guidelines Document available to download at:

https://www.seai.ie/grants/research-funding/research-development-and-demonstration-fund/

Following the Call deadline all applicants will receive the following email correspondence with respect to their application:

- Confirmation that their application was received before the Call deadline.
- Confirmation that their application has passed/not passed eligibility assessment.
- Confirmation of technical evaluation outcome and feedback.

Please refer to the RDD webpage for indicative timelines or contact energyresearch@seai.ie.

8. Evaluation process and criteria

Only fully complete applications received prior to the application deadline will be considered for evaluation. The evaluation consists of a two-stage process:

Stage 1 – Eligibility Assessment: Applications will be assessed to ensure administrative compliance with programme requirements and objectives. Please remember that **incomplete applications will not proceed to Stage 2.** Prior to submitting your application, please ensure to refer to the Application Checklist outlined in Annex 3 to ensure all required application details and supporting documentation are included and submitted in advance of the call deadline.

Stage 2 – Technical Evaluation: Applications passing the eligibility assessment will be technically evaluated under the evaluation criteria outlined below.

Following the above evaluation process, highly evaluated proposals will be recommended for funding, subject to budget availability. A Reserve List of highly evaluated proposals may also be formed. Reserve List projects may be funded at a later stage, should sufficient additional budget become available.

Projects selected for funding will be issued with a Grant Agreement which will detail the approved itemised eligible costs. SEAI may require applicants to clarify aspects of their proposal prior to issuing a Grant Agreement.

The evaluation criteria under which applications will be assessed, and the proportion of marks awarded to each criterion are provided below:

Excellence and Innovation (35%)

- The validity and reliability of the prospective technology/concept and approach – including transdisciplinary considerations, where relevant.
- Quality of the innovation and ambition related to state of the art in Ireland and beyond.
- Familiarity with relevant RD&D activities/knowledge of the area.
- Track record of participation or potential to perform in previous/future RD&D activities.
- Qualifications of the key personnel/organisations.

Relevance and Impact (35%)

- Relevance to the needs of the Irish energy sector, with particular reference to national policy including: Ireland's Climate Action Plans, Programme for Government, Ireland's National Energy & Climate Plan (NECP), and the Climate Action and Low Carbon Development Bill (2021) such as it pertains to SEAI's remit.
- Does the project stimulate & accelerate the development & deployment of energy related products, processes & systems in the Irish marketplace and/or facilitates guidance to policy makers on practical, regulatory, technological and/or market opportunities.
- Builds and/or maintains national capacity, capability and critical mass to carry out internationally leading RD&D activities underpinning the energy sector.
- Capacity of the project to strengthen the competitiveness and development of their relevant industrial sectors.
- Relevance of enterprise, scientific, policy and social impacts of project outputs.
- Strength of communication/dissemination and exploitation plans (including management of data).
- Replicability of the project outputs/case study across Ireland and at an international level.

- Evidence of the added value of transdisciplinary collaboration and/or the active engagement and involvement of key relevant stakeholders, including, for example, end-users and industry.

Quality and Efficiency of Implementation (including value for money) (30%)

(i) Project Delivery & Management (20%)

- Coherence and effectiveness of the project work plan.
- Quality of project framework, clarity of deliverables and milestones with a credible breakdown of activities and associated budget allocation.
- Credibility of timing-related project management factors, including project scheduling, dependency identification/monitoring and calculation of critical paths with a particular focus on realistic timelines, availability of data, concession, permits and regulatory approvals (where relevant). Data acquisition requirements should be identified in advance and appropriate agreements should be in place with third parties.
- Strength of the management and oversight arrangements including risk management and gender equality.

(ii) Budget & Value for Money (10%)

- Economic (spending less) – are the appropriate quantity and quality of resources/costs requested at the lowest cost possible to support project delivery?
- Efficiency (spending well) – is the requested budget maximising value for money and delivering project objectives as efficiently as possible.
- Effectiveness (spending wisely) – are the requested resources maximising the potential impact of the project outputs?
- Is the overall budget appropriate to a project of this size?

Note:
For applications to be considered eligible for funding, proposals must achieve a minimum average score of 60% in each evaluation criteria.

When differentiating between projects that are scored equally, the availability of sufficient budget will be the first criterion considered. The second criterion considered will be the close alignment of the proposed research with national policy ambitions and targets.

An intensifier may be applied to applications to co-funded topics.

9. Award Management

All SEAI RD&D grantees are required to report on outputs and impacts arising from their research at regular reporting periods throughout their research projects. Grantees are required to submit Annual Technical Report(s) as well as a Final Technical Report upon completion of their project. Annual and Final Technical Reports are used to monitor the progress of each project against the overall objectives of the SEAI National Energy RD&D Funding Programme and associated Key Performance Indicators (KPIs). Each of the SEAI RD&D Programme objectives is discussed below:

Objective: Accelerate the development and deployment in the Irish marketplace of competitive energy-related products, processes and systems;
Expected outcomes: The capacity of funded research to accelerate the development and deployment of new competitive energy-related products, processes and systems, will be assessed through the reporting of key outcomes including: the number of spin-off companies created or planned as a direct result of the project; new technology license agreements; EI commercialisation awards; along with the number of patent applications developed or submitted. Awardees are asked to update on these outcomes at annual and final reporting stage.

Objective: Support solutions that enable technical and other barriers to energy market uptake to be overcome;
Expected outcomes: Projects supported under the SEAI National Energy RDD Funding Programme may enable technical or other barriers to energy market update to be overcome, such as social, environmental, political or economic factors. This capacity will be assessed through the reporting of key project achievements at annual and final reporting stage, clearly highlighting how the project has furthered current state-of-the-art, current knowledge or current practice to overcome identified barriers, along with highlighting the degree of novelty, innovation and collaboration demonstrated.

Objective: Grow Ireland's national capacity to access, develop and apply international class energy RD&D;
Expected outcomes: National research capacity will be assessed through the reporting of the number of team members involved in each project, as well as the associated level of training received and research outputs of each team member. SEAI's expectation is that SEAI RDD awards will provide support necessary for awardees to build capacity, expertise, networks and relationships to a point where they can compete successfully for funding in Europe and to engage with international networks and collaborations including the International Energy Agency Technology Collaboration Programmes (TCPs). Equality, Diversity and inclusion considerations, including any gender dimensions within research projects, will form an important part of the reporting process. In their final report, awardees are asked to report on funding opportunities that they have pursued and won.

Objective: Provide guidance and support to policy makers and public bodies through results, outcomes and learning from supported projects.
Expected outcomes: Dissemination of research outcomes and results will be assessed through the reporting of all project-related dissemination activities at annual and final reporting stage. This includes reporting on all scientific publications as well as all other dissemination activities including publications, conferences, workshops, websites/applications, press releases etc. Engagement with policy makers and civil society will also be assessed. Awardees are asked to respond to an engagement questionnaire, to provide details of the levels of engagement throughout the research project with a range of stakeholders, including government, public bodies or policy makers, citizens or organised societal groups, and societal actors beyond the research and industrial community. Awardees are also asked to clearly outline if the project outputs could be used by policy makers, and if so, at what level, for example at local, national, European or international level.

Project Reviews:
All SEAI National Energy RDD Funding Programme Awards of more than three years' duration will be subject to a progress review in the form of an online or in-person site visit. Project reviews can be conducted internally (exclusively by SEAI staff) or can be conducted with participation of national or international expert reviewers and/or representatives from co-funding partner organisations. These project reviews are typically held at the midway point on the award. The outcome of any type of review may be taken into consideration in the assessment of future applications made to SEAI. As further clarified within the SEAI RD&D Grant Agreement Terms and Conditions, SEAI reserves the right to terminate a grant if, in the reasonable opinion of SEAI, progress is not deemed to be satisfactory. Further clarity on this is outlined in the Grant Agreement.

Annex 1: Topic Strand

Topic 1	*Understanding the potential opportunity and pathways to reduce emissions in short distance maritime transport*

Background:
Short distance maritime transport, such as ferries operating across inlets and rivers, plays a crucial role in Ireland's transportation network. As an island nation, Ireland relies heavily on maritime transport for both passenger and goods movement. In 2018, the maritime transport sector generated €2.3 billion in turnover and employed over 5,000 people (Marine Institute, 2020). Additionally, sea-based transport accounted for 85% of the total volume and 56% of the total value of goods traded in Ireland (IMDO, 2017). This sector is not only vital for economic growth but also for connecting communities and supporting tourism.
However, this sector also contributes significantly to transport emissions, necessitating urgent action to mitigate its environmental impact. As outlined in the Climate Action Plan 2024 (CAP24), Ireland aims to reduce emissions by 51% by 2030 (Government of Ireland, 2024). Understanding and addressing the emissions from short distance maritime transport is essential to achieving these ambitious targets.

Research gaps:
There is a lack of detailed data on the annual emissions from short distance maritime transport in Ireland. Existing studies often focus on larger, international routes, leaving a gap in understanding domestic ferries and other short distance vessels.
While alternative fuels like hydrogen, electricity and biofuels are promising, their practical application in short distance maritime transport is not well researched. The challenges and benefits of these fuels need thorough investigation.
Additionally, the economic feasibility and operational challenges of decarbonisation measures are not well understood. Research is needed to identify cost implications, barriers, and incentives for adopting low-emission technologies including impacts on port decarbonisation strategies.
Furthermore, more research is needed on the effectiveness of current policy and regulatory frameworks in promoting emission reductions in the maritime sector.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Conduct a comprehensive theoretical analysis of the emissions per annum from short distance maritime transport, such as ferries operating across inlets and rivers in Ireland.
- Identify alternative options to existing operations of short distance maritime transport.
- Investigate and report on the benefits, challenges, costs and barriers associated with alternative means and decarbonisation actions in the sector.
- Highlight potential carbon savings and the associated cost per saving.

Outputs from proposed research could include:

- Evaluation report on potential alternatives including comparative theoretical analysis.
- Creation of case studies, technical reports, and/or peer-reviewed articles.
- Presentations of research findings to stakeholders.
- Recommendations for embedding decarbonisation into port strategies and next stages of research.

A project advisory group should be formed by the Project Team and other relevant stakeholders.

