

Science Foundation Ireland

# Zero Emissions Challenge



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## ***Zero Emissions Challenge***

### **Science Foundation Ireland Future Innovator Prize 2019**

### **Call Application Handbook**

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Version: June 2019

#### **KEY DATES**

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|--------------------------|--|
| • Call Launch            | 28 <sup>th</sup> June 2019                               |
| • Application Deadline   | 23 <sup>rd</sup> September 2019, 13:00 Dublin Local Time |
| • Funding Decision       | November 2019  |
| • Award Start Date       | January 2020   |
| • Concept Phase Review   | March 2020   |
| • Seed Phase Review      | Q4 2020  |
| • Prize Award Start Date | Q1 2021  |

#### **Terms of Reference**

While every effort has been made to ensure the accuracy and reliability of this document, it is provided for information purposes only and as a guide to expected developments. It is not intended, and should not be relied upon, as any form of warranty, representation, undertaking, contractual, or other commitment binding in law upon Science Foundation Ireland, the Government of Ireland, or any of their respective servants or agents. Science Foundation Ireland Terms and Conditions of Research Grants shall govern the administration of SFI grants and awards to the exclusion of this and any other oral, written, or recorded statement.

All responses to this Call for Submission of Proposals will be treated in confidence and no information contained therein will be communicated to any third party without the written permission of the applicant except insofar as is specifically required for the consideration and evaluation of the proposal or as may be required under law, including the Industrial Development (Science Foundation Ireland) Act, 2003, the Industrial Development (Science Foundation Ireland) (Amendment) Act 2013 and the Freedom of Information Acts 1997 and 2003.

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## **1 About the SFI Future Innovator Prize**

The SFI Future Innovator Prize is a challenge funding programme that seeks to support Ireland's best and brightest unconventional thinkers and innovators to develop novel, potentially disruptive, technologies to address significant societal challenges.

To do this, the prize enables the formation of high-performance interdisciplinary STEM research teams to identify and validate challenges of national significance and global relevance. These teams will develop solutions to those challenges based on the unconventional perspectives arising from the convergence of knowledge, practice and methods from the different disciplines and sectors involved.

This prize will empower innovators through a "bottom-up" approach that will allow them to identify challenges (which may or may not be aligned to a theme or specific area) and develop solutions in new ways. Under the SFI Future Innovator Prize, researchers will be enabled to apply their knowledge and expertise to address challenges of strategic importance to Ireland but also provide a platform from which researchers can translate their solutions to take advantage of a global opportunity. SFI will also launch top-down challenge calls which will focus on developing and deploying transformative solutions to specific challenges in strategically important areas.

A challenge is a bold and ambitious goal that drives innovation toward addressing a complex, often intractable, societal issue/problem. Challenges and their solutions involve many stakeholders and beneficiaries across both public and private sectors/systems (e.g. government, national agencies and services, industry, HEIs, regulators, entrepreneurs, investors). As a result, the identification of challenges and the development of solutions requires a combination of technical and non-technical skills and insights. To maximise the potential for societal impact, the prize places strong emphasis on collaborative approaches that bring together diverse STEM researchers, stakeholders and the beneficiaries of research, to define challenges in new ways and co-create novel, potentially disruptive, solutions that should transform how we live. It is anticipated that the prize will incentivise stakeholders to co-develop solutions thereby amplifying collective capabilities to create sustainable, equitable and innovation-led growth. This has the potential to not only drive societal impact here in Ireland but also give Ireland a unique advantage in addressing challenges that have global implications.

The SFI Future Innovator Prize will consist of three phases: Concept, Seed and Prize Award. Following application review, successful applicant teams will be awarded funding of €20k to undertake team building, scoping and concept validation activities. They will then undergo a rigorous interview and

shortlisted teams will be provided with funding of €200k to further validate and prototype their proposed solutions. Finalists will compete for an overall prize award of €2M. Under this call, a bonus prize award of €1M will also be available, outlined in the text below.

## 2 Zero Emissions Challenge Theme

In the recently published All-of-Government Climate Action Plan to Tackle Climate Breakdown<sup>1</sup>, SFI is given responsibility to develop challenge-based approaches to address complex and long-term challenges in climate action. In immediate response to this, the theme for this SFI Future Innovator Prize Call is the *Zero Emissions Challenge*, which is focused on achieving a target of net-zero economy-wide greenhouse gas emissions by 2050<sup>2</sup>. Research and innovation will be essential in achieving and accelerating progress towards this ambitious goal. Challenges under the theme *Zero Emissions* must be aligned with at least one of the following areas (and fall within SFI's legal remit<sup>3</sup>).

**Decarbonising the energy system:** impacts should focus on sustainability, security and affordability of energy and might, for example, be in the areas of energy generation, storage or alternative fuels.

**Sustainable agriculture, land use and the bioeconomy:** impacts should focus on reducing the emissions intensity resulting from livestock and cropland, enhancing carbon sequestration in soils or vegetation, or enhancing sustainability through the bioeconomy.

**Transforming transport and mobility:** impacts should focus on reductions of the environmental and health impacts of the transport sector, and might, for example, be in the areas of battery technologies for electrification of transport or alternative fuels.

**Sustainable cities and the built environment:** impacts should focus on reduction in energy usage in cities and the built environment and might, for example, be in the areas of monitoring and sensing technologies, smart energy management, air quality or waste processing.

