

**Evaluation of the Technology
Innovation Development Award
(TIDA) Programme**

Final Report for

Science Foundation Ireland

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Evaluation of the Technology Innovation Development Award (TIDA) Programme Final Report for Science Foundation Ireland

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Executive Summary

Introduction and Evaluation Objectives

In the Action Plan for Jobs 2015, the Irish Government places a great emphasis on increasing activities to support entrepreneurship through initiatives such as the Start-up Gathering and funding to be provided by Science Foundation Ireland and Enterprise Ireland. The purpose of the Technology Innovation Development Award Programme (TIDA), a joint SFI/EI initiative, is to realise greater economic impact from state investments in research. The TIDA Programme is designed to enable researchers to focus on the first steps of an applied research project which may have a commercial benefit if further developed.

In August 2015 Science Foundation Ireland and Enterprise Ireland commissioned Frontline to undertake an evaluation of the TIDA Programme covering the period from 2009 through to 2013 inclusive. The aim of the evaluation was to assess the appropriateness and effectiveness of TIDA and to provide strong, independent recommendations for improving the programme. Based on this, we evaluated TIDA in terms of:

- programme performance against its objectives, as well as any consequential spin outs and licencing opportunities
- programme fit in terms of complementarity and/or overlap with other interventions in the national research systems
- programme performance and impact aligned with science policy context during the evaluation period
- programme performance in relation to similar programmes in nations of comparative size

During the evaluation we consulted with:

- researchers – 77
- unsuccessful applicants – 12
- institutional stakeholders including heads of research and technology transfer representatives – 31
- wider (non-institutional) stakeholders across Science Foundation Ireland, Enterprise Ireland, Department of Jobs, Enterprise and Innovation (DJEI) and Ryan Academy – 9

Performance Overview

Between 2009 and 2013, the €25 million TIDA awards programme led to **283 awards to 17 institutes**, with over half of all applications received by each of the institutes successfully awarded funding.

To date this support **has led to 57 patents, 9 licences and 7 spin out companies**¹. Science Foundation Ireland official output data notes there have been **80 publications, 149 academic collaborations and 83 non-academic collaborations**. There has also been a number of other outputs which have not been verified by Science Foundation Ireland such as invention disclosures and follow on commercialisation.

Researcher Findings

As part of our evaluation researchers and Principle Investigators (PIs) were asked to provide their views on the TIDA Programme. **77 researchers contributed through face-to-face interviews or e-survey**. Overall levels of satisfaction were high, with **82% of researchers rating the Programme as 'good' or 'very good'**.

Project objectives and processes

The primary reason for applying for a TIDA award was to develop new products/processes/service from research and to secure funding in their main area of interest. Overall the **feedback was positive in relation to the application process, support for application, selection process and ongoing support from Science Foundation Ireland**. Researchers described the processes as easy to understand and timely.

¹ SFI verified data

[Timescales and activities](#)

40% of projects were delivered on time while just 3% were ahead of time. **57% said the project took longer to deliver than set out – the main reason for this being recruitment challenges.** Just under half (49%) of the researchers said that all research activities were completed with a further 48% stating that most or some of the research activities were completed. Where barriers were mentioned the most common were technical and lack of staff availability.

[Project outputs](#)

48% had an invention disclosure developed while 38% had developed a patent. Two had set up a spin out while two have licenced the outputs. 73% of researchers said that they or their colleagues took part in the Entrepreneurship Training Programme, with **84% rating the training programme 'good' or 'very good'**. Researchers cited a **relatively high level of additionality** with 32% reporting that their project would not have taken place and 62% stating that they would have tried to find a different funder/redeveloped their proposal; all of which would have taken longer. **84% had accessed other forms of commercialisation support** including Enterprise Ireland Commercialisation Fund, Innovation Partnership and Innovation Voucher Funding, FP7 and H2020; Science Foundation Ireland and wider EU monies were also highlighted. When asked to compare the TIDA Programme to the other support accessed **57% said that TIDA was better suited to their research needs;** a further 42% stated it is on par with other programmes.

[Benefits](#)

Almost half of researchers have been involved in follow-on applied research projects that are closer to the market and ongoing industry engagement. Since TIDA was launched 41% had carried out follow-on basic research, Science Foundation Ireland has also expanded its early career stage significantly and as such it expects this figure to decrease. A number of researchers specified **substantial follow on awards, a number were in excess of €400k.** There were also a number of personal benefits achieved as a result of the research undertaken such as conference papers/posters, journal article and invited speaker at international conferences.

Engagement with the TIDA Programme has helped to generate reputational benefits for both the institute and for researchers. Additional benefits included improvements to employability of staff, demand for engagement and approachability. Researchers also noted applied research benefits (strengthening of expertise in core research area), educational benefits (improved teaching) and networking benefits for the institute (improved external networks – with other institutes/research organisations).

[Researcher competences](#)

Improving the applied research competencies/skills of scientific researchers was viewed as a key outcome of the Programme **with most researchers stating that TIDA impacted their ability on all competency areas.** Over two thirds of researchers agreed that members of their research team are more likely to move into the industry as a result of the TIDA Programme and slightly under half agreed that their research team is more likely to stay in Ireland.

[The future](#)

There were a broad range of views on potential improvements provided however overall respondents said they felt the programme was excellent and that minimal change should be made.

[Unsuccessful applicant feedback – the counterfactual](#)

As part of the evaluation process we interviewed 12 unsuccessful applicants to understand the counterfactual. The vast majority rate the application process as good/very good and none rated it poor. There were mixed views on the selection process with half saying neither poor nor good, and the remainder split between good and poor. Despite this the **majority cited no improvements were required** and many had gone on to be successful in future applications both for TIDA and other Science Foundation Ireland funding.

Stakeholder findings

As part of this review we interviewed a range of **institutional stakeholders** (VPs of Research, Technology Transfer Managers, Deans and commercialisation staff) that are internal to the research organisations that are delivering TIDA as well as **wider (non-institutional) stakeholders** across Enterprise Ireland, Knowledge Transfer Ireland, Department of Jobs, Enterprise and Innovation and Science Foundation Ireland.

Context

The clear view across **all stakeholders is that TIDA is a very strong programme**. The wide range of benefits that were described demonstrate that TIDA can and is being used to meet a number of priorities. **Institutional and wider stakeholders were in agreement that TIDA is an important programme in the commercialisation pipeline** plugging a gap at the early Technology Readiness Levels. **Wider stakeholders noted that it is a good policy fit and aligns well with the new science strategy – Innovation 2020²**. Wider stakeholders noted the TIDA allowed projects to be funded that were too early for Enterprise Ireland Commercialisation Fund and similar funds that support Technology Readiness Level (TRL) 4 and beyond.

Stakeholder across institutes noted that TIDA is not seen as a programme that would elicit commercial results straight away – but allows researchers to start their commercialisation journey through getting research to a point where serious commercial decisions can be made. While the **wider stakeholders shared these views**, some had reservations as to whether the projects funded always focussed on serious and commercial research.

Processes

The TIDA processes are viewed for the most part as user friendly, but a number of recurring themes emerged around:

- eligibility – viewed as moving in the right direction, but could be further broadened to support more early stage researchers; excellence must be maintained
- number of TIDA calls – increase to more than one call per year, possible through a pilot approach aligned to sectors that have shorter times to market
- application time-frame – viewed as too long and tighten these up, again aligned to those sectors that have a shorter time to market
- application process – viewed as straightforward, with potential developments focussed on commercialisation plans
- queries – increased human interaction with Science Foundation Ireland to help support relationship building with new researchers
- ongoing support and monitoring – specifically focussed on the maximising commercialisation

Benefits

Institutional stakeholders stated that the major benefit is that **TIDA fills a gap between research and full blown commercialisation**. Another benefit of TIDA is that **the result of a project leaves it in a position to make choices on the next step** – from a position of well-informed strength.

Institutional stakeholders noted that what has been – for some – a surprising benefit is the range of different reasons for undertaking a TIDA that are catered for. **In all areas the word that emerged most often was “confidence”**. Confidence in the research that was undertaken, confidence in the results and confidence in taking a step down the commercialisation path.

One aspect that TIDA supports that is widely seen across all stakeholders as **a real positive is the availability of the entrepreneurship training**. This is described an ‘eye-opener’ for researcher, giving them a real taste of what lies ahead if they intend to taking the commercialisation path sometime in the future.

² <https://www.djei.ie/en/Publications/Innovation-2020.html>

Across both institutional and wider stakeholders TIDA was viewed as instrumental in supporting a shift towards applied research, especially amongst those researchers who were at early stages in their careers; this was backed up by the researcher findings.

Wider stakeholders had some concerns that since TIDA was launched it was being used to fund the development of postdoc talent, which was never its intention. They suggested that there may be a need for an alternative postdoc funding programme for this, and **that TIDA should be limited to supporting researchers with a genuine interest in commercialising their technologies.** We note that Science Foundation Ireland has expanded its early stage career development and as such the level of post docs funded through TIDA will be significantly reduced.

A final benefit mentioned by both wider and institutional stakeholders and the researcher was the **kudos associated with winning a Science Foundation Ireland award.** While TIDA is one of Science Foundation Ireland's smaller awards it still brings the branding and a robust peer reviewed assessment process that brings credibility to the winning PI and their researcher.