Topic 2	*Decarbonisation of Ireland's passenger vehicle fleet* *Co-funded with CCAC*
Duration	≤1 Year
Funding	≤ €100k

Background:
The transport sector has proven to be one of the most difficult to decarbonise in Ireland and will rely on significant uptake of new technologies, behaviours and methods of travel by citizens. To meet its carbon abatement targets, Ireland's Climate Action Plan sets out several KPIs focused on decarbonisation of private transport such as 175,000 of Ireland's passenger fleet to be EVs by 2025. This is an interim step toward 845,000 EVs in 2030 representing 30% of the total passenger fleet, with EVs representing 100% of new registrations by 2030.
Some studies indicate that increased EV adoption may lead to higher overall driving activity relative to non-electric private vehicles. Additionally, the production of EVs requires substantial material resources.
In this context, modal shift is also a particularly important avenue for reducing overall energy demand and improving sustainability in the transport sector. At the end of 2024 the proportion of Battery Electric Vehicles (BEVs) in the total vehicle stock was just over 3%, with significant change needed at pace to meet decarbonisation objectives.
It would be useful to understand which policies have been successful internationally in reducing complexity, increasing the comparative advantage and increasing adoption of this technology which could be applied in Ireland.
A parallel concern to the decarbonisation of the vehicle fleet is that it fulfils requirements for a just energy transition, whereby the interventions intended to accelerate this decarbonisation also deliver equitable outcomes for society - both for potential grant recipients and those impacted by other policy measures outlined below and for those indirectly affected by grants, such as other road users.

Research Gaps:
This research could review policies supporting the rollout of Battery Electric Vehicles within countries where rollouts have been successful to date and identify solutions which could be adopted in an Irish context, including grant supports but also broader policy supports for deployment of charging infrastructure, skills and capacity development, taxation, road pricing mechanisms and parking incentives, national strategies and legislation.
Currently, SEAI's grant scheme is based solely on the cost of the electric car, with no weighting to favour applicants who may be based in regions with less accessibility to alternative modes of transport or to incentivise people living in areas with abundant alternatives to reduce their car use altogether.
This research could also assess whether the current universal grant structure is the most effective way to reduce transport sector carbon emissions while examining the potential mobility and emissions impacts of a differentiated EV grant offering that accounts for the modal shift potential and car dependence of grant applicants. This research should also consider distributional impacts and fairness of policies implemented. The research should be evidence-based and focused on providing specific guidance for future policy design.
The research should identify and quantify where possible, the impact of the incentives and look to disaggregate incentives impact in jurisdictions where multiple incentives are in place. Both financial and non-financial incentives should be included

Topic Objectives and Expected Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Review private fleet decarbonisation strategies, incentives, and regulations; both national and international, which could be successfully applied in Ireland. This includes grant supports, but also broader policy supports including for deployment of charging infrastructure, skills and capacity development, taxation, road pricing mechanisms and parking incentives, national strategies and legislation.
- Specifically focusing on grants, taxation and subsidies, create a selection of alternative EV grant structures that weight the extent of financial support for EV purchase by variables such as area of residence, public/active transport network proximity, local public transport network frequency and reliability, proximity to basic local services, income, etc.
- Comparison of grant impacts with the impact of alternative approaches.

- Apply these differentiated grants scenarios to Irish population data to model their impacts on the financial accessibility of EVs, and their subsequent impacts on car use, active and public transport use, and carbon emissions, relative to the current universal, undifferentiated structure.
- Design and implement data collection strategies to support the intended analyses, with the possibility of quantitative, qualitative, or mixed approaches.
- Carry out appropriate analysis techniques, and to the extent necessary apply new techniques, to draw insights from data material.
- Determine policy recommendations on EV grant provision, how broader future policies and interventions could be designed to more effectively contribute to carbon abatement targets and how just transitions aspects better be addressed in fleet decarbonisation policies and interventions.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 3	*Optimising Household Energy Use: Contributions to Grid Flexibility and Security*

Background:
The Climate Action Plan 2025 and the National Energy Demand Strategy reflect the need for an accelerated and concerted effort by all stakeholders for a flexible system in supporting renewables integration and electricity demand management. It has established a target of 20-30% demand flexibility by 2030, and various initiatives are underway to achieve this goal.
Effective management of energy demand, microgeneration, and flexible domestic assets can play a crucial role. This topic explores the potential for domestic contributions to grid flexibility and security through various energy management and low carbon technology optimisation methods. Domestic flexibility services involve using technologies to optimise household energy use. By adjusting consumption patterns in response to external signals like price changes or grid demands, households can enhance grid stability.

Research gaps:
Despite the promising potential, several gaps and barriers need addressing. These include the high initial cost of energy management technologies, lack of awareness, and resistance from property owners. Additionally, integrating these systems with existing grid infrastructure and understanding consumer behaviour impacts are critical research areas. The interoperability of these technologies and assets is imperative to unlocking domestic flexibility and providing a gap analysis and standard review will be crucial to setting the foundation moving forward.
Several research gaps need to be addressed to fully understand the contributions of domestic flexibility to grid stability. These include:

- The effectiveness of different energy management strategies in managing energy demand and microgeneration.
- The role of flexible domestic assets in enhancing grid security.
- The integration of domestic energy management systems with existing grid infrastructure.
- The integration of domestic energy management systems with technologies and assets present in the residence/household.
- The impact of consumer behaviour on the success of energy management strategies.

Topic Objective and Outputs:
The primary objective of this topic is to define a clear pathway for trialling various energy management strategies as key elements in unlocking domestic flexibility. The expected outputs could include:

- Setting out best practices and conducting an international review of similar and linked initiatives and trials in other jurisdictions.
- Providing a structured approach to progressing a physical trial of domestic flexibility services through activation and utilisation of home energy management systems including insights into automation, control, communication and optimisation aspects. Establish a blueprint for real-world trials
- Investigation of CAP Targets vs Flexibility vs Efficiency vs Grid Reinforcement and the optimal interplay between these features in the Irish context.
- Compiling a review of available technology including home energy management system costs.
- Exploring solutions to ensure that flexibility design includes participation opportunities for energy poor and vulnerable groups.
- Assessing the effects of an empowered domestic cohort on electricity prices, peak demand, electrification, and overall consumer bills.

A project advisory group should be formed by the Project Team and other relevant stakeholders.

Topic 4	*Analysis of Building Automation & Control Systems (BACs) in various non-residential building categories to inform and assist the practical role out of requirements for these systems under Energy Performance in Buildings Directive (EPBD)*

Background:
Part L of the Building Regulations sets out requirements in relation to the conservation of fuel and energy. Part L was updated in 2019 to include the Energy Performance in Buildings Directive (EPBD) requirement for Nearly Zero Energy Buildings. EPBD is a very high energy performance, and the nearly zero or very low amount of energy required should be covered to a very significant extent by energy from renewable sources, including energy from renewable sources produced on-site or nearby. The revised Energy Performance of Buildings Directive (EU/2024/1275) entered into force in all EU countries on 28 May 2024 and helps increase the rate of renovation in the EU, particularly for the worst-performing buildings in each country. The transposition and implementation of the revised EPBD (EU/2024/1275) is now under way in Ireland. This Directive will have wide ranging impacts across the non-residential sector. It will be important to raise awareness among businesses of the impact that the Directive will have on their buildings, including the requirement to have Minimum Energy Performance Standards for commercial buildings.

Research Gaps:
A lack of data has been highlighted on the extent of energy savings in non-residential buildings where Building Automation & Control Systems (BACs) are installed.
The parameters to assess those buildings that will fall under the new regulation as outlined but there is a significant amount of work involved in finalising the process to carry out such assessments. As part of the promotion of the regulations, it will be imperative to give building owners across all sectors a sense of whether their buildings may fall within the requirement aspect of the regulations and their implementation. This could be achieved by a simple calculator where basic readily available elements are input e.g. area, building age and mechanical systems in buildings.

Topic Objectives:
Project(s) proposed under this topic could consider addressing the following objectives:
Applications to this research topic should aim to acquire a clear understanding of energy savings when BACs are installed, through the collection and analysis of in-situ data in the various categories of non-residential buildings for example offices, schools, retail and healthcare.
Objectives:

- Conduct a thorough exploration of energy savings when BACS is installed and assess the impact.
- Identify the opportunities and challenges for non-residential buildings in Ireland.
- Develop a database containing all common building types, and other relevant subcategories (age, Part L regulation, mech systems, resiliency etc.)
- Create sample site report template and methodology across difference building types.
- Create a calculator and number of hard copy tables for easy look up by industry to assess their buildings requirements.

Outputs:

- Produce comprehensive reports on research results categorising energy savings across a range of non-residential buildings.
- Sample site reports for 10 building types (real buildings) with outputs of success or issues found with same.
- Overall assessment of EPBD layout of requirements, current procedures as set out on SEAI site and potential alternatives
- Hosting of calculator and tables on SEAI site.
- Workshops to engage all stakeholders on regulations and its proposed implementation.
- Policy recommendations for future renovation in non-residential buildings to address the following Actions in the in the Climate Action Plan 2025:
- BE/25/5 - Develop first draft of National Building Renovation Plan in line with Energy Performance of Buildings Directive and Action.
- BE/25/8 Publish roadmap to phase out fossil fuel boilers to align with Energy Performance of Buildings Directive requirements as part of the National Building Renovation Plan.

Topic 5	*Assessment of Ventilation and Indoor Environmental Quality in post occupancy dwellings*

Background:
The Energy Performance of Buildings Directive (EPBD) entered into force in all EU countries in May 2024 and Ireland is required to transpose this Directive by 2026. Buildings are the largest energy consumer in Europe and the building sector is therefore crucial to achieving the EU's energy and climate goals. Indoor Environmental Quality (IEQ) is included in the recast of the EPBD, and it has new requirements on IEQ and inspection of ventilation systems. The revised Cost-Optimal Methodology is to include IEQ related health benefits/costs and Part F of the building regulation (2019) also has a requirement for ventilation validation.
Feedback from industry stakeholders, e.g. independent ventilation validators, suggests that there may be an issue with oversized mechanical ventilation systems being installed on the market, which can have a hidden impact, post-occupancy, on energy efficiency and cost for the dwellings and its occupants. Similarly, ventilation validators have suggested the same of the poor maintenance or no maintenance of mechanical ventilation systems, which can have a post-occupancy hidden impact on Energy Efficiency of the dwellings, IEQ and health of occupants.