**Carbon-neutral industry:** impacts should focus on reducing the environmental impact of industrial processes, for example, through improvements in energy or material efficiencies, or electrification of processes.

**Negative-emissions technologies:** impacts should address technological barriers for removing greenhouse gases from the atmosphere, as required to limit warming under both the <1.5°C or <2°C IPCC scenarios.

<sup>1</sup> <https://www.dccae.gov.ie/en-ie/climate-action/topics/climate-action-plan/Pages/climate-action.aspx>

<sup>2</sup> The first recommendation of the Joint Oireachtas Committee on Climate Action

<sup>3</sup> <http://www.sfi.ie/about-us/about-sfi/what-we-do/>

Challenges under this theme should have transformative impact potential in achieving the target of zero emissions by 2050, and may be associated with the development of reduced-, zero- or negative-emissions technologies, as well as with the understanding, monitoring, and assessment of adaptation and mitigation strategies. SFI will incentivise the development of new, disruptive technology solutions with transformative potential as well as encouraging the development of innovative approaches to accelerate and enable the deployment, adoption, scalability and sustainability of existing technologies through the removal of technological, economic or societal barriers.

In addition to the main Prize Award of €2M, which may be awarded to support a solution in any area of the Zero Emissions Challenge, a €1M Bonus Prize Award may be awarded in the area of Negative-Emissions Technologies. Please see Section 9 for more details.

Following the launch of SFI Future Innovator Prize in 2018, SFI plans to launch new calls under the programme that may operate on an open basis or thematic basis as is the case for this call. It is also anticipated that the programme may be used for other special purpose calls that could potentially focus on addressing specific challenges aligned to strategically important areas.

### **3 United Nations Sustainable Development Goals (UN SDGs)**

In 2015, 193 Member States of the United Nations adopted the agenda entitled “Transforming Our World: The 2030 Agenda for Sustainable Development”. This agenda sets out a transformative vision to end global poverty and calls for action across five areas: People, Planet, Prosperity, Peace and Partnership (the so-called 5Ps). As an integrated approach, the agenda recognises that the goal to end global poverty must be complemented with strategies to: improve health and education, reduce inequality, and incentivize economic growth – all while tackling climate change and working to preserve the environment. In this context, to drive collective activity toward this overall goal, the 2030 Agenda includes 17 Sustainable Development Goals (SDGs)<sup>4</sup> across areas underpinning the 5Ps.

Given the ambition of the SFI Future Innovator Prize to address challenges of strategic national importance that are also globally relevant, applications should indicate to which of the SDGs their application most closely aligns, provide a brief justification for this alignment and a description of how the proposed solution has potential to positively impact this goal (in describing the impact of this application, consideration should be given to the nature of the target(s) associated with the SDG in question).

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<sup>4</sup> <https://sustainabledevelopment.un.org/sdgs>

#### **4 Objectives of the SFI Future Innovator Prize**

The overarching ambition of the SFI Future Innovator Prize is to enable the development of disruptive STEM-based solutions to key national challenges. This is underpinned by several specific objectives:

- To support development of novel, potentially disruptive, technologies to address significant national and global challenges;
- To support the formation of high-performance, interdisciplinary teams based on integration of diverse STEM disciplines and complementary skillsets;
- To promote convergence of knowledge, practice and methods from different disciplines and sectors;
- To promote engagement between researchers and stakeholders/beneficiaries of research;
- To accelerate societal impact from publicly funded research.

#### **5 What is Challenge Funding?**

Challenge funding differs in two important ways from more traditional forms of research funding:

- Challenge funding sets out a specific issue to be addressed at the outset – the challenge. Challenges should be visionary, inspirational but achievable and have transformative potential if successfully addressed. Challenges are identified/defined through collaboration between innovators, stakeholders, beneficiaries and end-users.
- Challenge funding focuses on delivering solutions. To find the most innovative and impactful solutions, challenge funding uses a highly competitive process to incentivize innovators including stage-gated release of funding, tight delivery timeframes and a final prize.

#### **6 Challenge Teams**

The SFI Future Innovator Prize is intended to support highly motivated, interdisciplinary challenge teams committed to addressing national societal challenges of transformative impact potential. Given the complex and multi-stakeholder nature of challenges and the strong emphasis that the prize places on delivering solutions, teams must encompass a range of technical (both scientific and engineering) and non-technical skills to address barriers associated with challenge definition and solution deployment.

The prize will support close collaboration between researchers and solution beneficiaries so that relevant, meaningful and important challenges can be identified and validated. Similarly, it is expected that the solutions are developed in collaboration with beneficiaries to maximise their societal impact

potential. The inclusion of this expertise should serve to assist teams to navigate non-technical issues relating to challenges and solutions, and enhance the technical skill set of the team with non-technical skills such as innovation and entrepreneurship.

Challenge teams should be strongly committed to applying interdisciplinary and convergent thinking to develop unconventional approaches to the identification of challenges and to the development of novel, potentially disruptive, solutions. Given the focus of the prize on solution delivery, the technical capabilities of teams should include areas such as design, human factors and prototyping. Final deployment of a solution should occur within a 2-year timeframe after the end of the Prize Award phase.

## 7 Who Can Apply?

The SFI Future Innovator Prize will accept applications from highly motivated teams that may comprise researchers (established, postdoctoral) and postgraduate students (MSc/MEng, PhD) from eligible research bodies<sup>5</sup>.