Improvements

Most of those interviewed stressed that they saw **TIDA as a very popular and successful programme and that any improvements that were suggested would need to be balanced to ensure that the focus of the programme remained as strong as it currently is.** Within this context, the improvements that were put forward for consideration are:

- **change eligibility criteria** to allow 'non-Science Foundation Ireland' researchers to come forward with proposals. We note that is now happening but this may need to be communicated more
- there should be **more than one call per annum** for TIDA proposals and the approval timescale should be reduced
- a question should be added to **the application around the commercialisation intent of the applicant**
- the **lead-in time to project start dates should be lengthened** to allow for recruitment
- the **one year time frame did not always meet a projects needs and project extensions** to, say, 18 months should also be considered
- there should be **more 'commercial expertise' made available by Enterprise Ireland** to support projects that seem to have commercial potential
- the entrepreneurship training is largely viewed as being very good – but consideration should be given to **delivering outside of Dublin and undertaking the pitching** elements later in the training
- creation of a fund to support commercial outputs such as patents
- greater alignment of metrics with Knowledge Transfer Ireland to show where TIDA was the originator programme

The future

TIDA was viewed as very important to supporting the mission of institutes to bring forward more applied research to support the economy. However some stakeholders were uncertain as to **where the home for this funding mechanism will lie** given the joint ownership of Science Foundation Ireland and Enterprise Ireland, noting this is an area **where 'clarity of mission' is required.** Institutional stakeholders like the support of Science Foundation Ireland in bringing forward research projects, they liked the kudos associated with winning a Science Foundation Ireland peer reviewed award and they also like the fact that Enterprise Ireland is involved to support the commercial element. A further concern voiced mainly from wider stakeholders is in **finding ways to recognise the contribution that TIDA makes to the commercialisation process.** The is **because of the focus that is now given to demonstrating outcomes** and TIDA does not currently do this to the same level as programmes at the higher TRL levels.

International Review

In addition to the objective of the evaluation was to undertake a review of similar programmes in international regions and countries. The findings are summarised as follows:

- **Finland** – Tekes has developed a programme of support that focusses on commercialisation of the concept. These are one year long, university-led projects with two annual calls
- **Denmark** – The Danish Agency for Science and Technology previously provided a POC style programme through The National Network of Technology Transfer, however the programme seems to have been stopped as no information is available
- **New Zealand** – the Ministry of Science and Innovation leads the strategy for support, however their POC style programme is undertaken at a regional level through the network of universities
- **Singapore** – a POC programme is delivered by the National Research Foundation. University researchers can apply for 12 month projects and up to S\$250,000 to support development of commercialisable prototypes; two calls per year
- **Israel** – the Ministry of Science, Technology and Space provides a range of supports for academic researchers but no further information provided
- **Scotland** – Scottish Enterprise had moved away from funding their one year POC programme for academics towards a larger programme focussed on achieving high growth start-ups. They still however fund the Royal Society of Edinburgh to deliver the Enterprise Fellowship programme which funds academics for one year to move their technology closer to market with an aim of **a spin out or licence; the programme includes entrepreneurship training**
- **North America** – The National Science Foundation (NSF) Innovation Corps (I-Corps™) is a set of activities and programmes that prepares scientists and engineers to extend their focus beyond the laboratory. Combining experience and guidance from established entrepreneurs with a targeted curriculum, I-Corps is a public-private partnership programme that teaches grantees to identify product opportunities that can emerge from academic research, **and offers entrepreneurship training to student participants, including distance learning**

Conclusions

The following conclusions have been drawn from our evaluation:

- **TIDA is working well** – All stakeholders were in agreement that the TIDA Programme was working well, was well liked, with many viewing it as a very strong programme. TIDA was seen as the only programme that allowed researchers at an early stage in their careers to “*dip their toe in the water of commercialisation*” while also supporting them establish their careers
- **TIDA processes were user friendly with some room for improvement** – For the majority TIDA processes were viewed as user friendly and generally well-managed, with many citing the application process as straightforward. Some improvements included:
 - eligibility criteria – further lower thresholds
 - number of calls – pilot increase calls
 - application time-frame – reduce time frame from application to decision
 - dealing with queries – introduce a telephone clarification system which would help build the relationship between Science Foundation Ireland and new researchers
 - ongoing support and monitoring viewed as very light touch – introduce further support to help to drive their technologies forward to the next stage
 - improved communication and market of the benefits of TIDA – more could be done to communicate the benefits
- **TIDA is a route into the commercialisation pipeline** – TIDA has positioned itself as a key route into the commercialisation pipeline, with some viewing it as the only mechanism to support pre TRL4 research if you are not linked to a Science Foundation Ireland applied or similar industry-focus research centre. While the Enterprise Ireland Commercialisation Fund was highlighted at the next logical step we believe that TIDA can and more often does provide researchers the ability to apply for a wide range of other funding

- **applications and success rates have increased** – Since TIDA was established in 2009 applications have more than doubled from 67 to 137 in 2013, and almost tripled in value from €4.4m to €12.7m. Success rates have also been increased from 2011 such that in 2013 almost two from three applications were successful after peer review
- **TIDA has been instrumental in affecting attitudinal change in applied research** – There was general consensus amongst researchers that TIDA was instrumental in supporting a shift towards applied research. Researchers stated that without this support their projects would generally have not have happened, and almost half (48%) had been involved in further applied research. While institutional stakeholders agree with these changes they highlighted concerns about the development paths for applied researchers, noting that opportunities were harder to find. As a result of this over two thirds agreed that members of their research teams are more likely to move into industry as a result of TIDA
- **project has a clear place in the wider funding landscape** – While TIDA and Enterprise Ireland's Commercialisation Fund Programme have many similarities in terms of types of project supported and the objectives of the programme, it is clear that they complement one another and exist to serve different target groups. The entrepreneurship training element of TIDA also fills a unique space in the support landscape, which is not duplicated by any other programme
- **entrepreneurship training programme is well received** – The entrepreneurship training programme, which is now compulsory, was extremely well received by researchers and both wider and institutional stakeholders. Some improvements were cited:
 - broaden delivery beyond Dublin
 - run the course in a shorter timescales
 - split the pitching element to later in the grant development
 - create increased opportunities for participants to capitalise on the peer to peer learning
- **application process and support viewed as very good** – Overall the process was described as smooth and straightforward and well aligned to the programme objectives. One potential area for development was to increase focus on commercial opportunity
- **awardees are getting both scientific outputs and commercial outputs (early stage)** – The TIDA Programme has generated extensive applied research, educational and networking benefits for awardees and their institutes. There has also been a wide range of commercial benefits including invention disclosures and patent as a result of TIDA. Just under half have also been involved in follow-on applied research projects and ongoing industry engagement. Overall there was high levels of satisfaction with the Programme amongst researchers with 82% rating it 'good' or 'very good'

Recommendations

Based on the conclusions the following recommendations have been developed.

1. **Continue to fund the TIDA Programme** – TIDA has performed well, met its objectives, is encouraging early stage researchers to test the applied research field and operating in an area where there was limited other support.
2. **Development of an approach to plug the gap between TIDA and Commercialisation Fund** – Where TIDA reaches the end of funding and has an identified commercial potential but is not ready for further funding, Science Foundation Ireland and Enterprise Ireland should agree an additional support mechanism to help make it 'funding ready'.
3. **Increased commercialisation focus in TIDA applications** - more could be done to firm up the commercialisation plans, with the addition of a specific section/series of questions around applicant's commercialisation plans and the types of support they hope to access as the next step to project development.
4. **Introduce a light touch interim review** – to minimise the likelihood of the gap, we suggest an interim review approach focused on the need for continued support to deliver an identified commercial benefit.
5. **Broaden eligibility criteria** – while it was agreed that the changes to the eligibility criteria were positive, there is still scope to further improve these. The main suggestion would be to further expand access to this programme for those previously funded by other agencies.

6. **Increase number of calls** – one call per year was viewed as insufficient. We suggest that Science Foundation Ireland look to pilot a two call approach, possibly for the ICT/software sector in the first instance to test the extent to which the applications increase.
7. **Shorten time from application to award** – we suggest that where possible the assessment process be tightened to allow increased time for recruitment before the programme start date.
8. **Increased flexibility in the start date** – aligned to the recommendation above, if the application process can be tightened this will impact positively on the start date with less impact on no cost extensions and the associated paperwork.
9. **Increase the communication with Science Foundation Ireland** – consider having a named contact point or dedicated helpline to support applicants and grant holders; this would help build a relationship with Science Foundation Ireland.
10. **Improve communication around the roles of Science Foundation Ireland/Enterprise Ireland** – this is a role for both Science Foundation Ireland and Enterprise Ireland and could be done through the website, on the application form and in any wider communication. Both parties should also take more responsibility to promote TIDA, particularly given its unique place in early stage TRL support.
11. **Increase output verification** - it would be beneficial for Science Foundation Ireland to verify the wider self-reported outputs to remove double counting and to capture not only those who are accessing further commercialisation funding but the value of this.
12. **Expand the entrepreneurship training element** – Since the entrepreneurship training was introduced it has gone from strength to strength. Given the extremely positive feedback we suggest Science Foundation Ireland should consider expanding the reach of the existing training scheme, potentially to include additional providers across Ireland; this would include encouraging more researchers to attend and making it more accessible to those outside Dublin. This could be achieved through utilising complementary, highly prestigious, and international training offerings including the addition of a distance learning component similar to the NSF I-Corps programme in North America.
13. **Creation of an alumni to support peer development** – grant holders or their researchers already come together through the Entrepreneurship Training Programme, however there is no formal opportunity for follow up. We suggest the creation of an alumni of participants to capitalise on the peer to peer learning and maximise the potential for future collaborations across institutes and disciplines.
14. **Split the pitching element from the entrepreneurship training course** – this would allow the technology to be further developed as well as bring the grant holders together.
15. **Build on Science Foundation Ireland post award monitoring to ensure TIDA originator is captured** – it will be important to align these with the information already captured by Knowledge Transfer Ireland which would allow KTI to show where TIDA has been an originator.
16. **Need for increased internal resource** – we have highlighted a number of recommendations that are likely to involve further support from Science Foundation Ireland and partners, and as such we recommend that Science Foundation Ireland should increase the resource of the team.