Research gaps:
While there has been some research on ventilation and Indoor Air Quality (IAQ)/IEQ, there is a need for post occupancy evaluation of mechanical ventilation, comparison with pre and post retrofit to assess impact on IAQ and a comparison with naturally ventilated homes that have been through a retrofit to B2 or better.
This topic aims to assess IEQ Performance, ventilation performance as compared with design intent and oversizing of mechanical ventilation system in post occupancy of existing dwellings.

Proposals to this topic could look at:

- Analysis of the actual performance and energy consumption of ventilation systems in Irish residential dwellings, considering Specific Fan Power (SFP).
- Pre-works vs post-works ventilation performance and the impact on IEQ.
- Performance comparison of mechanical and natural ventilation systems against design intent, including over-ventilation.
- An updated DEAP software that can capture actual measured flow rates and recorded SFP performance as measured during the third-party ventilation validation process is needed.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Assessment of IEQ and ventilation performance in post-occupancy of existing dwellings in Ireland with Mechanical Ventilation with Heat Recovery (MVHR), Mechanical Extract ventilation (MEV), Demand-controlled MEV and natural ventilation.
- Assessment of Ventilation performance post-occupancy vs design intent in existing dwellings in Ireland with Mechanical Ventilation with Heat Recovery (MVHR), Mechanical Extract ventilation (MEV), Demand-controlled MEV and natural ventilation.
- Reference of IEQ impact and cost benefits for future cost-optimal calculations and home and health insurance sector.
- Creation of a comprehensive dataset of real-world SFP performance metrics for ventilation system installations in Irish dwellings.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 6	*Co-design of energy poverty supports*

Background:
Irish energy poverty policy focuses on improving energy efficiency to reduce energy demand, introducing consumer protection measures, and supplying some income supports. However, few policies involve targeted delivery. Those that do, like the Warmer Homes Scheme and the Household Benefits Package, target older people (over 65's), and householders in receipt of certain social welfare payments. Other income supports are untargeted payments, such as the electricity credits applied to all domestic customers from 2022-2025.
Recent SEAI research shows some groups are particularly vulnerable to energy poverty, including renters and households with a disability. Renters are currently unserved by energy poverty policies and supports. Homeowners with disabilities can avail of the Warmer Homes Scheme but face long waiting lists and may have higher energy needs making them particularly vulnerable. A changing energy landscape including a move towards smart energy and demand flexibility offers new opportunities for energy users to save on their energy bills but also runs the risk of further disadvantaging those in energy poverty if they do not have access to expensive technology that facilitates flexibility.

Research Gaps:
There is a lack of evidence on policies and supports likely to be effective in combatting energy poverty in at-risk groups. New policies and supports are needed to address the needs of groups most at risk of energy poverty. These should ideally be co-designed with those they are intended to target to ensure they are effective.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- New policy options to combat energy poverty that have been co-designed with the groups they are meant to target
- Robust evidence on likely effectiveness of supports or interventions to alleviate energy poverty amongst specific at-risk groups

A project advisory group should be formed by the Project Team and other relevant stakeholders.

Topic 7	*The impact of climate change on Ireland's renewable energy resource potential* *Co-funded with Met Éireann*
Indicative Funding	< €750,000

Background:
Rising global mean temperature is associated with widespread changes in weather patterns around the world that are expected to accelerate in the coming years. Altered weather patterns could see impacts on precipitation, jet stream behaviour and changes in seasons. Scientific studies indicate that extreme weather events such as heat waves, heavy rainfall and large storms are likely to become more frequent or intense. Warmer ocean temperatures also have the potential to alter local weather by shifting wind patterns.

Climate change could affect renewable energy supply by:

- Alteration of production volumes and patterns due to changes in availability of renewable energy resources because of changed weather patterns
- Alteration or disruption of production due to an increase in frequency or severity of extreme weather events.
- Risks for the onshore and offshore wind generation include increased variability, infrastructure stress and potential damage to turbines due to turbulent conditions. Risks for solar PV include changes in cloud cover, higher temperatures impacting efficiency and extreme weather events that could damage solar installations. Other renewable energy resources such as aerothermal energy, bioenergy, hydropower or ocean energy could also be subject to changes in resource availability, efficiency or disruption.

Research Gaps:
Research is needed to better understand the occurrence and effect of weather patterns and extreme weather events on renewable energy resources and what risks those pose to infrastructure, supply and efficiency. This research may require an interdisciplinary collaboration between meteorologists, renewable energy technologists and energy systems specialists.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following:

- How might predicted changes in wind patterns, solar radiance, precipitation and frequency of extreme weather events caused by climate change affect Ireland's renewable resource potential?
- Understand the likelihood of simultaneous occurrence of correlated meteorological events affecting multiple renewable energy resources.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 8	*Hydrogen and other dispatchable flexible grid support technologies*

Background:
Ireland has set an ambition to deliver 2 GW of green hydrogen by 2030 as outlined in the Climate Action Plan (CAP) of 2023, reiterated in the 2024 and 2025 CAPs. The publication of the National Hydrogen Strategy in 2023 by the Department of Environment, Climate and Communication (DECC) further underscores Ireland's commitment to develop a domestic hydrogen sector. The National Hydrogen Strategy states that hydrogen will be utilised in hard to abate sectors. However, the 2024 Future Framework for Offshore Renewable Energy economic analysis WS3 report projects that domestic demand for renewable hydrogen is expected to remain low in the short-term.

Furthermore, the magnitude and source of demand in the medium to long-term is highly uncertain.
The Future Framework WS3 reports provides aggregate estimations on domestic hydrogen demand for four end-use sectors and three potential demand sources. It is essential to supplement the WS3 report findings with a more comprehensive sectoral assessment of hydrogen demand and insights into how demand could be met.

Research Gaps:
Research into the environmental impacts of large-scale deployment of hydrogen systems is limited. In the context of Ireland, there is no in-depth research focusing on the environmental impact assessment of future green hydrogen development. More globally, researchers have begun investigating this area of recent and argue that although green hydrogen provides an opportunity to decarbonise the energy system, the environmental trade-offs need to be taken into consideration.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following:

- Comprehensive estimations of water, land use, and material use life cycle analysis for large-scale green hydrogen deployment in Ireland
- Compare estimations for two different hydrogen production configurations, namely, onshore and offshore
- Temporal and geospatial modelling of hydrogen production, transport, storage and demand
- Economic analysis of different long-term electricity storage options that incorporates an end-to-end (production to end use) comparison of different energy storage options, including losses from electricity inputs to transform into other energy vectors for longer-term storage, transportation and sub-sequent use for electricity generation

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 9	*Demonstration of Grid Forming Inverters for greater stabilisation*

Background:
In the 2025 Climate Action Plan, the Government has an ambitious 80% renewable electricity target for 2030 and targets for significant electrification of both the heat and transport sectors. Implementing these renewable targets and overcoming issues associated with low inertia requires greater investment in grid forming inverters which can stabilise the grid. Consequently, conventional synchronous generators, such as thermal units, are being displaced by inverter-based renewable generation (IBRG).

A grid forming inverter (GFMI) is a promising solution for the challenges introduced to the electrical grid by the high penetration of the IBRG. They create and sustain the grid frequency and voltage, so they are more resilient to sudden shocks. An Ireland-specific, holistic study and demonstration of GFMI controls retrofitted to the existing doubly fed induction generator (DFIG) wind turbine would therefore be merited. The recent unprecedented blackout affecting Spain and Portugal in April 2025, where 15 gigawatts (GW) of electricity generating capacity – equivalent to 60% of Spain's power demand at the time – dropped off the system within the space of five seconds, highlights the critical importance of grid stability measures as renewable penetration increases across European power systems.

Research Gaps:
The project(s) proposed under this topic could consider addressing the following research gaps using data/insights collected on operational wind power plants:

- Evaluation of the operational issues associated with the connection of GFMI to the low voltage grid; such as voltage control and load flow modification.
- Interference of internal turbine modifications (or software upgrades, etc.), with existing O&M contracts.
- Practical challenges of operating a GFMI-based RES.
- Field demonstration of GFM controllers and associated practices to yield qualify RES interface for system services. Assessment of the possibility and demonstration of an isolated industrial site fed with GFM controlled wind turbine(s) to demonstrate islanded operation enabled by GFM controls.

Project Objectives & Expected Outputs:
The output should include a comprehensive system response study on the GFMI retrofitted wind turbine(s). The demonstration should qualify the upgraded wind power plant for supporting the grid during unplanned events/faults particularly in respect of:

- Limiting the rate of change of system frequency following the loss of a generating unit or load.
- Injecting instantaneous active power into the system at the time of a fault as a result of the corresponding phase change.
- Injecting instantaneous Fast Fault Current into the system at the time of a fault as a result of the corresponding voltage change.
- Contributing to damping power.
- Limiting vector shift.
- Contributing to synchronising torque.
- Contributing to the maintenance of an improved voltage profile during a fault.

The demonstration should be carried out at a currently grid connected wind power plant. The targeted wind power plant should be currently grid connected and in operation and have all necessary authorisations to operate as a grid connected power plant. Agreement and cooperation of the wind power plant owner, the operation and maintenance provider and, where applicable, the warranty provider must be evident.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 10	*Strategic research priorities for development of the offshore renewable energy sector in Ireland*

Background:
The climate and energy targets set by various EU Directives, including the Renewable Energy Directive III and the Effort Sharing Regulation, are the main driver of policy development in the area of renewable energy, with the Climate Action Plan (CAP) serving as the main vehicle for new policies. Ireland has committed to reducing GHG emissions by 42% by 2030 and to have 80% of electricity generated from renewable sources by 2030.

Maximising Ireland's offshore renewable energy potential will be key to meeting Ireland's CAP target of 80% renewable electricity by 2030. In 2024 the Department of the Environment, Climate and Communications published the Future Framework Policy Statement for Offshore Renewable Energy that identified delivering on our long-term climate goals, ensure the long-term energy security of our country, and develop green industrial opportunities for the abundant energy resources we have off our coasts as priority areas.

The Department of Enterprise Trade and Employment (DETE) published a complementary strategy Powering Prosperity that aims to enable companies in Ireland to play a major role in the development of Irish ORE projects, as well as supporting companies in Ireland to increase their activities in overseas markets and includes actions designed to support RD&I of future ORE technology developments.