As indicated in SFI's Gender Strategy<sup>6</sup>, SFI is committed to removing and mitigating any existing or perceived factors that may limit the participation of women in STEM careers. As such, female candidates are strongly encouraged to apply to this programme.

Applications to the prize must identify a core applicant/leadership team comprising:

- **Team Lead** (Lead Applicant) - It is expected that the Team Lead will have responsibility for managing the activities of the team, will provide technical leadership and have overall responsibility for delivery of research programme objectives.
- **Team Co-Lead** (Co-Applicant) - It is expected that the Team Co-Lead will provide technical leadership as part of the research programme but should not have the same technical/disciplinary background as that of the Team Lead.
- **Societal Impact Champion** - It is expected that the Societal Impact Champion will play a key advocacy role and assist in maximising the societal impact of the solution. They will provide non-technical leadership and support the Lead and Co-Lead to identify and validate challenges in addition to advising on solution development. Importantly, it is envisaged that the Societal Impact Champion will play a crucial role in identifying barriers and developing strategies to overcome them. It is envisaged that the Societal Impact Champion will come from outside

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<sup>5</sup> <https://www.sfi.ie/funding/sfi-policies-and-guidance/eligibility-related-information/>

<sup>6</sup> <https://www.sfi.ie/funding/sfi-policies-and-guidance/gender/>

academia and have appropriate experience in areas relevant to the societal impact focus of the application. These areas could include, for example: public sector/government, charities, patient advocacy, philanthropy or civil society. As a member of the core team, the Societal Impact Champion will play an important leadership role bringing complementary non-technical skills and stakeholder/beneficiary perspectives. In particular, the Societal Impact Champion will lead in the identification of barriers and in the development of strategies to overcome them.



Figure 1. The Societal Impact Champion will play a key advocacy/advisory role and can be drawn from a range of areas.

Industry has an increasingly important role in addressing society's most significant challenges and is strongly encouraged to engage with industry in the programme as a Societal Impact Champion or as part of a broader challenge team. Organisations are encouraged also to consider how staff participation could be facilitated through current/planned societal impact or corporate social responsibility (CSR) initiatives.

Following successful application, core teams will have an opportunity to build a broader challenge team. This will include identification and recruitment of additional collaborators (e.g., researchers, beneficiaries, end-users, industry stakeholders or students) and planning or defining activities they will undertake as part of the challenge team. Applications may reference individuals outside the core team who are anticipated to play a future role as team members. In such cases, it is important to highlight the discipline and skill set that these individuals will bring to the team. Consideration should also be given to the broader challenge/solution context which may require input from experts in disciplines outside of STEM such as the arts, humanities and social sciences (AHSS).

## 8 Applicant Team Composition & Eligibility

For the SFI Future Innovator Prize, applications will be accepted where the Lead Applicant and Co-Applicant (where applicable) satisfy the following the eligibility criteria.

### Eligibility Criteria

- Be a **member of the academic staff** of an eligible Research Body<sup>7</sup> (permanent or with a contract that covers the period of the award),  
*or*
- Be a **contract researcher** with a contract that covers the period of the award (contract may be subject to receipt of the award).  
*and*
- Hold a PhD or equivalent. Please consult the SFI Policy on PhD Equivalence<sup>6</sup> for further information.

Where the Co-Applicant (Team Co-Lead) is a postgraduate student (i.e., a full-time student undertaking a research postgraduate qualification, e.g. MSc/MEng, PhD, in a STEM discipline registered at an eligible Research Body), the Co-Applicant is exempt from the eligibility criteria above. Applications will not be accepted where the Lead Applicant is a postgraduate student. Table 1 indicates the possible application scenarios under the programme.

Table 1. SFI Future Innovator Prize Eligibility Matrix.

Scenario	Lead Applicant	Co-Lead Applicant	
A	Academic Staff or Contract Researcher; Holds a PhD (or equivalent)	Academic Staff or Contract Researcher; Holds a PhD (or equivalent)	Permitted
B	Academic Staff or Contract Researcher; Holds a PhD (or equivalent)	Full-time postgraduate student at an eligible Irish research body	Permitted
C	Full-time postgraduate student at an eligible Irish research body	Academic Staff or Contract Researcher; Holds a PhD (or equivalent)	Not Permitted
D	Full-time postgraduate student at an eligible Irish research body	Full-time postgraduate student at an eligible Irish research body	Not Permitted

<sup>7</sup> <https://www.sfi.ie/funding/sfi-policies-and-guidance/eligibility-related-information/>

Please note that **Members of the Core Team** (Lead/Co-Lead Applicants, Societal Impact Champion) are only permitted to be named on one application to the programme and may not be part of an existing award funded under the programme. Core Team members on applications to the Zero Emissions Challenge may not be named in the Core Team of applications to concurrent, open calls of the Future Innovator Prize Programme (e.g., AI for Societal Good Challenge). They may, however, participate in an application through inclusion in the broader challenge team.

In cases where the Team Co-Lead is a postdoctoral researcher or postgraduate student, the Co-Lead must be endorsed by the Lead Applicant in the form of a Letter of Support. This Letter of Support must confirm that the Lead Applicant has agreed to act as mentor (see Section 8.6) to the Co-Lead for the duration of the award. In cases where the Lead Applicant is not the current mentor/supervisor, the Letter of Support must outline how this situation will be managed and must be countersigned by the current mentor/supervisor.

Members of the applicant team may be located at different eligible research bodies. In this case, funding awarded under the prize programme will be administered through the Research Body of the Lead Applicant.