1 Introduction to the Programme and Approach

1.1 Background

Around the turn of the century, it became apparent that the key to future economic success was investment in a knowledge based economy; the Irish Government therefore established Science Foundation Ireland to support economic transformation through research excellence. Since Science Foundation Ireland came into being you have invested significant amounts in academic researchers and research teams who are most likely to develop new technologies, new knowledge and competitive enterprises in the STEM fields.

In the Action Plan for Jobs 2015, the Irish Government places a great emphasis on increasing activities to support entrepreneurship through initiatives such as the Start-up Gathering and funding to be provided by Science Foundation Ireland and Enterprise Ireland. The purpose of the Technology Innovation Development Award Programme (TIDA) - which is a joint Science Foundation Ireland/Enterprise Ireland initiative - is to realise greater economic impact from state investments in research. The TIDA Programme is designed to enable researchers to focus on the first steps of an applied research project which may have a commercial benefit if further developed. Both Science Foundation Ireland and Enterprise Ireland are particularly interested in attracting applications from researchers who have not had the opportunity to previously avail of Enterprise Ireland funding.

Successful TIDA awardees will initiate commercially relevant applied research programmes and develop the commercial expertise within their groups. At the end of their awards, it is envisaged that TIDA researchers will be primed to demonstrate the viability and robustness of their idea or product, and if appropriate, be in a position to apply for more significant levels of commercialisation funding such as the Enterprise Ireland Commercialisation fund or Innovation Partnerships. In line with Government policy, stimulating an entrepreneurial culture in the Irish research community is an important aspect of this process that is supported through TIDA.

From 2009 to 2013 (inclusive), Science Foundation Ireland invested €25.1m³ or 2.8% of its overall budget in the same period in TIDA; this resulted in the approval of 283 TIDA awards. The overarching objectives of TIDA are to:

- demonstrate the feasibility of an innovative idea for commercial benefit
- develop awareness of the commercialisation process
- encourage movement from academia into enterprise activities
- build demonstrators and prototypes
- improve existing industrial processes
- encourage convergence across disciplines

1.2 Evaluation objectives and approach

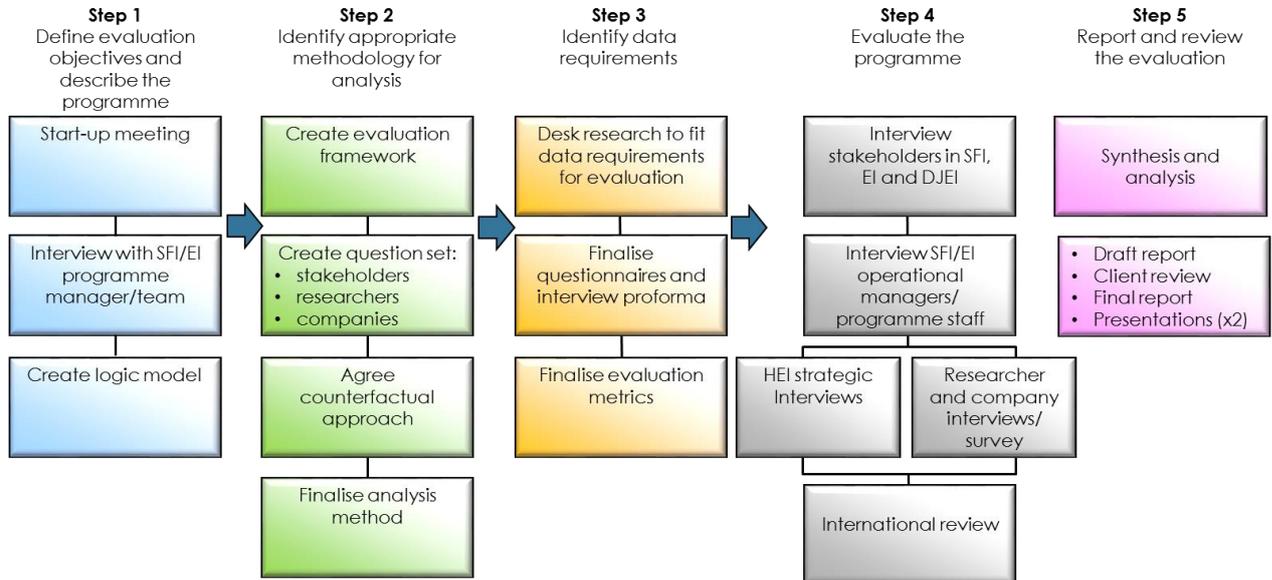
In August 2015 Science Foundation Ireland and Enterprise Ireland commissioned Frontline to undertake an evaluation of TIDA covering the period from 2009 through to 2013 inclusive. The aim of the evaluation was to assess the appropriateness and effectiveness of TIDA and to provide strong, independent recommendations for improving the programme. Based on this, we evaluated TIDA in terms of:

- performance against its objectives, as well as any consequential spin outs and licencing opportunities
- fit in terms of complementarity and/or overlap with other interventions in the national research systems

³ This included funding from 2009 through to 2013 and delivery during 2014

- performance and impact aligned with science policy context during the evaluation period
- performance in relation to similar programmes in nations of comparative size

Our approach to the evaluation is presented below.



During Step 4 we realised that there was limited direct company involvement with TIDA and it was agreed with Science Foundation Ireland to remove this stage and focus on the researcher and wider stakeholder consultation.

During the evaluation we consulted with:

- researchers – 77
- unsuccessful applicants – 12
- institutional stakeholders including heads of research and technology transfer representatives – 31
- wider (non-institutional) stakeholders across Science Foundation Ireland, Enterprise Ireland, Department of Jobs, Enterprise and Innovation and Ryan Academy – 9

A full list of consultees is provided in **Appendix 1**.

2 Performance Overview

In summary:

Between 2009 and 2013, the €25 million TIDA awards programme led to 283 awards being made to 17 institutes, with over half of all applications received by each of the institutes successfully awarded funding. It has led to 57 patents, 9 licences and 7 spin out companies, based on verified self-reported data. Science Foundation Ireland official outputs note there have been 80 publications, 149 academic collaborations and 83 non-academic collaborations (2013-2014). There has also been a number of other outputs which have not been verified by Science Foundation Ireland such as invention disclosures and follow on commercialisation funding.

This section examines the performance of the programme to date based on the project monitoring data provided to us by Science Foundation Ireland. It follows a logic model approach, considering the programme's inputs, activities, outputs, outcomes and impacts in turn.

2.1 Inputs

Approximately €25 million of Science Foundation Ireland funding was issued over the evaluation period, with over half of this (€16.5 million) issued in 2012 or 2013.

Overall programme expenditure by award date **Table 2.1**

2013	2012	2011	2010	2009	Total
€9,710,783	€6,763,144	€6,031,089	€1,840,071	€607,195	€ 25,050,976

Source: SFI, 2015

Seventeen Irish Universities and Institutes of Technology have benefited from TIDA funding, with Trinity College Dublin, University College Dublin and NUI Galway the largest beneficiaries.