Research Gaps:
Research priorities for ORE development in Ireland include technologies, operation and maintenance solutions specific to Irish offshore conditions

The Wind Europe and Ocean Energy Europe Strategic Research and Innovation Agenda (SRIA) 2024 updates should be referenced as they identify the most pertinent research topics for ORE in Ireland that could apply in the Irish context.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following:

- Designing ORE devices and supporting technologies (anchoring, mooring, power connections etc.) for Irish offshore conditions
- Operations & Maintenance solutions for Irish offshore conditions including instrumentation, robotics and sensing technologies
- Advanced manufacturing processes for ORE technologies to enable cost reductions and identify strategic Irish manufacturing opportunities in the ORE sector
- AI-based systems that control and operate robotics and manufacturing processes to advance ORE
- Cyber resilience and cybersecurity of offshore renewable energy projects .

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 11	*Heat loss and heat performance in dwellings in Ireland and the EU*

Background:
Ireland's Climate Action Plan includes a target of 400,000 heat pumps to be installed in existing homes by 2030. To be considered eligible for a heat pump grant in Ireland, the level of heat loss from the home must be below a certain threshold as calculated in DEAP (Dwelling Energy Assessment Procedure). Other countries in Europe have different rules around eligibility for heat pumps and some, e.g. UK, have no eligibility requirement.

Information is needed to inform the approach used in Ireland around eligibility for heat pump grants.

Research Gaps:
The comparison of insulation standards and their evolution over time from other EU countries where the rate of heat pump deployment is higher (e.g. Scandinavia) and Ireland would provide useful data for this evaluation.

Understanding heat loss over time in the housing stock of countries where heat pump deployment is high will allow for a comparison with the Irish housing stock and the compatibility of heat pumps with homes of different age profiles.

While there has been some research on measured U-values, it would be of value to measure in situ U-values for cohorts of dwellings that align with DEAP, i.e. with respect to construction types, age profiles, etc.
Further to this, measuring heat pump performance against both theoretical heat loss and the measured heat loss/U-values would be of value.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

1. Understand insulation standards in EU countries where heat pump uptake is higher. An assessment of insulation standards, and typical U-values, in countries with high levels of heat pump deployment, and how they have evolved over time, would provide a valuable understanding of the housing stock in such countries. This information could then be compared with how those values have evolved over time in Ireland and potentially provide valuable information on the higher level of deployment of heat pumps in those countries.
2. A programme of in-situ measurement of U-values of building elements for different construction types over different time bands and Building Energy Ratings. This would afford a better understanding of the actual U-values of building elements in Ireland as compared with theoretical values/default u-values in DEAP. The heat loss/U-values of typical dwellings in place over time and how that compares with the Irish housing stock.
3. Measurement of heat pump performance (and impact on running costs) in homes where the U-values/overall heat loss has been measured, ideally using relatively inexpensive/low-cost monitoring equipment that has an appropriately high level of accuracy. The number of homes is going to be smaller than for Output No.2 which will include homes not currently eligible for heat pumps through SEAI grant programmes.

Potential Outputs include:

- Literature review on Insulation standards over time in EU countries where heat pump uptake is high
- Measured in situ U-values by age band for different construction types
- Measured performance of heat pumps in homes where u-values/overall heat loss has been measured.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 12	*Underground thermal energy storage potential in Ireland*

Background:
As the energy demand continues to climb, using more effective energy conservation methods is essential. Applications of thermal energy storage (TES) system technologies have been demonstrated to offer solutions to energy issues on a global scale that are both economically viable and friendly to the environment. There are different types of underground thermal energy storage systems including ATES (aquifer thermal energy storage) and BTES (borehole thermal energy storage). Underground thermal energy storage – the use of the subsurface as a heat source in winter and a heat sink in summer - is an integrated part of many large shallow geothermal heat networks across Europe and is likely to be critical to making such geothermal projects economically feasible.

Thermal storage could significantly improve decarbonising potential of district heating systems in Ireland and underground TES could represent an optimal solution, particularly in built up areas.

Research Gaps:
A strong need for research in this area in the Irish context has been identified, as no large-scale projects of this nature exist in Ireland. It has not yet been demonstrated whether the fractured bedrock aquifers in many parts of the country could support ATES systems.

Project proposals that take real-world geological conditions into account and projects that use an existing heat network or project and model the performance and economics of underground TES will be considered.

Key questions to answer are:

I. Is it technically and economically feasible to implement ATES and BTES technologies in Irish contexts (both geological and socio-economical)? and
II. Will the use of the subsurface to store thermal energy result in a lower levelized cost of heat for district heating scale projects?

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following:

- Research in the Irish context using, but not limited to, real-world geological conditions to assess technical feasibility of implementing TES.
- Analysis using existing heat network or project to assess whether using the subsurface to store thermal energy would support a lower levelized cost of heat for district heating scale projects.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 13	*The potential role of geothermal energy in the Irish energy system*

Background:
Geothermal energy is local, secure, clean and affordable, yet this renewable heat source remains under-utilised in Ireland at present. The National Heat Study (SEAI, 2022) recognises that whilst 94% of Ireland is suitable for a shallow geothermal heat pump system, GSHPs comprise just 3% of the total national heat pump market. GSHPs are more efficient than other ambient source heat pump solutions and thus their widespread deployment would help to protect our electrical grid infrastructure from overloading. The National Heat Study also states that "*Further work aimed at the complete characterisation of the suitability of the geothermal resource across Ireland will allow a better understanding of its potential for district heating at various locations*".

Research Gaps:

- Integration of geothermal energy into heat networks – How does geothermal energy perform in a local or district scale heat network alongside a mix of other renewables? Does the inclusion of shallow or deep geothermal heating, cooling and underground thermal storage improve the performance and economic metrics of a project? How does the addition of geothermal energy in later phases of a heat network impact the performance? Projects would ideally use a real-world example heat network to model these scenarios and answer the questions above.
- Shared loop geothermal heat pumps for residential scenarios – Such schemes are being increasingly successfully adapted across UK and EU, however, remain virtually non-existent in Ireland. Research into marketability and scalability of these schemes in Irish context can lead to them being more effectively adapted in Ireland. Projects could look at market, regulatory and legal environments as well as planning considerations.
- Econometrical analysis of large existing geothermal installations in Ireland.

Topic Objective and Outputs:

Potential outputs of research include but are not limited to:

- Analysis and modelling, ideally using real-world example heat network, on how inclusion of shallow or deep geothermal heating, cooling and underground thermal storage improve the performance and economic metrics of a project and if addition of geothermal energy in later phases of a heat network impact the performance.
- Analysis into marketability and scalability of Shared loop geothermal heat pumps for residential schemes in an Irish context.
- Analysis of performance data, costs, payback periods, energy security against shocks, technical parameters with the aim of providing a baseline for policy makers from which to design sectoral supports for geothermal industry.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 14	*Exploration of innovative models for the development of Heat as a Service in the residential sector*

Background:
Heat as a Service has the potential to support the scale up of heat pump adoption by reducing upfront costs and uncertainty for homeowners, supporting national retrofit targets of installing 400,000 heat pumps in existing homes by 2030.

The Programme for Government outlines a commitment to 'explore mechanisms to incentivise households to adopt renewable energy sources for their homes' and includes a focus on lower-income households for whom the upfront costs of heat pumps may be a barrier.

The EU Energy Efficiency Directive (EED recast) and Energy Performance of Buildings Directive (EPBD recast) which are currently being implemented in Ireland, both reference the role of financial tools in facilitating access to energy efficiency measures. Specifically, Article 17 of the recast EPBD references the option to incentivise 'on-bill schemes, pay-as-you-save schemes or energy performance contracting' that 'tackle the upfront costs of renovations'.

Research Gaps:
Absence of demonstration projects and detailed analysis of suitable models for the Irish market.

Topic Objective and Outputs:
This topic should aim to accelerate the development and deployment of Heat as a Service in the Irish residential market.

Project(s) proposed under this topic could consider addressing the following:

- Market and stakeholder research identifying the target market and potential delivery partners for Heat as a Service products.
- Assess the practicality and cost-effectiveness of Heat as a Service for different segments of the residential sector, including lower-income and vulnerable groups and the rental sector (public, private and non-profit).
- Consumer research investigating expected take-up of preferred models and the degree to which such models address known barriers to heat pump adoption.

Potential Outputs:

- Development of outline models for Heat as a Service for the Irish market.
- Report outlining preferred models and recommendations on an enabling framework to accelerate the deployment of Heat as a Service.
- Presentations of the research findings to a variety of stakeholders.
- Feasibility study for Heat as a Service pilot.

A project advisory group should be formed by the Project Team and should involve relevant stakeholders.

Topic 15	*Industrial heat decarbonisation and hydrogen integration with district heating systems*

Background:
Ireland's Climate Action Plan (CAP) has established targets for decarbonising the industrial sector and expanding district heating (DH), with DH targets of 0.8 TWh by 2025 and 2.7 TWh by 2030, compared to current levels of approximately 0.2 TWh. Industrial processes, particularly high-temperature operations, present both decarbonisation challenges and opportunities for waste heat recovery that could support DH development.

The CAP sets an ambition to deliver 2 GW of green hydrogen by 2030, with the National Hydrogen Strategy identifying hydrogen as a solution for hard-to-abate sectors. This creates potential synergies between industrial decarbonisation and district heating systems.

The nascent state of DH in Ireland presents an opportunity to design systems that integrate with industrial waste heat recovery and potentially incorporate hydrogen technologies. Ireland's growing renewable electricity capacity, particularly from wind, offers potential for green hydrogen production that could be integrated with both industrial processes and DH systems.