## 9 Prize Programme Process Overview

There are three phases to the programme: **Concept, Seed and Prize Award.**

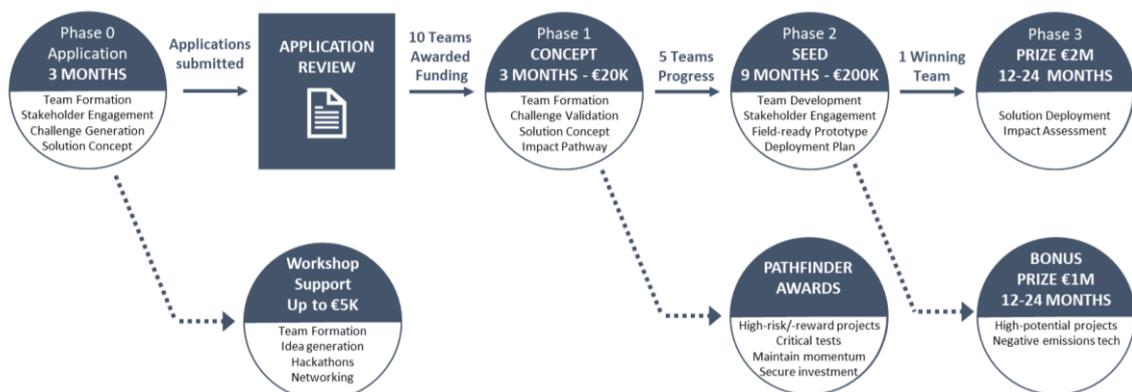


Figure 2. Phase structure of the SFI Future Innovator Prize.

### 9.1 Application

The core challenge team will prepare an application to compete for the Prize. This application should include: preliminary societal challenge (problem) validation, a solution concept, and a description of

the potential impact of addressing the societal challenge. Challenge validation refers to a process whereby stakeholders, beneficiaries and end-users have been consulted to:

- i) identify/define a societal challenge (problem) and its significance, and
- ii) assess the potential societal impact of a proposed solution.

### ***Workshop Support Grants***

The Future Innovator Prize is intended to support highly motivated, interdisciplinary challenge teams, who together with beneficiaries, end-users and other stakeholders will identify and validate relevant, meaningful and important challenges, and co-create solutions that will maximise societal impact (see Section 6: Challenge Teams for more information). To facilitate this engagement, to instigate team formation and to seed idea generation, SFI will provide limited support to organise events such as hackathons, workshops, or networking events. Organisers are encouraged to include participants from outside of academia and to engage with a broad network of innovators that may help to strengthen the societal impact of applications to the programme.

Departments, institutions and Research Centres are encouraged to apply, but individual researchers may also apply to organise such an event. Requests may be made up to €5k and events should be of an appropriate scale to warrant support from SFI. Awards may not be used to support activities of individual applicants in the preparation of their application. Applications for this support must be made by e-mail through the research office at your host research body and using the application form available through the SFI website. Submissions must be made by 13:00, 26 July 2019 and events must take place before the application deadline. Decisions on applications for workshop support grants rest with SFI and applicants will be notified by 7 August 2019. Provision of this kind of support is being piloted and evaluated under this call only and thus will not be available for other challenge calls. It is noted that no overhead will be paid on these awards. Note that no overhead will be payable on these awards.

### ***Application Review***

Eligible applications will be subject to assessment by a panel of international experts secured by SFI. Only the most competitive applications, as evaluated using the following review criteria, will be invited to progress to the Concept Phase of the programme:

- **Quality, experience and ambition of the applicant team;**
- **Significance of the challenge;**
- **Novelty of the proposed solution, including its potential to deliver disruptive innovation;**

- **Transformative societal impact potential of the solution;**
- **Feasibility of execution within the budget and timeframe permitted;**

SFI is a signatory to the San Francisco Declaration of Research Assessment (DORA)<sup>8</sup> and is aligning its review and evaluation processes with the DORA principles. In this regard, all types of research output are recognised in the assessment of research quality and impact. In the spirit of supporting open research and as a signatory of Plan S<sup>9</sup>, SFI will also consider a commitment to making data and other types of research, open and accessible.

**Following assessment of applications, *approximately ten*<sup>10</sup> of the most competitive teams will each be awarded €220k and will enter the Concept Phase of the programme. Applicant teams that are not recommended to progress will be notified by SFI. Formal feedback will not be provided at this stage. During the 3-month Concept Phase, teams may access up to a maximum of €20k. At the end of the Concept Phase, the progress of teams will be assessed by international review with *up to five* of the most competitive teams progressing to the Seed Phase. Teams that do not progress to the Seed Phase will have their remaining Concept Phase funding decommitted.**

## **9.2 Concept Phase**

The Concept Phase is intended to support teams to develop the feasibility and viability case for the concept presented in their application. Teams will be expected to further validate the challenge identified, provide detail on the proposed solution and its implementation, and describe an impact pathway for their solution. As part of the impact pathway, teams must describe technical and non-technical barriers to be overcome, the opportunity associated with addressing those barriers and how the solution will achieve impact. During this process, the core (applicant) team will have the opportunity to recruit additional team members with skills and knowledge to support the objectives of the proposal. It is strongly recommended that stakeholders and beneficiaries be included as members of a broader team. At the end of the Concept Phase, representatives from the team will be invited to pitch their concept to a panel of international experts drawn from a range of sectors including academia, industry, entrepreneurship and investment. This panel will assess the progress of the team and the likelihood of success and make a recommendation as to whether the team should

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<sup>8</sup> <https://sfdora.org/>

<sup>9</sup> <https://www.coalition-s.org/>

<sup>10</sup> SFI reserves the right to fund a greater or fewer number of teams at either phase depending on quality and budget availability.

progress to receive seed funding under the programme. In preparation for the end of phase review, teams will be required to submit progress reports a number of weeks in advance.