Expenditure by institute **Table 2.2**

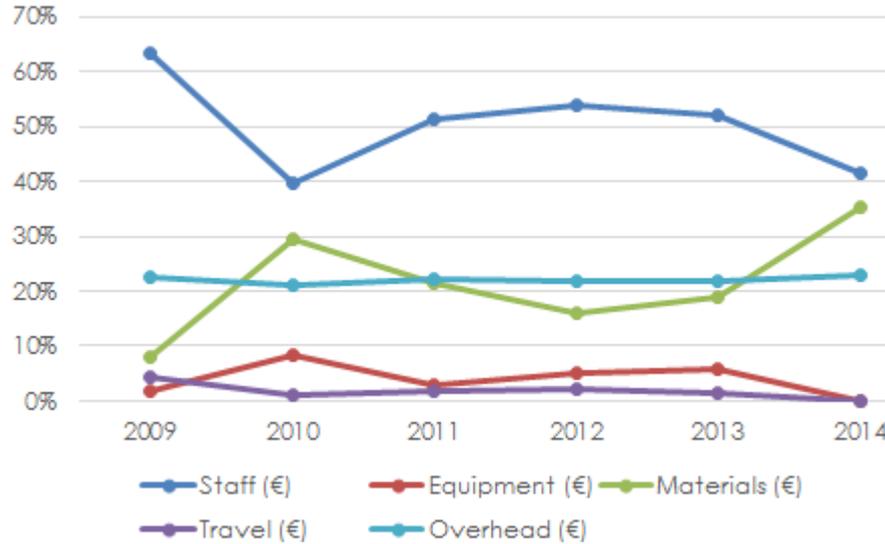
Institute	Award date 2009-2013
Trinity College Dublin	€ 5,378,297
University College Dublin	€ 4,025,992
National University of Ireland, Galway	€ 3,371,584
Dublin City University	€ 2,987,217
University College Cork	€ 1,936,293
Royal College of Surgeons in Ireland	€ 1,866,890
Tyndall National Institute	€ 1,407,563
Dublin Institute of Technology	€ 1,047,179
National University of Ireland, Maynooth	€ 835,436
University of Limerick	€ 740,674
Waterford Institute of Technology	€ 633,386
Institute of Technology, Carlow	€ 234,692
Cork Institute of Technology	€ 183,475
Institute of Technology Sligo	€ 123,358
Institute of Technology, Tallaght	€ 118,914
Athlone Institute of Technology	€ 116,951
Institute of Technology, Tralee	€ 72,683

Source: SFI, 2015

In each year of the programme, approximately half of the TIDA funding went towards covering staff costs, while the remainder was divided between equipment, materials, travel and overheads. We note that the dip in staff funding in 2010 resulted from a €50k funding cap in that year; in all other years the cap was €100k.

Itemised breakdown of expenditure

Figure 2.1



(Source: SFI, 2015)

2.2 Activities

During the five year evaluation period, 473 applications for TIDA funding were submitted to Science Foundation Ireland, with a total value of €40 million. 283 (60%) of these applications were successful, with a combined value of €25 million.

Total applications received (successful and unsuccessful)

Table 2.3

Year of award	Number of applications	Value of applications
2013	138	€12,760,633
2012	109	€10,003,333
2011	103	€9,454,022
2010	56	€2,663,230
2009	67	€5,262,311

Source: SFI, 2015

Total applications received (successful)

Table 2.4

Year of award	Number of successful applications and success rate	Value of successful applications
2013	90 = 66%	€9,710,783
2012	66 = 61%	€6,763,144
2011	71 = 69%	€6,031,089
2010	48 = 86%	€1,840,071
2009	8 = 12%	€607,195

Source: SFI, 2015

In general, success rates have increased since the programme was established and currently 2 in 3 applications are successful. We believe this may have resulted from the improvements to the guidelines after the first iteration in 2009 and from the research community adapting to the new grant over time. Trinity College Dublin submitted the highest number of applications at 110 (23% of the total), followed by UCD (88 applications, 19%) and NUI Galway (51 applications, 11%).

Applications received by institute (successful and unsuccessful)**Table 2.5**

Institute	2009-2013	
	Number of applications	Value of applications
Trinity College Dublin	110	€9,473,222
Royal College of Surgeons in Ireland	42	€2,932,884
University College Dublin (UCD)	88	€6,959,055
National University of Ireland, Galway	51	€4,869,329
Dublin City University	41	€3,564,758
University College Cork	39	€3,159,516
Tyndall National Institute	21	€1,910,974
National University of Ireland, Maynooth	21	€1,786,223
Dublin Institute of Technology	18	€1,564,869
University of Limerick	18	€1,645,030
Waterford Institute of Technology	11	€994,679
Athlone Institute of Technology	3	€294,686
Institute of Technology, Carlow	3	€289,868
Cork Institute of Technology	2	€199,403
Institute of Technology, Tralee	1	€97,769
Institute of Technology Sligo	1	€123,358
Teagasc	1	€82,308
Institute of Technology, Tallaght	1	€98,140
Limerick Institute of Technology	1	€97,458

Source: SFI, 2015

The three institutes with the highest numbers of successful applications were Trinity (59, 21% of the total), UCD (45, 16% of the total) and DCU (39, 14% of the total). All of the institutes received funding for more than half of the projects they applied for. Out of the 11 institutes which received 10 awards or more, DCU had the greatest success rate, with 95% of applications receiving awards, while Trinity had the lowest at 54%.

Applications received by institute (successful)**Table 2.6**

Institute	2009-2013	
	Number of applications	Award date 2009-2014
Trinity College Dublin	59	€ 5,378,297
University College Dublin	45	€ 4,025,992
National University of Ireland, Galway	32	€ 3,371,584
Dublin City University	39	€ 2,987,217
University College Cork	28	€ 1,936,293
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Athlone Institute of Technology	1	€ 116,951
Institute of Technology, Tralee	1	€ 72,683

Source: SFI, 2015

2.3 Outputs

Based on output data provided by Science Foundation Ireland, a total of 23 TIDA funded projects led to a patent award between 2013 and 2014, with half of these lodged by either TCD or NUIM. Please note that this specific output data has only been collected since 2013, however there is further supporting output data from the annual survey of applicants; this is discussed in more detail below (Tables 2.12 and 2.13).

Table 2.7

Patents by institute			
Institute	2013	2014	Total
Trinity College Dublin	3	4	7
National University of Ireland, Maynooth	2	3	5
Royal College of Surgeons in Ireland	2	2	4
University College Dublin		2	2
Dublin City University	1	1	2
National University of Ireland, Galway		1	1
Dublin Institute of Technology		1	1
Waterford Institute of Technology		1	1
Total	8	15	23

Source: SFI, 2015

Science Foundation Ireland output data also suggests the TIDA programme led to 26 invention disclosures, with the majority of these lodged by UCD, UCC and DIT.

Table 2.8

Invention disclosures by institute			
Institute	2013	2014	Total
University College Dublin		6	6
University College Cork	1	4	5
Dublin Institute of Technology	3	1	4
Dublin City University		3	3
Trinity College Dublin	1	2	3
National University of Ireland, Galway	1	1	2
Royal College of Surgeons in Ireland	2		2
University of Limerick		1	1
Total	8	18	26

Furthermore the projects funded through the TIDA programme led to 80 publications, over half of which were produced by DCU, UCC or Trinity.

Publications by institute**Table 2.9**

Institute	2013	2014	Total
Dublin City University	2	15	17
University College Cork	10	6	16
Trinity College Dublin	8	4	12
Royal College of Surgeons in Ireland	9	1	10
Tyndall National Institute	4	3	7
Dublin Institute of Technology	2	4	6
University College Dublin		3	3
National University of Ireland, Maynooth	1	2	3
University of Limerick	1	2	3
Waterford Institute of Technology		1	1
Institute of Technology, Carlow	1		1
Athlone Institute of Technology		1	1
Total	38	42	80

The programme led to 149 academic collaborations. NUI Galway were involved in the largest number of these, with 32 collaborations.

Academic collaborations by institute**Table 2.10**

Institute	2013	2014	Total
National University of Ireland, Galway	11	21	32
University College Dublin	9	20	29
University College Cork	10	11	21
Royal College of Surgeons in Ireland	11	8	19
Trinity College Dublin	6	10	16
Tyndall National Institute	2	8	10
Dublin City University	4	6	10
Dublin Institute of Technology	3	3	6
University of Limerick	1	1	2
Institute of Technology, Tralee	1	1	2
Waterford Institute of Technology		1	1
Institute of Technology, Tallaght		1	1
Total	58	91	149

83 of the projects involved collaborations with businesses, including 24 at Trinity and 14 at University College Cork.

Non-academic collaborations by institute**Table 2.11**

Institute	2013	2014	Total
Trinity College Dublin	4	20	24
University College Cork	7	7	14
Royal College of Surgeons in Ireland	9	2	11
National University of Ireland, Galway	3	7	10
University College Dublin	4	4	8
Tyndall National Institute	2	5	7
Dublin City University	1	5	6
Institute of Technology, Tralee	1	1	2
National University of Ireland, Maynooth		1	1
Total	31	52	83

Wider data was also taken from the feedback of 417 TIDA participants during 2010 through to 2013. This was based on survey data from participants of TIDA awards and includes multiple responses over years in acknowledgement of the fact that likely commercial outcomes from TIDA awards may occur after the award has expired.

The figures in Table 2.12 have been verified by Science Foundation Ireland and double counting removed while those in Table 2.13 are based only on self-reported information alone and are likely to include elements double counting; as such totals have not been provided.

The patent filed data in 2013 is slightly higher than the awarded data presented in Table 2.7, suggesting some level of attrition. We note that the invention disclosure information is very high in Table 2.13 compared to the levels reported by Science Foundation Ireland in Table 2.8 which suggests both double counting and a need for further data reconciliation.