Research gaps:
1. Limited data on the quantity, quality, and distribution of high-temperature industrial waste heat sources from various industries (i.e., manufacturing, data centers) in Ireland that could be integrated into DH systems.
2. Insufficient understanding of the technical and economic feasibility of recovering high-temperature industrial waste heat to be captured and integrated into DH systems in Ireland.
3. Unclear role of hydrogen in complementing or competing with DH systems in Ireland's energy mix.
4. Inclusion of diverse heat sources beyond hydrogen (i.e. geothermal, biomass combustion, biomass CHP, even solar thermal).
5. Align cost analysis with Irish guidelines: Develop cost datasets aligned with Irish infrastructure guidelines, to prioritize national cost savings for DH planning.
6. Enhance temporal data resolution: Develop high-resolution temporal datasets, including hourly and daily heat demand profiles, to optimize DH system design and operational efficiency.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Broaden low-carbon heat sources: Include diverse heat sources beyond hydrogen (i.e. geothermal, biomass combustion, biomass CHP, even solar thermal).
- Incorporate all waste heat types: Map low, medium, and high-temperature waste heat from various industries (i.e., manufacturing, data centers).
- Explore multiple decarbonisation pathways to compare against DH serving industry: Include electrification, heat pumps, and biomass alongside hydrogen for industrial heat.
- Address data gaps: Develop high-resolution spatial, cost, and temporal datasets for DH planning in alignment with future Irish planning.
- Support diverse DH typologies: Evaluate integration for urban, rural, and industrial DH systems.
- Enhance techno-economic focus: Assess infrastructure costs and policy incentives for DH-industrial integration.
- Leverage international benchmarks: Study diverse DH systems globally (e.g., Denmark's waste heat, Iceland's geothermal).
- Diversify pilot projects: Test varied heat sources and DH configurations in pilots.
- Improve data integration: Use GIS and temporal models for heat supply-demand alignment.
- Clarify renewable electricity role: Assess renewable electricity for DH via heat pumps or storage.
- Assess CCS integration: Evaluate the integration of carbon capture and storage (CCS) with industrial heat sources to reduce emissions while supplying district heating systems, enhancing decarbonisation synergies.
- Engage stakeholders: Collaborate with industry, local authorities, and communities to support data collection, pilot design, and policy development for effective DH integration.

Potential outputs from projects proposed under this topic (but not limited to):

- Mapping of industrial waste heat sources in Ireland with assessment of DH suitability
- Techno-economic analysis of waste heat recovery for DH systems
- Evaluation of hydrogen's potential role in industrial decarbonisation and DH
- Test pilots on varied heat sources and DH configurations
- Case studies of relevant international best practices and DH systems
- Policy recommendations
- Conceptual designs for pilot projects demonstrating integration approach

A project advisory group should be formed by the Project Team and should involve relevant stakeholders.

Topic 16	*Solutions for collaborative approaches to establish and operate AD plants and biorefinery facilities in Ireland*
Indicative funding	< €750,000

Background:
The European Commission launched the REPowerEU plan in May 2022. It aims to diversify gas supplies, speed up the deployment of renewable gases and replace gas in heating and power generation. The National Biomethane Strategy launched in May 2024 committed to supporting delivery of up to 5.7TWh of indigenously produced biomethane by 2030. A capital grant scheme for biomethane production plants opened as part of this strategy. Ireland's Bioeconomy Action Plan 2023-2025 also identifies the need to enhance, apply and scale-up biobased innovation and bioeconomy solution. Ireland is uniquely positioned to develop a sustainable bioeconomy, underpinned by a strong biomethane industry due to the nature of the agricultural sector in the country.

Collaboration, like the cooperative model, between farmers, biomethane producers, and policymakers is key to harnessing the environmental and economic benefits of biomethane biomethane and the bioeconomy for the agriculture sector. A similar model to the current cooperative models could be implemented in the developing biomethane sector, and the wider bioeconomy, for larger plants to allow for greater farmer involvement and/or ownership. This would also help support the social acceptance of AD, including biorefineries, around Ireland.

Research Gaps:
Collaboration, like the cooperative model, between farmers, biomethane producers, and policymakers is key to harnessing the environmental and economic benefits of biomethane for the agriculture sector. A similar model to the current cooperative models could be implemented in the developing biomethane sector for larger plants to allow for greater farmer involvement and/or ownership. Research is needed to understand other viable models. This would also help support the social acceptance of AD, including biorefineries, around Ireland.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Analysis of solutions for co-ownership and multi-actor approaches (including, for example, co-operatives) to establish and operate AD plants and/or integrated AD & biorefinery facilities in Ireland.
- Recommendations for farmers, biomethane producers, upstream and downstream bioeconomy stakeholders, and policymakers .

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 17	*Farm level assessment to enhance forage yields and quality of the grass/crops as a feedstock for AD plants and/or integrated AD & biorefinery facilities to meet the Renewable Energy Directive sustainability criteria*
Indicative funding	< €750,000

Background:
The Climate Action Plan 2024 sets a target of 5.7 TWh of biomethane production which may require as many as 200 Anaerobic Digestion (AD) plants to be built by 2030. The key to a viable and sustainable AD plant is a secure supply of quality feedstock. Teagasc estimate that, at a national level, total land area of c. 120,000 ha (less than 5% of available land) will be needed to produce the silage to feed the AD biomethane plants required to reach the 5.7 TWh target. These average yields could be improved with the incorporation of legumes, such as white or red clover, or using multi-species swards and this would reduce the level of displacement and chemical fertiliser required. There is also an option to pre-treat these feedstocks using biorefinery systems prior to their use in the AD plant (e.g. grass biorefinery for protein extraction). Pre-treatment of AD feedstock has the potential to maximise resource efficiency, improve biomass valorisation, and contribute to improved economics within AD value chains.

Research Gaps:
Research is needed to understand if the above solutions are viable and how to improve the average forage fields. The incorporation of legumes, or multi-species swards to successfully increase the yields and reduce the level of displacement and chemical fertiliser need to be verified.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Assess at farm level how to enhance forage yields and quality with the intended end use of the grass/crop as a feedstock for an AD plant (may include considerations for pre-treatment via a biorefinery plant)
- Ensure best practice of avoiding unintended consequences in agricultural emissions by demonstrating the ability to meet the Renewable Energy Directive sustainability criteria:
    - GHG Emission Savings
    - Land Use and Biodiversity Protection
    - Sustainable Forest Management
    - Soil, water and air protection
    - Certification and Compliance

Outputs from proposed research could include:

- Assessment of optimal AD or biorefinery feedstock crops from farms considering species mixes, fertiliser requirements, potential displacement of other crops.
- Analysis of the sustainability impacts of AD or biorefinery feedstocks from farms with reference to the Renewable Energy Directive sustainability criteria.
- Farm level analysis, case studies, reports and/or peer reviewed articles.
- Dissemination of best practice findings and policy recommendations of the research findings to a variety of stakeholders.

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 18	*Addressing sustainable supply and demand for critical raw materials in the renewable energy sector*

Background:
Minerals are increasingly in demand as critical raw materials for components in renewable energy systems. Achieving Ireland's ambitious national climate and energy targets, such as 70% electricity production from renewable energy sources and one million electric vehicles by 2030, requires raw materials for Wind and Solar PV, energy storage and implementing other system changes to support the existing electricity grid infrastructure.

Demand generated by energy and transport sectoral targets up to 2030 have been estimated in the Green Metals Report 2023 produced by Geological Survey Ireland (GSI) of the Department of Environment, Climate and Communications. Research, innovation and recycling will impact demand and the metals and materials that are highlighted as being critical in supply for Ireland include Rare Earth Elements (REE) and battery critical materials such as lithium and cobalt. The report highlights that demand is likely to outstrip supply considering their use in other technologies and processes as well as increasing global demand. This poses a security threat for Ireland's ability to deliver on Climate Action Plan targets.

Research gaps:
Applications to this topic would aim to address potential sustainable solutions and pathways for adequate and reliable access to raw materials and REE for Ireland, linked to the European Critical Raw Materials Act 2024, and specific to the Irish context and national targets.

Topic Objectives and Outputs:
Project(s) proposed under this topic could consider addressing the following:

- Building sustainability and circularity of demand
- Creating solutions for resource efficiency and the development of substitutes
- Ensuring sustainable sourcing and due diligence in supply chains for raw materials
- Increasing and diversifying the supply of critical raw materials in Ireland
- Evaluating the potential for discovery of critical raw materials (CRMs) in Ireland
- Assessing resource estimation for various decarbonation solutions/technologies, specifically focused on the Irish context and targets

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 19	*A system-based evaluation of post-growth policy alternatives using multi-criteria or sufficiency-orientated frameworks, with an emphasis on positive social and ecological outcomes supported by economic instruments*

Background:
The results of the latest SEAI energy projections for Ireland show there will be insufficient technology deployed in time to meet 2030 and 2050 targets. For a successful clean energy transition, it is recognised that energy technology as well as other factors including policy frameworks, behavioural changes, changes of institutional settings, and system dynamics are all interconnected and influence each other. Transformative processes leading to a system change are required however concrete decisions on what steps to take and how to implement them to build future pathways are necessary.

Research Gaps:
An approach of modelling alternatives to growth as represented by de- and post-growth is evolving and this topic calls for further exploration to assess applicability for Ireland going forward. This could include quantitative models (energy-economic models), policy scenario analysis, or more conceptual frameworks. Research would inform the 'what next' and 'how' when it comes to 'system change'.
Proposals for projects should not only be a theoretical exploration but should also contribute to policy design and indicate how Ireland could start implementing post-growth principles.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following potential outputs:

- Papers to illustrate the policy landscape in Ireland and how this could evolve into a more progressive policy suite that is consistent with planetary boundaries.
- Exploration of public and political acceptability, i.e., what barriers exist for implementing de-growth or post-growth policies that could be informed by the project?
- System-based evaluation of post-growth/de-growth policy alternatives using multi-criteria or sufficiency-orientated frameworks, with an emphasis on social and ecological goals rather than economic growth .

A project advisory group should be formed by the Project Team with other relevant stakeholders.

Topic 20	*Exploring the Expansion and Impact of Energy Cooperatives in Ireland*

Background:
Despite numerous policies aimed at reducing energy poverty in Ireland, success has been limited. High levels of energy poverty persist (as indicated by research carried out by SEAI's Behavioural Economic Unit (BEU) and other teams), while energy companies maintain substantial profits, even during energy crises. In a liberalised economic system, energy companies prioritise profits, and the regulator's role is to ensure competition among them. Reducing overall consumption – a key element of various climate plans and policies – is not their primary goal.

Unlike private energy providers, energy cooperatives offer a unique solution by addressing both energy prices and consumption through their inherent design. In principle, an energy cooperative is a community of energy users who own and operate the means of production for the energy they use – including the grid. In practice, most cooperatives do not own both the production plants and the grid, and many have customers that are not part of the cooperative decision-making process. A handful of small energy cooperatives exist in Ireland.

Research gaps:
Research is needed to explore the prevalence and impact of energy cooperatives within Ireland, as well as their feasibility and potential for growth as a distinct model of energy provision. Certain changes to the grid structure and wider energy policy could make their development easier. However, there is a significant lack of research on energy cooperatives in Ireland. This limits the extent to which energy cooperatives can be evaluated in terms of their potential and expanded as an alternative model of energy provision and consumption.