**At the conclusion of the Concept Phase, up to five of the most competitive teams will be recommended to progress to the Seed Phase. During the 9-month Seed Phase, teams may use the remaining award amount. Those teams not successful at the end of the Concept Phase will have their funding decommitted.**

**In exceptional cases, where the international review panel identify high-potential teams developing a solution that has transformative impact potential, but where, for example, a critical proof-of-concept stage is lacking, the panel may recommend that they are awarded a Pathfinder Award to advance this aspect of their solution, maintain momentum and to potentially seek investment elsewhere. The amount and duration of Pathfinder Awards will be at the discretion of SFI and SFI reserves the right not to make any Pathfinder Awards should no suitable teams be identified during the review process.**

### **9.3 Seed Phase**

The Seed Phase enables teams to undertake further stakeholder engagement and collaborative co-development towards a field-ready prototype. The development of this prototype should be guided by the needs of stakeholders and beneficiaries and be informed by key measures of success identified through engagement with stakeholders and beneficiaries. During this prototyping process, the team should commence planning for further development and deployment of the solution. While the programme is intended to support pre-commercial activities, and as such development of existing products is not permitted, as part of the Seed Phase it may be necessary to consider commercialisation routes to fully scope solution deployment. In this context, teams should take into consideration the necessary requirements to facilitate this process and it is anticipated that the collective skill set of the challenge team will support such activity. The Seed Phase will culminate with teams pitching to an international prize panel who will assess progress made in developing the prototype and validation of the deployment plan. In preparation for the end of phase review, teams will be required to submit progress reports a number of weeks in advance.

**Following assessment of the five teams in the Seed Phase, one team will be selected to receive the €2M prize award to support development and deployment of their challenge solution. This or another team may be selected to receive the €1M Bonus Prize for Negative-Emissions Technology.**

#### 9.4 Prize Award

The winning team will finalise and implement their plan for solution deployment with a view to delivering the solution within two years of the end Prize Award Phase.

#### 9.5 Bonus Prize Award for Negative-Emissions Technology

Negative-emissions technologies that can effectively reduce levels of GHG in the atmosphere are essential in future scenarios to limit global warming. In recognition of the potential transformative impact and the significant technical challenges that these technologies represent, a bonus prize award of €1M may be awarded for solutions within this criterion that are judged to have high potential for impact. The bonus prize award may be made to the same or a different team as that selected to receive the main Prize Award.

**NOTE:** SFI reserves the right not to grant the main Prize Award or Bonus Prize Award if the review panel does not identify a winning team. In addition, the final funding decisions are at the sole and exclusive discretion of SFI, which are arrived at following consideration and approval by the SFI Executive Committee and the SFI Grant Approval Committee. SFI reserves the right to modify the review process. Applicants will be notified of any relevant modification to the review procedure.

#### 9.6 Skills Development

In addition to the provision of funding, SFI organises a number of training workshops during the Concept and Seed Phases to support team skills and knowledge development. The topics of these workshops are selected to complement team activities within the specific phases of the programme. Further details of these workshops will be provided to teams successful in securing funding under the programme. It is expected that core team members attend these workshops.

### 10 Application Procedure

Applications to this call of the SFI Future Innovator Prize must be submitted through SESAME, SFI's online grants and awards management system in advance of the **application deadline of the 23<sup>rd</sup> September 2019**. Full details of this application procedure can be found in the **SFI Future Innovator Prize SESAME Guide** available for download from the SFI Future Innovator Prize webpage.

Application through SESAME, involves completion of an online form with details on, for example, team members, alignment to research areas/SDG and requested budget. In addition, applicants will be required to upload information in PDF documents.

Applications to the SFI Future Innovator Prize comprise a number of sections that include:

### 10.1 Idea

This section of the application allows you to provide summary information on the idea you are proposing. As part of this section, you should provide a clear and concise summary of your idea. Ensure that you clearly describe the challenge you have identified and your proposed solution. Describe what is visionary about the challenge and what is unconventional about your approach, why you expect it to succeed and how it will deliver impact.

### 10.2 Team, Challenge, Solution & Societal Impact

This section provides you with the opportunity to provide more detailed information on the team, societal challenge, proposed solution and the societal impact that your solution will deliver. It is important that as part of this section you:

- Briefly describe the applicant team. Describe how, through its composition and formation, the team brings a unique perspective and unfair advantage in addressing this challenge.
- Describe clearly the societal challenge (or problem), its importance and the opportunity for Ireland? How is it visionary and inspirational? How have you engaged with stakeholders/beneficiaries to validate the challenge? What are the key barriers that your team will address? Has this challenge international relevance?
- Describe clearly the solution proposed? How is it novel and/or unconventional? What is its current stage of technical development? What is the current state-of-the-art? How will the proposed approach (technical/non-technical) lead to disruptive innovation? How feasible/viable is the solution? What are the risks?
- What outcomes will your solution deliver and when (provide an indication of key milestones, deliverables and timelines)? How will your solution transform society?