Programme outputs (verified by Science Foundation Ireland)**Table 2.12**

Output	2010	2011	2012	2013	Total
Patents filed	21	16	10	10	57
Licences granted	0	6	3	0	9
Spin out companies	2	3	1	1	7

Source: SFI, 2015

Wider Programme outputs (not verified by Science Foundation Ireland)**Table 2.13**

Output	2010	2011	2012	2013
Demonstrate innovation to companies/investors	41	81	58	43
Improve an existing industrial process	35	58	34	36
Demonstrate convergence across disciplines	56	96	67	48
National testbeds accessed	3	14	11	9
Follow on commercialisation funding awarded	22	35	18	8
Invention disclosures	42	63	49	40
Demonstrators/prototypes produced	44	81	65	51

Source: SFI, 2015 (note further SFI verification is required before we can accurately report wider outputs)

3 Researcher Findings

This section contains the analysis of the Principal Investigator (PI)/ researcher experience and covers:

- background
- project delivery
- project outputs and benefits
- researcher competences

In summary:

- primary reason for applying for a TIDA award was to develop new products/processes/service from research and to secure funding in their main area of interest
- overall the application processes was viewed very positively, with 91% rating the process good or very good, 92% rating the support for the application process as good or very good and 75% rating the selection process as good or very good
- 40% of projects were delivered on time while 57% took longer to deliver; the remainder completed early
- 49% of the researchers said that all research activities were completed with a further 48% stating that most or some of the research activities were completed
- where barriers to completion were mentioned the most common were technical and lack of staff availability
- 48% had an invention disclosure developed while 38% had a patent developed
- two spin outs were established
- levels of satisfaction were high overall, with 82% of researchers rating the Programme as 'good' or 'very good'
- satisfaction levels were also high in relation to the Entrepreneurship Training programme with 84% of researchers rating it 'good' or 'very good'
- researchers cited a relatively high level of additionality with 32% reporting that their project would not have taken place and 62% would have tried to find a different funder/redeveloped their proposal all of which would have taken longer; the reminder cited no additionality
- 84% had accessed other forms of commercialisation support including Enterprise Ireland Commercialisation Fund, Innovation Partnership and Innovation Voucher Funding, FP7 and H2020; Science Foundation Ireland and wider EU monies were also highlighted
- 57% of researchers said that TIDA was better suited to their research needs when compared with other programmes
- 46% have been involved in follow-on applied research projects that are closer to the market, while 44% had ongoing industry engagement
- just under a third (31%) of researchers report that members of their TIDA research team have moved into industry
- engagement with the TIDA Programme has helped to generate reputational benefits for both the institute and for researchers
- researchers noted the following key benefits; strengthening of expertise in core research area; improved teaching; improved external networks – with other institutes/research organisations
- 69% of researchers 'agreed' or 'strongly agreed' that members of their research team are more likely to move into the industry as a result of TIDA
- 43% 'agreed' or 'strongly agreed' that their research team is more likely to stay in Ireland as a result of TIDA
- none of the unsuccessful applicants rated the application process as 'poor' or 'very poor' – four rated it as 'very good' and six as 'good'
- three rated the selection process as either 'poor' or 'very poor', however, the same number rated it as 'good' or 'very good'
- while a broad range of improvements were suggested around TIDA many noted no improvements were required

3.1 Background

This section considers the **views of 77 researchers, of which 36 have been involved in an Entrepreneurship Training Programme**. These views were gained through face to face interviews and responses to an e-survey. We note that everyone did not reply to all of the questions and in some areas multiple responses were given; this will be highlighted where relevant.

Table 3.1 shows the breakdown of researcher response by Institute.

Institute	Response count	Response %
University College Cork	15	19
University College Dublin	9	12
Trinity College Dublin	8	10
Tyndall National Institute	8	10
National University of Ireland - Galway	8	10
University of Limerick	6	8
Dublin City University	6	8
Royal College of Surgeons in Ireland	6	8
National University of Ireland - Maynooth	3	4
Waterford Institute of Technology	3	4
Dublin Institute of Technology	1	1
Sligo Institute of Technology	1	1
Tallaght Institute of Technology	1	1
Carlow Institute of Technology	1	1
Tralee Institute of Technology	1	1
Total	77	100

3.2 Project delivery

The following section summarises the aspects around project delivery and covers project objectives, experience and barriers to completion.

3.2.1 Project objectives

There were multiple 'drivers' for researchers to want to be involved a TIDA award as noted below.

Reasons for applying for a TIDA award⁴ **Table 3.2**

Why did you decide to apply for a TIDA award?		
Answer options	Response %	Response count
Wanted to develop new products/processes/service from research	71%	53
Secure research funding in my main area of interest	57%	43
Gain applied insights into my main area of interest	41%	31
Further the institute's commercialisation mission	39%	29
Wanted to develop a business opportunity from my main area of interest	31%	23
Other	28%	21
Secure funding for research assistants and equipment	28%	21
Learn from industry to enhance my research and teaching abilities	23%	17
Further the institute's research mission	21%	16
Wanted to support businesses in my main area of interest	19%	14
Keep up to speed with industry focus in the main area of interest	16%	12
Secure funding for specialist equipment	5%	4

The primary reason for applying for a TIDA award was to **develop new products/processes/service from research** (noted by 53 researchers, 71%) and to **secure funding in their main area of interest** (noted by 43 researchers, 57%). This was followed by the desire to **gain applied insights into their main area of interest** (noted by 31 researchers, 41%).

'Other' reasons include to follow on from previous work, to prospect in a new area or to work with a company on a specific research area.

3.2.2 Project processes and experience

The evaluation considered the processes involved with the Programme to find out how well it was working and to find out if the process was supporting or proving to be a barrier to getting good projects approved. Overall the feedback was positive in the areas covered which were broken down as:

- application process
- support for application
- selection process
- ongoing support from Science Foundation Ireland

Researchers were asked to rate their experience of the application on a scale of 1 to 5, where 1 is 'very poor' and 5 is 'very good'. **Overall the application processes was viewed very positively**, with 91% (68) rating the process 4 or 5.

⁴ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

Application process⁵**Table 3.3**

On a scale of 1-5, where 1 is very poor and 5 is very good, how would you rate the application process?						
Answer Options	1	2	3	4	5	Response Count
Application process		2 (3%)	5 (7%)	27 (36%)	41 (55%)	75

Researchers described the application process as:

- *“Clear, simple and short enough to remain focused.”*
- *“Clear documentation. Relatively short proposal.”*
- *“Concise application form, reasonably quick response time.”*
- *“It was a straightforward and transparent process.”*

Researchers were then asked to rate their experience of support for the application process. 92% (64) of researchers noted this a 4 or a 5.

Support for the application process⁶**Table 3.4**

On a scale of 1-5, where 1 is very poor and 5 is very good, how would you rate the support for the application process?						
Answer Options	1	2	3	4	5	Response Count
Application process support	1 (1%)	2 (3%)	2 (3%)	30 (43%)	34 (49%)	69

Again, positive feedback from researchers. Comments include:

- *“Reasonable support - not needed as it was straightforward.”*
- *“The Guidelines and FAQ were comprehensive.”*
- *“It was clear who had responsibility for different steps and could advise.”*
- *“Support from a mentor in SFI, also from research office; both a great help.”*

When asked about the selection process, 75% (52) of researchers scored this a 4 or a 5.

Selection process**Table 3.5**

On a scale of 1-5, where 1 is very poor and 5 is very good, how would you rate the selection process?						
Answer Options	1	2	3	4	5	Response Count
Selection process	2(3%)	2 (3%)	13 (19%)	36 (52%)	16 (23%)	69

Comments behind the scoring above include:

- *“Experience also as non-successful applicant: objective and fair review of this proposal with useful feedback.”*
- *“Fast turnaround and clear reviews.”*
- *“I do not think it should be linked exclusively to current SFI grants.”*
- *“Robust - provided feedback and practical development info - noted where we could improve our proposal and highlighted strengths.”*

⁵ Percentages do not total 100% due to rounding.

⁶ Percentages do not total 100% due to rounding.

Ongoing support from Science Foundation Ireland⁷

Table 3.6

On a scale of 1-5, where 1 is very poor and 5 is very good, how would you rate the ongoing support from Science Foundation Ireland?						
Answer Options	1	2	3	4	5	Response Count
Ongoing support	5 (7%)	7 (10%)	19 (27.5%)	19 (27.5%)	19 (27.5%)	69

The researchers had **mixed views on the ongoing support from Science Foundation Ireland, and although it is a largely positive response, there were a number of comments made that reflect a desire to see increased levels of input from Science Foundation Ireland:**

- *“Very good interaction with staff in SFI.”*
- *“No support but didn't ask for it; maybe good to get their input but wouldn't know who to ask questions to.”*
- *“Support is good and relevant for the projects.”*
- *“Needs a programme officer for TIDA; room to do it better could be more proactive.”*
- *“The project officers were always responsive when I needed information.”*
- *“Mainly been through e-mails, but happy with the support they received.”*

3.2.3 Timescales

Researchers were asked to describe the time taken to complete the project in line with the original project management plan.

Timescales

Table 3.7

Which of the following best describes the time taken to complete the project in line with the original project management plan?		
Answer Options	Response %	Response Count
Project was delivered quicker than set out in the plan	3%	2
Project was delivered to the timescale set out in the plan	40%	29
Project took longer to deliver than set out in the plan	57%	42

40% (29) of projects were delivered on time while just 3% (2) were ahead of time. **57% (42) said the project took longer to deliver than set out.** There are however a number of reasons for not finishing on time and they emerged from the comments made by researchers:

- *“Recruitment took time and so project was put back with a non-cost extension.”*
- *“1 year is a very short period in which to complete a project even one as well defined as this.”*
- *“The problem turned out to be more complex than expected, and we had unexpectedly little engagement from an industrial partner (because of their position changing.)”*
- *“At times I found it hard to focus on the project, due to other commitments (related projects all needed assistance, and one still needs time to generate new projects).”*
- *“Projects have to promise a lot in a 12 month period to get funded. Delivering on such a timeline is a big ask for one researcher.”*
- *“It is difficult to recruit and retain staff for exactly one year, as they will be looking for next position early in time course of project.”*
- *“Huge technical difficulties and needed a few more months.”*

⁷ Percentages do not total 100% due to rounding.