Topic Objective and Outputs:
Project(s) proposed under this topic could consider addressing the following objectives:

- Conduct a comprehensive exploration of existing cooperatives in Ireland
- Assess the impact of increased participation in cooperatives on energy prices and carbon emissions in Ireland.
- Identify the barriers to the formation of cooperatives in Ireland, including political, technical, social, behavioural, and financial challenges.

Outputs from proposed research could include:

- An evaluative case studies report documenting and evaluating existing energy cooperatives in Ireland. This report could incorporate (e.g. but not limited to):
    - Basic characteristics of a given cooperative (e.g. number of members, number of households served).
    - Organisational and governance structure.
    - Production and consumption model.
    - Growth or contraction over time.
    - Energy production and consumption performance.
    - Carbon emission performance.
    - Energy prices for consumers.
- An interdisciplinary analysis of the barriers and enablers of energy cooperatives in Ireland. This analysis could identify the socio-political, technical, behavioural, and economic dimensions that may enable or disable the proliferation and effectiveness of an energy cooperative energy provision model within Ireland, with attention to the wider energy policy and energy provider context, in which a model of centralised and private sector energy provision dominates.
- An international case study report of successful energy cooperatives in other parts of Europe, with comparative analysis of how – among other areas mentioned above –the formation, operation, and performance of successful EU energy cooperatives contend with Irish-based cooperatives.

A project advisory group should be formed by the Project Team and other relevant stakeholders.

Annex 2: Application Form Template Instructions

This section provides guidance on how to complete the Application Form.

Please note:

- Only fully complete applications received prior to the application deadline will be considered for evaluation.
- Do not exceed the maximum page limits defined for the following Application Sections:
    - Section 2 – Max 8 Pages
    - Section 3 – Max 4 Pages
    - Section 4 – Max 14 Pages
- Please ensure all sources are appropriately referenced including use of any generative AI or AI assisted tools. Please refer to the European Commission Guidelines for further guidelines on the use of generative AI in research and describe which tools (with version specified), where the tool was used in the application and to what extent.
- The above page limits are exclusive of references. Please include a list of references/bibliography as an appendix as required.
- Font size must be a minimum of 10 pts.
- Please submit the final Application Form in PDF Format.
- Please use the following naming structure for submitting documentation
  Organisation name (Lead surname) document type, for example 'SEAI (Bloggs) Application Form' and 'SEAI (Bloggs) Letter of Support 1', etc.

Section 1: Project Details

1.1. Project Title (max. 30 words)

The project title should clearly convey the nature of the project to be undertaken. Please include a project acronym, if applicable.

1.2. Topic Number (if applicable)

If you are applying to the Topic Strand detailed in Annex 1, please enter the topic number you are applying to here. If you are applying to the Open Strand, please type 'open strand'.

1.3. Lead Applicant, Partner Applicant & Collaborators

Provide the requested details relating to the Lead Applicant, Partner Applicant(s) and Collaborator(s). See Section 3 of the Call Document for definitions of project roles.

1.4. Requested Duration, SEAI-Requested Costs and Total Project Costs

Indicate the requested project duration (months), the costs requested from SEAI and the total cost of the project. Please ensure that these figures align with those provided within the Budget Template (excel spreadsheet).

In-kind contributions are valued by SEAI and should be detailed in the 'in-kind contributions' table (only) within Section 5.3 of the Application form. In-kind contributions should not be included within the Total Project Costs table or within the Budget Template spreadsheet.

1.5. Abstract (max 250 words)

This should be a succinct and accurate summary of the proposed work.

1.6. Non-technical Summary (200 words)

Provide a brief, easy-to-understand description of your project. This should be written in simple language, aimed at helping the public understand the reasons and methods behind the work.

1.7. Keywords (max 5 words)

These should be descriptors that best characterise the proposed research.

1.8. Energy Research Classification

From the drop-down list, please select the energy research category that best aligns with the proposed research.

1.9. Specific Policies and Targets addressed

List the national and international energy and climate targets and/or policies addressed through your project. Where relevant, please specify the specific policy target, and e.g., the number of the action(s) from the Climate Action Plan which your project aims to contribute to.

1.10. End-users targeted

Provide details of the research end-users targeted. A research end-user is defined as an individual, community, or organisation, that will directly use or directly benefit from the output, outcome or results of the proposed research.

1.11. Readiness level

Identify the readiness level by which your project can be measured. E.g., Technical Readiness Level (TRL), Societal Readiness Level (SRL), Market Readiness Level (MRL), Policy Readiness Level (PRL), Acceptance Readiness Level (ARL), Organisational Readiness Level (ORL) etc. Identify the current readiness level of your proposal and the targeted readiness level at project completion. More than one type of readiness level may be selected as appropriate. Please provide a reference to the scale used.

1.12. SEAI and RD&D Funding Programme Remit (max 250 words)

Describe how the proposed project aligns with SEAI's remit and the overarching objectives of SEAI's National Energy RD&D Funding Programme. The overarching programme objectives are to:

- *Accelerate the development and deployment in the Irish marketplace of competitive energy-related products, processes and systems;*
- *Support solutions that enable technical and other barriers to energy market uptake to be overcome;*
- *Grow Ireland's national capacity to access, develop and apply international class energy RD&D;*
- *Provide guidance and support to policy makers and public bodies through results, outcomes and learning from supported projects.*

This statement will be reviewed by SEAI when determining the eligibility of the application.

Section 2: Excellence and Innovation (max 8 pages)

2.1. State-of the-Art/Literature Review

Describe the current state-of-the-art, current knowledge or current best practice in this area, and particularly in the Irish context. Please ensure to use references where appropriate.

2.2. Innovation/Novelty - Beyond State-of-the-Art

Describe the concept of the proposed project and provide details of how the proposed project will further the current state-of-the-art, current knowledge or current practice. The degree of novelty and innovation associated with the proposed project should be clearly demonstrated. Describe clearly how this project would advance the state of the art in the research area/field, and within Ireland.

2.3. Project Objectives

Provide details of the objectives of the project and the associated timelines for delivery of these objectives.

2.4. Project Team & Collaborator Profile

Provide details of the Project Team (Lead Applicant and Partner Applicants) and Collaborators involved in the proposed project, including details of relevant qualifications and key achievements. Please refer to project members by surname.

Provide an outline of previous relevant involvement in research, innovation and/or commercialisation activities performed by the project team. For the Lead and Partner Applicants only, outline their track record in obtaining research/innovation funding from exchequer, industry, European or other funding sources.

Please note: this section should refer only to the Lead and Partner Applicants and Collaborators and should not provide details of individuals or organisations who may be engaged as external consultants. Whilst requests for the funding of external consultants is permitted, please note that applications will not receive additional marks for such consultants at the evaluation stage.

2.5. Previous SEAI or other RD&D Funding (if applicable)

a. *If applicable, describe any previous SEAI funded research projects and clearly outline how this proposed project builds upon previously funded work.*
b. *If applicable, describe any previous funded research projects and clearly outline how this proposed project builds upon previously funded work.*

Section 3: Relevance and Impact (Max 4 pages)

This section should be as specific as possible and provide information that reviewers will find helpful in assessing the relevance and potential impact of the proposed research activity.

3.1. Relevance to the needs of the Irish Energy Sector and to SEAI

Clearly demonstrate the relevance of the proposed project to the needs of the Irish energy sector with particular reference to Ireland's Climate Action Plan, the Programme for Government, the National Mitigation Plan, Energy White Paper and/or Ireland's National Energy & Climate Plan (NECP), Climate Action and Low Carbon Development Bill (2021). Refer to other relevant policy documents as appropriate.

3.2. Expected Impact

Describe the expected impacts of the proposed project in terms of both a) academic impacts and b) other research impacts. Furthermore, describe indicators of both qualitative and quantitative evidence of expected impacts.

In terms of academic impact, please describe how this research would contribute to your field of study within academia (if applicable). As part of your description, where relevant, please refer to how the proposed project would enhance the applicant/organisation's potential for involvement in, for example, Horizon Europe collaborative projects and/or other non-exchequer funded RD&D activities in the future. Where relevant, also outline how the proposed project would enhance collaboration with Industry or other business opportunities.

In terms of other research impact, consider the contribution that this research would make in categories such as: economic (e.g. jobs, exports, turnover growth, investments); societal (e.g. benefit to consumers/end users); policy-oriented (e.g. contribution to evidence-based policy formation and/or the legislative/regulatory framework); or scientific (creating knowledge, enhancement of Irish scientific capacity and capability).

Provide details of expected impacts of engaged research[1]; working with rather than for the potential research end users (e.g., businesses in the energy/low-carbon technology sector, energy consumers, local authorities, regulators, policy makers, communities etc.) and indicate the timeframe over which the anticipated impacts will be realised.

[1] IUA Engaged Research Planning for Impact https://www.campusengage.ie/wp-content/uploads/2022/03/Updated-Final-PBS10581-IUA-Engaged-Research-Planning-for-Impact-Framework-2022-Update_V5.pdf

Section 4: Project Implementation and Work Plan (Max 14 pages)

4.1. Work Plan

Complete the 'summary of work packages' table in the application form template which provides details of the number and title of each work package.

WP No.	Title
1	Xxx
Etc.	Xxx

For each work package, replicate and complete the table below in the application form template.

WP No. & Title	*Provide the number and title of the work package.*		
Start Month No.	*e.g., 1*	**Finish Month No.**	*e.g., 6*
WP Lead	*Indicate the role and organisation of the project team member who will lead the work package.*		
WP Contributors	*Indicate the role and organisation of other contributors to the work package and briefly describe their role.*		
Objective(s)	*Describe the primary objectives of the work package.*		
Description	*Provide an outline of the work to be undertaken as part of the work package, including the methodology to be followed, specialised equipment to be used and analysis to be performed.*		
Milestones (Specify the month each milestone will be reached)	*Define and number each milestone (add as many lines as milestones)*	*Specify the month number each will be achieved*	
	e.g., WP1-M1: Literature review	*e.g., Month 3*	
Deliverables (Specify the month the deliverable will be provided)	*Define and number each deliverable (add as many lines as deliverables)*	*Specify the month number each will be achieved.*	
	e.g., WP1-D1: Literature review paper submitted to a peer-reviewed journal	*e.g., Month 3*	
Data Required (if applicable)	*WP1- Dataset 1:* *WP1: Dataset 2:* *(Add as many lines as datasets)* *Please provide a brief description of data required for this work package*[2].		
Est. resource allocation per WP (est. cost and FTE)	*Provide an estimation of resourcing allocation per work package, e.g., total associated staffing budget requested, and approx. staffing allocation (FTE)*		

Please also provide a high-level Gantt chart (or similar) indicating timelines for the work packages and tasks. Please ensure to include your high-level Gantt chart within the Application Form Word Document template. Please do not submit a Gantt chart as a separate file.