Please download the template for this section from the Zero Emissions Challenge: SFI Future Innovator Prize webpage<sup>11</sup>, complete all the fields, convert to PDF and upload in SESAME as part of your application.

**NOTE:** In preparing your application to the programme, please review the SFI guidance on ethical and scientific issues<sup>12</sup>. In particular, applicants should fully consider potential biological sex and socio-cultural gender dimensions associated with challenge identification/definition and solution development.

<sup>11</sup> <http://www.sfi.ie/funding/funding-calls/future-innovator-climate/>

<sup>12</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/ethical-and-scientific-issues/>

### 10.3 Budget

This section should be used to describe the budget (direct costs) and resources you will need. Given the phased structure of the SFI Future Innovator Prize programme, it will not be possible to provide significant detail in relation to requirements for the Seed Phase. As such, the requested budget and resources for this phase should be indicative and be based on what you currently envisage. It is recommended that you maximise the budget requested at each stage. In this section:

- Provide a breakdown of the indicative eligible direct costs (in €) associated with your application.
- Please review the SFI Grant Budget Policy<sup>13</sup> for eligible costs and team member salary scales.
- Please include any subcontracting to be undertaken in the Materials & Consumables section.

As part of this section, please also provide a high-level justification for your Concept Phase requests. In addition to direct costs, SFI also makes an indirect or overhead contribution to the host research body, which is reflected as a percentage (30%) of the direct costs (excluding equipment). Overheads are payable as a contribution to the Research Body for the indirect costs of hosting SFI-funded research programmes and are intended to enable the research body to develop internationally competitive research infrastructure and support services.

### 10.4 Authorisation

For an application to be accepted, it must be authorised for submission by the host research body of the lead applicant. It should be noted that Research Body submission of an application represents their approval of an application and agreement to SFI General Terms and Conditions<sup>14</sup>. Submission may only be made by an authorised Research Body representative. In particular, the Research Body is approving:

- The eligibility of the applicants.
- That the applicants are, or will be upon receipt of the grant, recognised as employees of the Research Body for the duration of the grant.
- That the requested budget including salaries/stipends, equipment, travel and consumables are in line with accepted institutional guidelines.
- The availability of infrastructure within the institution as outlined by the applicant in the research proposal.

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<sup>13</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/budget-finance-related-policies/>

<sup>14</sup> <https://www.sfi.ie/funding/sfi-policies-and-guidance/sfi-general-terms-and-conditions/>

- That the proposed research programme has not been funded by other sources.
- That relevant ethical and regulatory approval has been or will be sought and must be granted prior to the award commencing.
- That the relevant licences will be in place at the time of award.
- That the details provided in relation to research funding history i.e., current, pending or expired grants, as detailed in the application, are valid and accurate.
- That permission from all team members and collaborators has been obtained, such that SFI may receive their personal information, and may process such data for the purpose of peer review.

### 10.5 Curricula Vitae

Please upload curricula vita for each of the core applicant team members (i.e. Lead, Co-Lead and Societal impact Champion). A CV template is available for download for the Lead and Co-Lead applicants from the SFI Future Innovator Prize webpage. The CV not only provides an opportunity to give information about your education, employment record and research outputs where relevant, but also allows you to identify up to five key achievements in research and impact.

<p><b>NOTE:</b> The Societal Impact Champion is not required to use the CV template provided and may use a format of their choosing. However, the overall length of the CV must not exceed three pages.</p>
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### 10.6 Letters of Support

As part of an application to the prize, several Letters of Support must be provided. These include:

- A Letter of Support from the **Host Research Body of the Lead and Co-Lead applicants** which should comment on the significance of the proposal and related infrastructure and services available to the applicant. In addition, in cases where team members will be transferring from another active SFI research grant, an outline of the management plan (i.e., a description of how the individual will be replaced on the original award) to assure how these awards progress satisfactorily should be provided. Note also the Host Research Body Letter of Support should contain a description of the institutional policy regarding management of conflicts of interest.
- Where the Co-Lead is a postdoctoral/postgraduate researcher, the Co-Lead must be endorsed by the Lead Applicant in the form of a Letter of Support. This Letter of Support must confirm, that the Lead Applicant endorses the researcher and has agreed to act as mentor to the

researcher for the duration of the award. In cases where the Lead Applicant is not the current mentor/supervisor of the researcher, the Letter of Support must outline how this situation will be managed and must be countersigned by the current mentor/supervisor of the researcher. The Letter of Support must include details of the Co-Lead's current role and funding arrangements including remuneration level. The grant identification code and grant title under which the applicant is currently funded should also be provided.

- A Letter of Support from the **Societal Impact Champion** outlining their role in the team and how they propose to actively guide/support the team to deliver impact.
- **NOTE:** No additional Letters of Support may be included at the application stage. Any additional/unsolicited Letters of Support will be removed from an application.

## **11 Progress Review and Prize Award Management**

Review of progress at the end of the Concept and Seed Phases will be undertaken by a sitting panel of international experts. This process will involve the completion and submission of a progress report to SFI and an interview with the sitting panel. The sitting panel will review progress and future plans and make a recommendation to SFI as to whether the team should progress to the subsequent phase of the programme. Guidance on progress reports will be provided to applicants at the start of each phase.