3.2.4 Research activities

Just under half (49%, 36) of the researchers said that all research activities were completed with a further 48% (36) stating that most or some of the research activities were completed. Just 3% (2) said none of the research activities were completed.

Research activities

Table 3.8

Did you successfully complete the research activities that made up the project?		
Answer Options	Response %	Response Count
Yes – all research activities completed	49%	36
Yes – most research activities completed	39%	29
Yes – some research activities completed	9%	7
No research activities completed	3%	2

Total respondents - 74

The reasons for partial completion or barriers to completion are shown in Table 3.9.

3.2.5 Barriers to completion

Although this is a question about barriers, the responses are not particularly negative. There is recognition from researchers that there are circumstances that can arise that will create barriers even with the best of intentions. 35% (26) noted no barriers. **Where barriers were mentioned the most common were technical and lack of staff availability** as shown in Table 3.9.

Barriers to completion⁸

Table 3.9

What were the main barriers to the successful completion of the research objectives?		
Answer Options	Response %	Response Count
Technical issues	38%	28
No barriers	35%	26
Lack of staff availability to deliver the project	30%	22
Lack of own time due to commitment to other research projects	11%	8
Lack of own time due to commitment writing other research applications	10%	7
Lack of own time due to other teaching commitments	8%	6
Lack of external finance to deliver the project – other public sector	8%	6
Bureaucracy associated with the ongoing management of the project	6%	4
Lack of institute finance to deliver the project	3%	2
Lack of external finance to deliver the project – Enterprise Ireland	3%	2
Lack of external finance to deliver the project – private finance	1%	1

⁸ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question

Comments include:

- “Importantly, the evolution of the market need/interest during the timeframe of the award impacted on the focus of the research; a more challenging, but more rewarding potential application of the technology developed is pursued in addition to the original plans.”
- “Took time to find the right person; lack of PI time as this is not part of the budget; technical challenging area so this was expected.”
- “Staff major issue as had to train person and this took a few months - so 1 year time frame was too tight.”

3.3 Project outputs

The following section summarises the findings on project outputs and satisfaction and covers:

- final outputs
- monetary gains
- overall satisfaction
- the Entrepreneurial Training Programme
- additionality of support

3.3.1 Final outputs

48% (32) had an invention disclosure developed while 38% (26) had developed a patent. Two had set up a spin out while two has licenced the outputs.

Final outputs⁹ **Table 3.10**

What were the final project outputs?		
Answer Options	Response %	Response Count
Invention disclosure developed	48%	32
Patent developed	38%	26
Licenced research outputs to an Irish company	3%	2
Licenced research outputs to an overseas company based in Ireland	3%	2
Spin out company developed	3%	2

3.3.2 Monetary gains to the institute

Researchers were asked whether they were aware of any monetary gains to the institute from the project. **The majority of researchers, 80% (56) reported that no monetary gain had been achieved.**

Monetary gains to Institute **Table 3.11**

Are you aware of any monetary gains to the Institute from the project?		
Answer Options	Response %	Response Count
Yes	20%	14
No	80%	56

Where monetary gains had been achieved (19%, 13), this was through:

- “Additional income from an EI Commercialisation Fund grant.”
- “Follow on SFI Starter Investigator grant (SIRG).”

⁹ Respondents could provide multiple answers.

- “MCCI funding (pre prototype) and SFI funding (fundamental research).”
- “Additional research monies in other contracts with the company via direct or EU funding.”

In addition researchers were asked whether monetary gains had come back to their departments/centres, with 23% (15) stating that they had.

3.3.3 Overall satisfaction with the TIDA Programme

Levels of satisfaction were high overall, with 82% (60) of researchers rating the Programme as ‘good’ or ‘very good’.

Experience of TIDA

Table 3.12

Overall, on a scale of 1-5, where 1 is very poor and 5 is very good, how would you rate your experience of TIDA?		
Answer Options	Response %	Response Count
1	0%	0
2	3%	2
3	16%	12
4	36%	27
5	45%	33

There were only two researchers who had a ‘below the line’ level of satisfaction with the TIDA Programme. Comments around satisfaction include:

- “The Programme is an excellent one and allows post-docs to apply to gain valuable experience in writing proposals.”
- “Award made possible and amplified a research project promoting it to the stage suitable for further development through funding application and/or industry partnership.”
- “Provided excellent vehicle to establish proof of concept and engage with industry.”
- “Nice balance between exploratory and commercial research. Permits funding of students and has the goal of developing interaction with industry or commercial applications”
- “12 months is not long enough in a life sciences project. We cannot hire good people for such a short period; they are looking for 2-3 year contracts.”
- “A follow-on programme would be nice, e.g. TIDA Phase 2, featuring more money and commercially-relevant supports (a bit like the H2020 SME instrument).”
- “The programme itself was good, but once it finished there was no support.”
- “Major mismatch in expectations of TIDA from myself and the reviewers.”

3.3.4 The Entrepreneurship Training Programme

As part of their involvement in the TIDA Programme 73% (54) of researchers said that they or their colleagues took part in the Entrepreneurship Training Programme. **Satisfaction levels were high with 84% (43) of researchers rating the training programme 'good' or 'very good'.**

Experience of the Entrepreneurship Training Programme

Table 3.13

Overall, on a scale of 1-5, where 1 is very poor and 5 is very good, how would you rate your experience of the Entrepreneurship Training Programme?		
Answer Options	Response %	Response Count
1	0%	0
2	4%	2
3	12%	6
4	43%	22
5	41%	21

Elements of the training programme that were noted as most useful include:

- *"Pitching and overall skills development."*
- *"Description of pathway and barriers to commercialisation was enlightening."*
- *"Comprehensive overview of entrepreneurship area; each component presented efficiently and practically."*
- *"Concept and design."*
- *"Finance/legal aspects relating to options for what to do when taking an idea further."*
- *"Exit strategies."*
- *"Learning to package the concept behind the technology in an accessible and commercially relevant way."*
- *"Connecting with peers."*

Elements of the training programme that could be improved upon include:

- *"More discussion with industry about how IP is utilised."*
- *"The opportunity to take the course periodically would benefit my research."*
- *"More on business plan and further pitch development."*
- *"Shorter course, e.g. over 1 week rather than 4 weeks, would be better."*
- *"Intellectual property was an important consideration and everyone had plenty of questions, especially those collaborating with other companies."*
- *"Could also do with a talk from someone who was like us (a researcher) and whose idea took off."*
- *"Learning from those who had been there/done it."*
- *"More information on Angel Investors and what they could do."*
- *"My impression is that it was somewhat generic in nature."*

3.3.5 Additionality of support

Researchers were asked to estimate the additionality of their participation in a TIDA project. Table 3.14 presents the results.

What would have happened if you had not been successful in getting project funding?	Response Percent	Response Count
I would have done the project anyway with a different funder	11%	8
I would have tried to find a different funder/redeveloped proposal/taken longer	62%	46
I would have develop a better project and re-applied at a later date	5%	4
I would not have continued with the project at all	32%	24

Researchers cited a **relatively high level of additionality** with 32% (24) of researchers reporting it would not have taken place if the TIDA programme did not exist. A further 62% (46) said that they would have tried to find a different funder/redeveloped their proposal all of which would have taken longer. Only 11% (8) would have done the project anyway – with a different funder.

Researchers were asked if they were successful on any other commercialisation focussed programmes; these could have been before, during or after TIDA. **84% (66) had accessed other forms of commercialisation support** of which: 57% (37) had undertaken Enterprise Ireland's Commercialisation Fund, 40% (26) Enterprise Ireland's Innovation Partnership programme and 29% (19) accessing Enterprise Ireland's Innovation Vouchers scheme. 47% (31) had undertaken either an FP7 or Horizon 2020 project.

What of the following other commercialisation focussed programmes have you undertaken?	Response Percent	Response Count
Enterprise Ireland Commercialisation Fund	58%	38
Enterprise Ireland Innovation Vouchers	30%	20
Science Foundation Ireland Innovation Partnerships	41%	27
FP7/Horizon 2020	48%	32
Other	30%	20

'Other' support used includes:

- Irish Research Council Elevate Fellowship
- Science Foundation Ireland Starting Investigator Research Grant (SIRG) funding
- Enterprise Ireland/IDA Ireland Technology Centre funding
- Royal Society award
- wider EU monies including Marie Curie

¹⁰ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

¹¹ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

When asked to compare the TIDA Programme to the other support accessed **57% (38) of researchers said that the TIDA Programme was better suited to their research needs, with a further 42% (28) stating that TIDA is on par with other programmes¹²**. Just 10% (7) said that TIDA was less well suited to their research needs. Reasons for this include:

- “Eligibility criteria could be good to include options for earlier stage researchers.”
- “Restricted as only a year. “
- “Leverage from other projects are required to fit into the financial envelope of the project.”
- “Funding too low.”

3.4 Range and quality of support for Technology Readiness Levels

Researchers were asked to rate the range and quality of grant support available across Ireland from all agencies to support commercialisation of technologies at each Technology Readiness Level. Researchers stated that the range of the support available in **TRL 2, 3 and 4 was high while not surprising they felt support at TRL 8 and 9 was low**; most likely because these levels are very company focussed. Table 3.16 shows the range of responses. Note there were high levels of not applicable in the higher TRLs where researcher were unable to comment.