[2] As per the data management strategy, (Section 4.5) projects are encouraged to outline good consideration of existing datasets and encouraged to reuse and repurpose existing datasets. Risks to data access/acquisition should be detailed in Section 4.2; Project Management and Risk.

4.2. Project Risks and contingencies (max 3 pages)

Clearly describe the proposed project management structure for the project and provide details of reporting lines and responsibilities. Please also provide a high-level Gantt chart (or similar) indicating timelines and dependencies for the work packages and tasks.

Please include details highlighting the capacity of the Lead Applicant to lead this project, e.g. consideration to number of current awards and other activities underway, and associated full time equivalency (FTE), along with FTE expectations on this project. Similarly, please include details highlighting the capacity of the wider project leadership team, across both Lead/Partner Applicants, to deliver the project.

Please ensure to include your high-level Gantt chart within the Application Form (Word Document template). Please do not submit a Gantt chart as a separate file.

Using the table provided in the application form template, describe the primary risks associated with the proposed project, their likelihood (low, medium or high) and outline the measures which will be undertaken to avoid or mitigate these risks.

If your research requires the acquisition of a licence (e.g., foreshore licence), permits or planning permission, please consider this in your risk assessment and provide details of the estimation of acquisition timelines and mitigation measures/alternative options. Similarly, please identify risks associated with data acquisition/ access and mitigation measures to reduce impacts.

4.3. Research Security

The SEAI Research Development and Demonstration Programme supports the European Commission's Council Recommendation on Research Security. SEAI will follow recommendations including reserving the right to undertake a risk appraisal in the funding application processes, as arising. SEAI encourages funding beneficiaries to identify and assess risks up front and periodically throughout the research project.

Please describe any potential research security exposure of your research activity

4.4. Gender Considerations*

Complete the 'gender considerations' table in the application form template with further details on gender balance and any potential gender dimension within the proposed research activities.

Description of how gender balance will be fostered within the project team:	
Please describe how gender balance will be fostered within the proposed project team. *Please list concrete actions demonstrating how gender balance will be fostered.* • *For 3rd level educational bodies, please comment on the Athena Swan[3] Institutional award status or award commitment for your organisation/department.*	
Action title *(add as many lines as appropriate)*	**Description**
Action 1:	
Action 2:	
Action 3:	

[3] https://www.advance-he.ac.uk/equality-charters/international-charters/athena-swan-ireland

Description of any potential gender dimension of the proposed research activity:
Please consider any potential gender dimension of the proposed research activity. Gender considerations in research mean that gender is part of the research design and systematically controlled for throughout the research process, without necessarily being the primary focus of analysis. Research that takes gender considerations into account is found in most scientific disciplines and in energy research, with empirical evidence researchers have studied the gender dimension in areas such as energy consumption in households, energy saving and decision-making in the production of energy. Energy research that takes the gender dimension into account has potential for further development e.g., does the underrepresentation of women in the energy sector, in terms of both production and decision-making, have any impact on the transition to more sustainable energy systems?[4] [5] *The following video may be helpful in outlining the gender dimension in research:* *Gender dimension in research video - YouTube*

*Note - there will be no discrimination due to gender in the evaluation of projects.

4.5. Data Management and Open Access Strategy

Data Management Strategy: Project participants are asked to consider in advance how they will acquire and subsequently manage the data the project will generate, and to plan which data will be preserved, made publicly available and where. Where possible, use of existing available data is encouraged, and data acquisition agreements should be in place with data holders in advance. A data management plan will demonstrate how the data will be managed effectively and securely. Please describe (500 words max):

- *What new data will be collected or produced;*
- *What existing data will be re-used and evidence of preliminary data-sharing agreements (if relevant);*
- *How the data will be safely stored and managed both during and after the project.*

Open Access Strategy: Project teams are encouraged to work with open access tools and to make project outputs/models/assumptions available to interested stakeholders to facilitate follow-on studies and reduce duplication of research. Associated metadata and clear descriptions of data, acquisition, organisation, analysis and interpretation should be included. Planned open access locations for the data should also be included. Projects should aim to follow the FAIR principles, making research data findable, accessible, interoperable and re-usable. Please describe your open access strategy (500 words max).

Please complete the ***Data Management Plan*** *Form (Annex 1 of the Application Form) and submit along with your application. This should outline details of all data to be collected, processed and/or generated by the proposed project.*

4.6. Intellectual Property Management & Exploitation

Exploitation Plan: describe how results and outcomes from the proposed project will be exploited during and after the project, such that the project will result in tangible impacts.

Describe how background and foreground Intellectual Property (IP) will be managed.

Describe how any discoveries, inventions or processes resulting from the proposed project will be exploited. Where relevant/available, provide details of potential end users/markets.

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[4] what_is_the_gender_dimension_roggkorsvik_kilden_genderresearch.no_.pdf (kjonnsforskning.no)
[5] A_Review_of_Energy_and_Gender_Research_in_the_Global_North.pdf (geecco-project.eu)

Where there is a reasonable potential for commercial exploitation of research outputs, applicants should apply the principles of the National IP Protocol[6] 2019 – Ireland's framework for research commercialisation.

Where relevant, applicants should discuss expected project outputs and intellectual property with their Technology Transfer Office and/or consult with Knowledge Transfer Ireland for information on how to fulfil Intellectual Property obligations, and for support in relation to developing consortium agreements where required.

Successful applicants are required to take necessary steps to preserve and protect such intellectual property rights including, where appropriate, applying for patent registration; and actively exploiting any discoveries, inventions or processes resulting from the research, by means of commercial licensing arrangements or otherwise.

Where appropriate and whenever possible, IP should be managed for the benefit of enterprise development in Ireland.

For collaborative projects, please confirm (by ticking the relevant box in the application form) that should the proposed application be successful, the project consortium (Lead Applicant, Partner Applicant(s) and Collaborator(s)) will put a formal agreement in place to agree on Intellectual Property Rights and other relevant issues associated with the responsibilities within the project and exploitation of results.

4.7. Communication and Dissemination Plans

Communication and Dissemination Plans: Describe the strategy for communication, dissemination and implementation (if applicable), and what activities will be undertaken to promote the proposed project and engage the relevant audiences/end-users throughout the project. Please provide evidence of tailored, multifaceted communication strategies for varying end-users including public participation or consultation. SEAI expects that outputs/findings from SEAI supported projects will be widely disseminated and made publicly available.
Please note that project outcomes (i.e., generated knowledge/scientific output/research results/lessons learned) must be made available, among others, in the form of a short, publishable project report/case study (allowing for IP or commercial sensitivity restrictions on any sensitive data). These outcomes may be disseminated via the SEAI website and further publication as required.

4.8. Engagement with research end-users and key stakeholders [7]

Please describe any engagement with research end-users, or other stakeholders, in the formation of the research proposal and in setting priorities for the proposed research. Please describe planned engagements with research end-users, including participatory processes, both during and after the project, that could involve multiple disciplines, sectors and stakeholders.

4.9. Sustainable Research

SEAI's mission is to drive the reduction and replacement of fossil fuel usage, and our role is to help all of society be more energy efficient. Research has a major role in the design of new practices and products, education, policy formation and information exchange to realise both mission and goal. However, research activities themselves can be resource intensive. SEAI funded researchers are required to describe their research design that will minimise waste and environmental footprint without adversely impacting the validity and reliability of the research outputs.
Here you can identify and describe how you have considered sustainable practices in your research activities. You could refer to:

- *Fieldwork considerations.*
- *Travel to place of work, conferences and meetings.*

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6 https://www.knowledgetransferireland.com/ManagingIP/National-IP-Protocol/
7 https://www.iua.ie/wp-content/uploads/2023/12/Campus-Engage-Engaged-Research-Policy-Briefing-for-Funding-Agencies-FINAL-1.pdf

- *Reproducibility of scientific work, enabling factorial design.*
- *Sustainable initiatives.*
- *Reporting and promoting your results.*
- *Evaluating the impact of your research practices, using targets and indicators.*
- *Use of Large Language Models (Artificial Intelligence)*
- *Materials life cycle costing.*
- *Regulate disposal.*
- *Training on environmental issues related to energy, climate and biodiversity that will facilitate their consideration in laboratory operations and scientific work.*

Wet laboratories, in particular, consume more energy and water than office space as well as producing more waste. Make references to any organisational policies, certifications etc. for example International Organization for Standardization (ISO) or https://www.sfi.ie/sustainable-lab-cert/

4.10. Artificial Intelligence (AI)

Disclose the use of any generative AI tools in the preparation of this application. Please describe which tools (with version specified), where the tool was used in the application and to what extent.

Section 5: Budget

Please complete the following:

1. *Budget Justification (see below)*
2. *Budget Template (MS Excel spreadsheet)*
3. *Provide the requested 'financial documentation/declarations' (as PDF documents)*

Applicants should refer to the SEAI RD&D Budget Policy Document when completing the budget sections of their application.

5.1. Research Category Justification (max 250 words)

Please select a Research Category from the list and provide a justifying narrative for your selection. Before selecting, please review and refer to the SEAI RD&D Budget Policy document for detailed definitions of each research category listed.
The onus is on the Applicant organisations to select a research category which appropriately reflects the proposed project activities. Please select the appropriate Research Category.
Repeat the table as required for each partner applicant.

5.2. Grant Aid Intensifier Justification (max 250 words)

If applying for the grant aid intensifier, please select the relevant intensifier and provide a justification in the table provided. Please refer to the SEAI RD&D Budget Policy document for eligibility details and requirements of this grant intensifier.
Repeat the table as required for each partner applicant.

5.3. Budget Summary

Provide an overview of costs by completing the budget summary table. Add additional columns for each additional project partner if applicable. ***Please ensure that these figures align with those provided in the budget template*** *(Excel spreadsheet).*

Please also complete the Summary Table – In-kind Contributions.