Upon completion of the Seed Phase, the remaining teams will submit a progress report to SFI, followed by a final presentation and interview with a prize panel. This panel will assess the potential societal and economic impact of the work undertaken to date and recommend an overall winning team that will receive the prize award of €2M to deliver the solution developed through the Concept and Seed Phases of the programme. This sitting panel will also make a recommendation on whether a €1M bonus prize for negative-emissions technology should be made to one of the remaining teams.

## **12 Additional Information**

### **12.1 SFI Resubmission Policy**

Applications to any call that are based primarily on unsuccessful submissions (following peer review) to any SFI programme must demonstrate that the review comments resulting from the initial application have been considered in the preparation of the new submission. SFI will not review resubmissions that have not clearly considered the major comments or concerns resulting from the prior review and these proposals will be withdrawn without review. Please see SFI Policy on

Resubmission of Grant Applications<sup>15</sup> for further information. Applicants to an SFI call for proposals must declare whether a new submission relates to a previously submitted application to any SFI scheme. If the application is a resubmission, a statement referencing the previous application and explaining the differences must be provided and making reference to reviewer comments where relevant. Please email this statement to [challenges@sfi.ie](mailto:challenges@sfi.ie) prior to the deadline. This statement will assist SFI Scientific Staff in the assessment of eligibility of a revised application and will not be shared with reviewers.

## **12.2 Conflict of Interest**

Experts engaged by SFI are required to abide by the SFI Reviewer Code of Conduct<sup>16</sup>. Amongst other requirements, this includes operation in a confidential, fair, independent and equitable manner. Experts are required to confirm, in advance of carrying out their review(s), that they will do so in a confidential manner. The identity of experts who conduct the postal reviews shall remain confidential and shall not be disclosed to the applicant. SFI shall not be liable for the release of information concerning proposals to third parties by those international experts involved in the peer-review process. Adherence to the SFI Reviewer Code of Conduct also requires experts to immediately identify and declare where a conflict of interest exists or arises; in such cases, alternative reviewers will be appointed. Reviewers must adhere to high standards of integrity during the peer-review process. They must not compromise the intellectual property integrity of the application and may not appropriate and use as their own, or disclose to any third party, ideas, concepts or data contained in the applications they review.

## **12.3 SFI Policies and Positions**

In addition to complying with SFI's Grant General Terms & Conditions, applicants are expected to be familiar and consult with SFI policies/positions and with all relevant national policies when preparing their application to any SFI programme. The following is a non-exclusive list of relevant policies; it should be noted that these are reviewed and updated from time to time:

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<sup>15</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/eligibility-related-information/>

<sup>16</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/review/>

## Clinical Trials

Research programmes that include clinical trials as part of the study must adhere to the **SFI Clinical Trial and Clinical Investigation Policy**<sup>17</sup>, as well as with the requirements set out by the Health Products Regulatory Authority (HPRA).

## Animal Usage

Applicants intending to use animals in their research projects are obliged to comply with the **SFI Use of Animals in Research Policy**<sup>18</sup> and should also ensure that their studies are in line with the HPA's position on the use of animals in research.

## Research Integrity

SFI places paramount importance on ensuring that the highest standards of research integrity underpin all aspects of the research that it supports. To this end, SFI endorses the **National Policy Statement on Ensuring Research Integrity in Ireland**<sup>19</sup>; that is, all institutions and SFI award holders are expected to abide by this policy statement and the **European Code of Conduct for Research Integrity**<sup>20</sup>.

## Doctoral Education

For postgraduate students funded by SFI, the host Research Body is expected to adopt the principles, standards and good practice for doctoral education as described in the **National Framework for Doctoral Education (2015)**<sup>21</sup>, which SFI has endorsed.

## Intellectual Property Management

Intellectual Property (IP) should be managed according to the policies set out in the Government publication: **Ireland's National IP Protocol 2019**<sup>22</sup>. The IP arrangements are the responsibility of the Research Body and shall reflect the collaborative nature of the project, the level of cash and in-kind commitment made by the Industry Partner and compliance with State Aid Regulations.

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<sup>17</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/ethical-and-scientific-issues/>

<sup>18</sup> [http://www.sfi.ie/resources/SFI-Policy-on-the-Use-of-Animals-in-Research\\_June\\_2016.pdf](http://www.sfi.ie/resources/SFI-Policy-on-the-Use-of-Animals-in-Research_June_2016.pdf)

<sup>19</sup> <https://www.iua.ie/publication/view/national-policy-statement-on-ensuring-research-integrity-in-ireland/>

<sup>20</sup> [http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics\\_code-of-conduct\\_en.pdf](http://ec.europa.eu/research/participants/data/ref/h2020/other/hi/h2020-ethics_code-of-conduct_en.pdf)

<sup>21</sup> [http://hea.ie/assets/uploads/2017/04/national\\_framework\\_for\\_doctoral\\_education\\_0.pdf](http://hea.ie/assets/uploads/2017/04/national_framework_for_doctoral_education_0.pdf)

<sup>22</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/national-policies-sfi-positions/>

## Gender Strategy

Research should fully consider potential biological sex and socio-cultural gender dimensions as key analytical and explanatory variables. As articulated in the **SFI Gender Strategy**<sup>23</sup>, applicants are advised to demonstrate that they have considered any potential sex/gender aspects in their proposed research programme.

The strategy also sets out a target for 30% of SFI's portfolio of award holders to be female and for research teams to be composed of at least 40% of each gender by 2020. As such, applicants should consider how these targets can be achieved at all levels of the research team.