Range and quality of commercialisation support available across Ireland at each TRL Table 3.16

Technology Readiness Level	Very poor	Poor	Neither poor nor good	Good	Very good	N/A	Response Count
TRL 1: basic principles observed	6	8	4	25	20	4	67
TRL 2: technology concept formulated	3	7	2	26	22	5	65
TRL 3: experimental proof of concept	1	4	4	33	23	1	66
TRL 4: technology validated in lab	1	2	8	28	24	3	66
TRL 5: technology validated in relevant environment	0	7	9	16	19	14	65
TRL 6: technology demonstrated in relevant environment	0	6	8	19	15	16	64
TRL 7: system prototype demonstration in operational environment	0	7	7	18	15	17	64
TRL 8: system complete and qualified	2	7	8	12	6	26	61
TRL 9: actual system proven in operational environment	2	6	10	12	5	26	61

Comments include:

- “There is virtually no support for moving biotech discoveries past pre-clinical development into clinical trials; the only avenue is via start-ups or licensing and many ideas are not developed because of this gap in funding.”
- “If not part of centres then more difficult to access TRL 1 and 2.”
- “Really only have TIDA at the early stage i.e. TRL 2 and .3.”
- “Don't really have much in 6, tech centres do some 5 and 6 but limited after this.”

¹² Does not total 100% as some respondents had accessed more than one form of commercialisation support and therefore provided multiple responses.

- “There is limited programmes that are focussed around the early TRL levels; TRL 8 and 9 is company focussed area.”
- “There is a gap between 4 and 5 and TIDA could be extended to suit this.”

Based on the TRL levels, researchers were asked which best aligns with the TIDA Programme. Researchers mainly noted TRL 2-3 here; this aligns with the wider stakeholders.

3.5 Benefits

The following section summarises the findings on project benefits and covers:

- follow-on activities
- wider benefits
- reputational benefits
- research and educational benefits including networking

3.5.1 Follow on activities

Researchers were asked if they had been able to develop any follow-on activities since completion of their TIDA project. **46% (33) have been involved in follow-on applied research projects that are closer to the market, 44% (31) had ongoing industry engagement and 41% (29) had carried out follow-on basic research.** We note that Science Foundation Ireland has expanded its early career stage significantly and as such it expects this figure to decrease.

Follow-on activities¹³

Table 3.17

Have you been able to develop any follow-on activities since the completion of the project(s)?		
Answer Options	Response %	Response Count
Follow on applied research projects – closer to market	46%	33
Ongoing industry engagement	44%	31
Follow on basic research projects	41%	29
New industry engagement	30%	21
Follow on applied research projects – further from market	22%	16
No follow on activities	13%	9

A number of researchers specified substantial follow on awards including the new Science Foundation Ireland Royal Society Fellowship and the Science Foundation Ireland Starting Investigator Research Grant (SIRG); all said that TIDA was key to winning these awards which were between €400k and €500k over four years.

¹³ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

3.5.2 Wider benefits

Researchers were asked if any personal benefits had been achieved as a result of the research undertaken through the TIDA projects. Their responses are detailed below. Key outcomes included:

- **production of conference papers/posters**
- **publication of journal articles**
- **invited speaker at international conferences**

In addition, **just under a third (31%, 21) of researchers report that members of their TIDA research team have moved into industry**, this has included positions with Novartis, GSK and Pfizer.

Wider research outputs¹⁴

Table 3.18

Have you done any of the following as a result of the research project?		
Answer Options	Response %	Response Count
Publication of journal articles	68%	36
Production of conference papers/posters	70%	37
Delivery of lectures/courses in the research area	51%	27
Consultancy work in the research area	15%	8
Events associated with public understanding of science and technology	26%	14

Potential career benefits¹⁴

Table 3.19

Have you experienced any of the following benefits as a result of the research project?		
Answer Options	Response %	Response Count
Membership of learned committee / professional society	21%	8
Awards/prizes	26%	10
Promotion/improved post	37%	14
Invited speaker at national conferences	55%	21
Invited speaker at international conferences	58%	22

Examples include:

- *"Paper in preparation as a result of additional work."*
- *"Plenary speaker abstract."*
- *"Articles published."*
- *"Chapter in book and conference papers also feeding into teaching."*
- *"Presented at a number of national and international conferences."*
- *"One of three to win the new SFI Royal Society SFI Fellowship, which will support me for the next four years."*

3.5.3 Reputational benefits

Engagement with the TIDA Programme has helped to generate reputational benefits for both the institute and for researchers. At the institute level, improved reputation (61%, 40), improved demand for engagement (42%, 28) and improved approachability (36%, 24). 20% (13) reported no reputational benefits.

¹⁴ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

Reputational benefits¹⁵**Table 3.20**

Has your engagement with the TIDA Programme generated any reputational benefits for the institute?		
Answer Options	Response %	Response Count
Improved approachability	36%	24
Improved demand for engagement	42%	28
Improved reputation	61%	40
No reputational benefits	20%	13

At an individual-level, 60% (41) reported improved reputation. Further benefits include; improved employability of staff (59%, 40), improved demand for engagement (43%, 29) and improved approachability (34%, 23). 15% (10) reported no reputational benefits.

Reputational benefits for the researcher/ research team¹⁵**Table 3.21**

Has your engagement with the TIDA Programme generated any reputational benefits for yourself/research team?		
	Response Percent	Response Count
Improved approachability	34%	23
Improved demand for engagement	43%	29
Improved reputation	60%	41
Improved employability of staff	59%	40
No reputational benefits	15%	10

Further comments include:

- *“Winning an SFI award brings kudos to the researcher and the institute.”*
- *“Enable me to achieve follow on funding that will keep me employed for 4 years; wouldn’t have had this without TIDA.”*
- *“Collaboration with external groups.”*
- *“Engagement in foreign funding programmes (e.g. Science without Border, self-funded students).”*
- *“Have been able to show the outputs to companies.”*
- *“This applied research area improves the universities industrial engagement focus.”*
- *“Improved recognition for a university that houses research with context for innovation.”*
- *“Improved reputation with industry.”*
- *“There is a growing awareness that the university can deliver on translational research.”*
- *“Increasing number of visitors to lab and invitations to international conferences.”*
- *“Increased collaboration with other institutes.”*
- *“Really useful for staff who have done a PhD and supports their career development.”*

3.5.4 Research and educational benefits

Researchers were asked if engagement with the TIDA Programme had generated any applied research benefits, educational benefits and networking benefits for the institute.

¹⁵ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

Key benefits highlighted by researchers include:

- applied research benefits – **strengthening of expertise in core research area**
- educational benefits – **improved teaching**
- networking benefits – **improved external networks – with other institutes/research organisations**

Research benefits¹⁶

Table 3.22

Has your engagement with the TIDA Programme generated any applied research benefits for the institute?		
Answer Options	Response %	Response Count
Strengthening of expertise in core research area	73%	48
Technology advancement	58%	38
Research stimulus	54%	36
More interest in applied research	45%	30
Knowledge flows	44%	29
No applied research benefits	11%	7

Examples include:

- "New projects eligible for applied research funding developed."
- "Research under TIDA award complementing and strengthening research previously developed, enhancing proprietary technology and international visibility."
- "Contributing to basic and fundamental knowledge in the research field, ultimately potentially contributing to their commercial applications."
- "Subsequently successfully competed for an Enterprise Ireland Commercialisation Fund."

Educational benefits¹⁶

Table 3.23

Has your engagement with the TIDA Programme generated any educational benefits for the institute?		
Answer Options	Response %	Response Count
Improved teaching	38%	25
Improved talent retention	31%	20
Improved talent attraction	28%	18
No educational benefits	31%	20

There are **a number of ways that the programmes have supported wider benefits, including back into education.** Some comments which shows how positive this can be include:

- "Undergraduate students' projects related to TIDA project contributing to training and degree."
- "Content included in EUV course for PhD students."
- "Helped researcher stay on a Tyndall and develop their career."
- "Part of the research work output was used in specialised lectures."
- "Am now getting more interest from abroad of exceptional students wishing to do PhD work"

¹⁶ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

Network benefits¹⁷**Table 3.24**

Has your engagement with the TIDA Programme generated any network benefits at the institute?		
Answer Options	Response %	Response Count
Greater engagement with VCs and angel investors	10%	6
Companies engaging with the institute (monetary value)	20%	12
Companies engaging with the institute (non-monetary value)	33%	20
Improved internal networks – within the institute	48%	29
Improved external networks – with other institutes/research organisations	49%	30
Improved external networks – other business support agencies/providers	31%	19
Improved external networks – with businesses	39%	24

Examples include:

- *“Additional internal collaboration with clinician and additional external collaboration with academic group and engagement in programmes funded by foreign agencies.”*
- *“Interaction with colleagues in UCC have developed and interaction with colleagues in TCD have increased.”*
- *“Strengthened links into Invent and protecting IP.”*
- *“Links into EI if you view TIDA as starting process.”*
- *“Formation of academic - industry collaborative partnerships.”*