In-kind contributions are valued by SEAI and should be detailed within the 'In-kind Contributions' table (only) within Section 5.3 of the Application form. In-kind contributions should not be included within the Total Project Costs table or within the Budget Template spreadsheet

5.4. Budget Justification

Provide a justification to support proposed total project costs included in the application under the headings of: staff, equipment, materials, travel and external consultants.

Staff: *Justify the role and need for each staff member who would be funded by the proposed project by completing the table below for each person. Repeat the table as required for each proposed staff member to be funded.*

Position Title	*Please detail the requested position title (e.g. Research Engineer or Postdoctoral Researcher to be Recruited).*
Organisation name	*Indicate the name of the organisation which this staff post will be associated with.*
Total cost of staff member	*Indicate the total cost (€) associated with this role.*
WP/task alignment	*Provide details of the work packages/tasks which this person will work on.*
Justification for the level of this position	*Describe how the costs associated with this position have been calculated.*
Justification for this position	*Describe why this position is required on the project.*

Equipment: *Justify the need for each piece of equipment which will be funded by the proposed project by completing the table below for each piece of equipment. Repeat the table as required for each piece of equipment.*

Equipment & quantity	*Indicate the equipment required and the quantity.*
Organisation name	*Indicate the name of the organisation who will own the equipment and where it will be based.*
WP/task alignment	*Provide details of the work packages/tasks which the equipment is required for.*
Cost requested (€)	*Indicate the cost (€) associated with the equipment.*
Justification for cost	*Provide a justification/rationale for the quoted cost.*

Materials: *Justify the need for each material which will be funded by the proposed project by completing the table below. Repeat the table as required.*

Materials & quantities	*Indicate the materials required and the quantity.*
Organisation name	*Indicate the name of the organisation who will own the materials.*
WP/task alignment	*Provide details of the work packages/tasks which the materials are required for.*
Cost requested (€)	*Indicate the cost associated with the materials.*
Justification for cost	*Provide a justification/rationale for the quoted cost.*

Travel: *Justify the need for travel costs requested as part of the proposal. Where possible, online meetings/events are encouraged.*

Travel	*Indicate the travel required and the quantity.*
Organisation name	*Indicate the name of the organisation who the requested costs are associated.*
WP/task alignment	*Provide details of the work packages/tasks which the travel is required for.*
Total cost (€)	*Indicate the total cost associated with the travel.*
Justification for cost	*Provide a justification/rationale for the quoted cost.*

External Consultants: (max ½ page): *Justify the need for and value of external consultants costs requested as part of the proposal. As noted in the SEAI RDD Budget Policy, every possible effort must be made, in the first instance, to build a project team capable of completing all tasks proposed in the project without the need for external consultants.*

Section 6: Letters of Support

Letters of Support (max 1 page each)

The following letters of support should be submitted as part of an application to the Call. Letters of support may be uploaded individually or may be merged into a single PDF file.

Please also complete the summary Letters of Support checklist Table within the Application Form.

- ✓ **The Lead Applicant,** *confirming that the information provided in the application is correct to the best of their knowledge, that all sources including generative AI have been correctly acknowledged in the application, and that the proposed project has not been/is not the subject of grant aid from any other source. By submitting a proposal, the Lead Applicant confirms that they hold a contract covering at least the duration of the proposed project or agreement from their employer that their employment will be extended to cover at least the period of the proposed project.*
- ✓ **An authorised staff member in the lead institution/organisation** *(e.g., company CEO/CFO/Director, University/Research Institution Vice President for Research/Director of Research or equivalent) confirming their endorsement of the proposal and confirming their commitment to hosting and facilitating the proposed project should it be successful.*
- ✓ **Each Partner Applicant Organisation (if any)** *confirming their role in the proposed project and indicating the level of any financial support (cash or in-kind) being provided by their organisation to the proposed project.*
- ✓ **Each Collaborator Organisation (if any)** *included in the application, providing details to confirm their role in the project, and details of any proposed support (e.g., data access, technology trial/demonstrator, in-kind support, or other).*

Please note that unsolicited letters of support are not permitted.

Annex 3: Application Checklists

****PLEASE NOTE - THE BELOW DOCUMENTATION IS MANDATORY AND FAILURE TO SUBMIT ANY DOCUMENTATION (IF APPLICABLE) WILL DEEM YOUR APPLICATION INELIGIBLE****

Companies

Application form	
Budget template	
Declaration of Financial Resources	
Declaration of Solvency	
Most recent annual financial statements (if applicable)	
For Newly Incorporated Companies - Management Accounts or 1 year Cash Flow Projection prepared by Qualified Accountant (if applicable)	
Declaration of SME Status (*if applicable*)	
Proof of funds (*if applicable*)	
A letter from the Revenue Commissioners (*if applicable*)	
Letters of Support	
Data Management Plan	

3rd Level Educational Bodies

Application form	
Budget template	
Declaration of 3rd level educational body – Non-Economic Public Good (NEPG) (*if applicable)*	
Letters of Support	
Data Management Plan	

Public or Semi State Bodies

Application form	
Budget template	
Declaration of Financial Resources	
Declaration of Non-Economic Public Good (NEPG) *(if applicable)*	
A letter from the Revenue Commissioners *(if applicable)*	
Letters of Support	
Data Management Plan	

Annex 4: Budget template Instructions

Please find details in Appendix 1 of the SEAI RD&D Budget Policy document, available to download from the Programme Documents section of the SEAI RD&D Webpage:
https://www.seai.ie/grants/research-funding/research-development-and-demonstration-fund/

Annex 5: General Terms and Conditions

1. Failure to fully adhere to the provisions of the Call may result in application refusal, grant offer revocation or grant claim refusal, depending on the particular status and stage of the application.

2. Please note that SEAI may, if required by law or otherwise and without incurring any liability, vary, revise or supplement Programme Documentation and/or Terms and Conditions of the Programme before or after the applicant's submission of an application and such revised terms will apply to the application unless the applicant chooses to withdraw its application or withdraw from the Grant Agreement.

3. The applicant's agreement with SEAI in the event of a Grant Offer being accepted will comprise the Grant Agreement, Terms and Conditions of the Programme, the Call Document (including its annexes), and other programme documentation provided by SEAI. The applicant having accepted the Grant Offer and communicated his/her acceptance of it to SEAI shall comply with and agree to be bound by the provisions of these documents.

4. The project, in respect of which the grant application is made, must be located in the Republic of Ireland.

5. The Grant Offer only becomes valid upon receipt by SEAI from the applicant of the signed Grant Agreement.

6. The applicant must ensure Grant approval is received before proceeding with any orders, purchases or commencing works. No payments will be made retrospectively for costs incurred prior to approval being granted. Orders placed or invoices dated prior to grant approval will not be eligible for grant support.

7. The total grant amount will not be permitted to escalate above the amount indicated in the grant agreement under any circumstances.

8. The applicant must obtain all necessary insurances, consents and statutory approvals and have authority to implement the project.

9. The SEAI National Energy RD&D Funding Programme is subject to any state aid clearances required from the Commission of the European Union and any consents, clearances or licenses that might be required from any other competent body. The applicant must ensure that compliance is achieved with the relevant

principles of Irish and EC law regarding the spending of this funding and, where applicable, the laws and guidelines concerning State Aid and public procurement.

10. The applicant must be prepared to participate in follow-up site visit(s) to verify impacts and achievements and to participate in follow-up research (telephone or questionnaire) as may be commissioned by SEAI to establish the Programme's impacts and achievements. This may also include the acquisition of information and data for the development of case studies for wider dissemination (protecting as appropriate all confidential or commercially sensitive information/ data). The applicant acknowledges that SEAI may have to provide certain contact details to third party contractors in relation to these matters and the applicant hereby consents to SEAI making these disclosures.

11. The timing of payment to approved applicants is subject to the funding allocated by government to the Programme in a particular calendar year, in accordance with public financial procedures. Where all other conditions are met, payment will be made on a "first come, first served" basis. Where funding is exhausted in a particular calendar year, payment to remaining applicants will be deferred until such time as further funds may become available. Deferred payments will receive priority, if and when those funds become available.

12. The applicant shall follow the SEAI complaints procedure in relation to any disputes between the applicant and SEAI concerning any matter in connection with the Programme.

13. Any false, fictitious or fraudulent statements or claims knowingly made on grant applications, or supporting documentation, submitted in respect of previous grant applications / requests for payment or otherwise made to SEAI, its authorised officers, or an SEAI Inspector, or any breach of these Terms and Conditions of the Programme may result in current and future applications being deemed ineligible by SEAI. In respect of applications where the applicant has already received payment pursuant to the Programme.

14. The Applicant acknowledges that SEAI is subject to the requirements of the Freedom of Information Act 2014, as amended ("FOIA"). SEAI undertakes to use its best endeavours to hold confidential any information provided by the applicant subject to its obligations under law, including the FOIA. Should the applicant wish that any of the information supplied by him/her should not be disclosed because of its sensitivity, he/she should, when providing the information, identify the same and specify the reasons for its sensitivity. SEAI will consult with the applicant about such information before making a decision on any Freedom of Information request received.

15. Any personal information which an Applicant volunteers to SEAI will be treated with the highest standards of security and confidentiality, strictly in accordance with the Data Protection Acts, 1988 to 2003, as re-enacted, amended or replaced from time to time, and pursuant to the General Data Protection Regulation (meaning Regulation (EU) 2016/679 of the European Parliament and of the Council of 27 April 2016 on the

protection of natural persons with regard to the processing of personal data and on the free movement of such data, and repealing Directive 95/46/EC) and any related legislation. SEAI, as data controller, and its agents, will store such information on its database and fully respect the confidentiality of the data provided. The information provided by applicants will be used for evaluation purposes and to facilitate the administration of the grant process. This may require that data be supplied to and discussed, in confidence, with any person or organisation appointed by SEAI to assist in assessing or monitoring this application. These persons will be subject to the same requirements for protection of confidentiality.

16. An applicant must notify SEAI immediately if it decides not to undertake and/or complete its project. If a successful applicant decides not to undertake and/or complete its project, SEAI will not pay it the grant and instead may (but is not obliged to) allocate some or all of the funds provisionally allocated to that applicant to a different applicant.

17. The parties are of the view that there is no supply of goods or services between them and therefore there is no VAT chargeable to SEAI by the grantee in relation to the payment of the grant. In the event that the Revenue Commissioners determine that, in their view, VAT is chargeable then the grant payment shall be regarded as inclusive of any VAT charge.