## Maternity Supplement

SFI is committed to removing and mitigating any existing or perceived factors that may limit the participation of women in STEM careers. SFI invites its award holders to apply for a supplemental discretionary allowance to support their SFI funded award when either an SFI Awardee or a team member funded on an SFI award takes a period of maternity or adoptive leave<sup>24</sup>.

## Appeals Process

This policy<sup>25</sup> establishes procedures and responsibilities for the appeal of the declination of a proposal by SFI.

## State Aid

All SFI funding granted under this call will be subject to, and must be compliant with, State Aid law. As such, proposals must be designed to ensure that any funding received from SFI does not, directly or indirectly, give rise to the granting of State Aid. Potential applicants are referred to the guidance provided by the European Commission in Section 2 of its **2014 Framework for State aid for research and development and innovation (2014/C 198/01)**<sup>26</sup>. If in any doubt as to the interpretation or application of this guidance, potential applicants are advised to seek independent legal advice.

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<sup>23</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/>

<sup>24</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/>

<sup>25</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/>

<sup>26</sup> [http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0627\(01\)&from=EN](http://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52014XC0627(01)&from=EN)

## Child Protection

Where relevant, applicants and Research Bodies are required to comply with the provisions of the **Children First Act 2015**<sup>27</sup>, and the **National Guidance for the Protection and Welfare of Children 2017**<sup>28</sup>. It is the responsibility of the Research Body to ensure that they are compliant with all applicable law.

## Data Protection Policy

**The General Data Protection Regulation**<sup>29</sup> is a legal framework that sets out guidelines for the collection and processing of personal information of individuals within the European Union.<sup>30</sup> Applicants are advised that they must be compliant with this regulation if they collect or process personal data.

SFI may collect, use and disclose personal data provided in the application and/or otherwise obtained under, or in connection with, the application for processing the submission, for the performance of its statutory powers and functions, and for the general activities of SFI. Further details regarding SFI's collection, use and disclosure of personal data, and the rights of individuals with respect to any personal data held by SFI, are available in the **SFI Privacy Statement**<sup>31</sup>.

During peer-review procedures, information may be sent to external experts in countries outside of the European Economic Area, including countries that are not recognised by the European Commission as having adequate data protection laws. By submitting an application to SFI, the Research Body and members of the Research Team are agreeing that they consent to the processing and transfer of personal information in this way.

During the application process or at any time thereafter, SFI may contact the Research Body, the Principal Investigator, or any member of the Research Team with regard to funding opportunities, activities or events organised by SFI or other relevant bodies, or for the purposes of monitoring and evaluation (including, but not limited to, the collection of scientific data or data relating to the application process). SFI may choose to authorise a third

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<sup>27</sup> <http://www.irishstatutebook.ie/eli/2015/act/36/enacted/en/pdf>

<sup>28</sup> [http://www.tusla.ie/uploads/content/Children\\_First\\_National\\_Guidance\\_2017.pdf](http://www.tusla.ie/uploads/content/Children_First_National_Guidance_2017.pdf)

<sup>29</sup> <https://www.dataprotection.ie/docs/GDPR/1623.htm>

<sup>30</sup> <https://www.eugdpr.org/>

<sup>31</sup> <http://www.sfi.ie/privacy/>

party to contact the Research Body, the Principal Investigator or any member of the Research Team on its behalf.

### **Conflict of Interest**

SFI recognises that applicants may have a prior relationship with an industry partner engaged in an application for funding to SFI (e.g., industry consultancy role, founder of an academic spin-out company) which may be perceived as a conflict of interest. Where a potential conflict of interest exists, SFI requires that it is disclosed by the applicant to SFI and their Research Body and that any such situations are managed by the Research Body in accordance with the principles and mandates laid out in **Ireland's National IP Protocol 2019**<sup>32</sup>.

### **Open Access**

As part of cOAlition S and a signatory to Plan S<sup>33</sup>, SFI is committed to ensuring that all publicly funded research is openly available. Where a research publication arises in whole or in part from SFI funded research (i.e. where one or other of the researchers concerned receives SFI funds in support of their endeavours), the **SFI Open Access Availability of Published Research Policy**<sup>34</sup> should be adhered to. SFI monitors compliance with this policy through its Annual Stocktake of Research Outputs.

### **Data Management**

Good data governance and stewardship are key components of good research practice. Science Foundation Ireland is part of an initiative for the voluntary international alignment of research data management policies<sup>35</sup>. Applicants may find it helpful to consult with Science Europe's recently developed framework for discipline-specific research data management<sup>36</sup> if preparing a data management plan as part of their application for funding to SFI.

**NOTE:** Current SFI policies and positions will be reviewed on a regular basis; applicants are advised to consult the policy information in advance of submission of a proposal.

<sup>32</sup> <http://www.sfi.ie/funding/sfi-policies-and-guidance/national-policies-sfi-positions/>

<sup>33</sup> <https://www.coalition-s.org/>

<sup>34</sup> <http://www.sfi.ie/resources/open-access-dec-10.pdf>

<sup>35</sup> <https://www.scienceeurope.org/policy/policy-areas/research-data/>

<sup>36</sup> [http://www.scienceeurope.org/wp-content/uploads/2018/01/SE\\_Guidance\\_Document\\_RDMPs.pdf](http://www.scienceeurope.org/wp-content/uploads/2018/01/SE_Guidance_Document_RDMPs.pdf)