3.6 Researcher competences

3.6.1 Applied researcher competencies

Improving the applied research competencies/skills of scientific researchers was viewed as an objective of the Programme. During our discussions with researchers we asked them to highlight what impact their involvement with the TIDA Programme had in relation to their abilities – as shown in the Table 3.26. Most researchers who responded to this question said TIDA impacted their ability on all competency areas. Key competency areas include:

- plan applied research projects
- solve problems in relation to research
- manage applied research projects
- recognise commercial opportunities

¹⁷ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

Applied Researcher Competencies¹⁸

Table 3.25

Has your involvement with the TIDA Programme made an impact on you in relation to the following abilities:				
Answer Options	None	Some	Substantial	Response Count
Manage information & communication linked to applied research	11	42	14	67
Manage information & communications linked to commercialisation	10	40	16	66
Develop, manage and maintain relationships with other departments	28	30	8	66
Develop, manage and maintain relationships with external agencies	15	39	11	65
Maintain relationships with commercial partners	12	34	20	66
Plan applied research projects	5	32	30	67
Manage applied research projects	10	30	27	67
Deliver applied research projects	9	28	27	64
Recognise commercial opportunities	7	28	29	64
Manage business opportunities through to successful outcomes	32	25	7	64
Market and promote your institute to commercial partners	21	32	11	64
Solve problems in relation to research	6	40	20	66
Solve problems in relation to commercialisation	18	37	10	65
Assessing next steps for clients – and opportunities for other solutions	22	33	9	64

3.6.2 Analysis of core skills required for successful commercialisation of research

Researchers were asked to comment on what they thought were the core skills needed to carry out successful commercialisation of research. As Table 3.25 shows, there is a broad range of views reflected in the following comments:

- *“Desire to be commercial.”*
- *“Drive and vision with some ability to see and monetise business opportunity.”*
- *“Involvement and leadership.”*
- *Clear commercialisation objectives and plans.*
- *“Project and financial management.”*
- *“Adequately resourcing.”*
- *“Risk taking of and management of risk.”*
- *“An understanding of how problems faced by industry require applied research and engineering to produce new solutions.”*
- *“Understanding competition.”*
- *“Clear route to commercialisation, idea of time to market, product that need can be clearly identified and described.”*

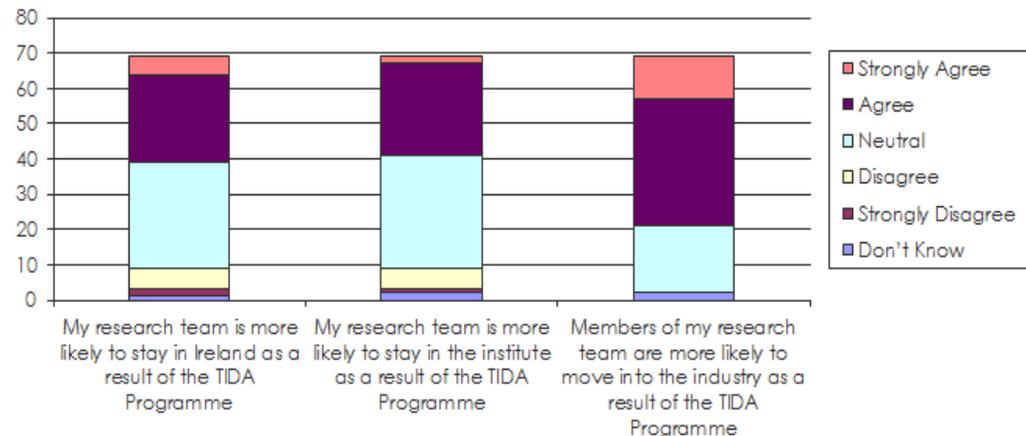
¹⁸ Respondents were able to answer multiple responses with percentage response relating to proportion of total respondents to question.

3.6.3 Impact on research team

Researchers were asked what impact the TIDA Programme has had on their research team. **69% (48) of researchers 'agreed' or 'strongly agreed' that members of their research team are more likely to move into the industry** as a result of the TIDA Programme. **43% (30) 'agreed' or 'strongly agreed' that their research team is more likely to stay in Ireland** as a result of the TIDA Programme. While 40% (28) 'agreed' or 'strongly agreed' that their research team is more likely to stay in the institute as a result of the TIDA Programme. This shows the strength of the programme in keeping people in Ireland and encouraging industry focussed research.

Impact on research team

Figure 3.1



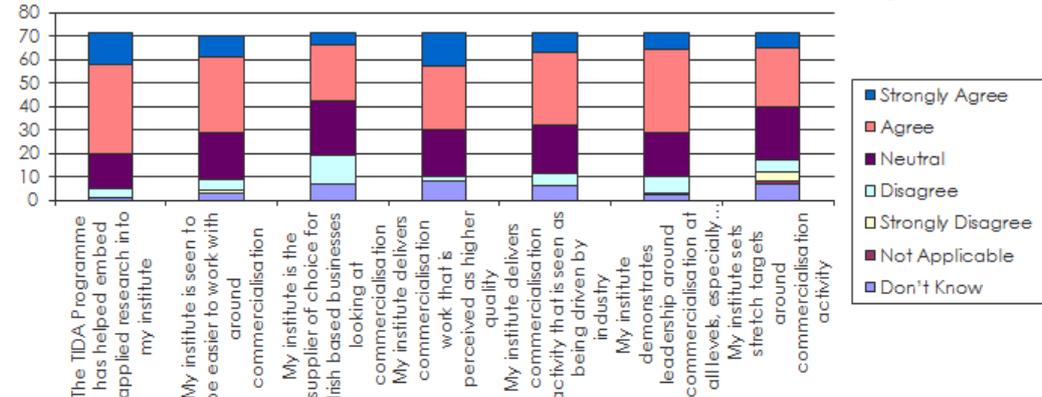
3.7 Perception of institute's commercialisation system and infrastructure

Researchers were asked about their perception of their institutes commercialisation system and infrastructure as shown in Figure 3.2. Researchers most strongly agreed with the following statements:

- the TIDA Programme has helped embed applied research into my institute
- my institute demonstrates leadership around commercialisation at all levels, especially from the top
- my institute delivers commercialisation work that is perceived as higher quality
- my institute is seen to be easier to work with around commercialisation

Perceptions of Institutes

Figure 3.2



The broad range of opinion is represented above and while many agreed or strongly agreed with all of the statements, many noted that TIDA is just part of the influencing mix.

3.8 The future

There are a **broad range of views on potential improvements** and these are shown below. What is worth mentioning is that many responses were made that said they felt the programme was excellent and that minimal change should be made to a successful programme. A selection of the other comments include:

- *"Extend length of time of the projects – a year is too short."*
- *"Feedback on examples of how TIDA has worked."*
- *"Mentoring by business experts with streamlining of approach to market."*
- *"Funding levels need to be maintained and if possible increased."*
- *"Extend it to others as well as current SFI PIs."*
- *Funding scheme to allow smoother transition to follow on TIDA or other award."*
- *"No continuity across the funding landscape - needs more joined up approach to funding."*
- *"Increase number of projects funded."*
- *"Eligibility criteria could be good to include options for earlier stage researchers."*
- *"Option on start date to align with getting person on time."*
- *"There should be more contact from the SFI during the project to help match make with clients."*

We note that in the current programme a number of these recommendations are already underway.

3.9 Unsuccessful applicant feedback – the counterfactual

As part of the evaluation process we interviewed a selection of 12 unsuccessful applicants to understand the counterfactual.

In spite of being unsuccessful, **none of the 12 participants rated the application process as either 'poor' or 'very poor'** – 4 rated it as 'very good' and 6 as 'good'.

Three rated the selection process as either 'poor' or 'very poor'. However, the same number rated it as 'good' or 'very good'.

Six of the applicants later successfully applied for funding to develop their technology through an alternative source. **One successfully reapplied for TIDA funding and two decided not to pursue the development** of their technology.

Feedback includes:

- *"It would be helpful if SFI offered signposting support to unsuccessful applicants, and maybe give a bit more feedback on potential development options for our technology."*
- *"The feedback I received was short and to the effect of 'my business plan didn't demonstrate enough understanding of the product and its route to market'. There should be some sort of programme to help you work out the route to market if that's not what TIDA is about."*
- *"A second annual call each year would be better. If you have a strong technology ideas two months after the call is made, it is unlikely that you would be able to wait 10 months to apply again, and you could lose your first to market advantage if you do."*
- *"The process was fine, and the form was of a reasonable length, but the feedback was minimal."*
- *"A fantastic programme. Although it is smaller than other Enterprise Ireland programmes, it is vital as it allows PI to get meaningful data very quickly in a way not possible under any other grant programme."*

4 Stakeholder Findings

As part of this review we interviewed a range of **institutional stakeholders** (VPs of Research, Technology Transfer Managers, Deans and commercialisation staff) that are internal to the research organisations that are delivering TIDA as well as **wider (non-institutional) stakeholders** across Science Foundation Ireland, Knowledge Transfer Ireland, Department of Jobs, Enterprise and Innovation and Science Foundation Ireland. A list of interviewees is presented in Appendix 1.

4.1 Context

The clear view across **all stakeholders is that TIDA is a very strong programme**. The wide range of benefits that were described demonstrate that TIDA can and is being used to meet a number of priorities.

The government drive to have education and innovation as an economic driver allowed TIDA to come into its own as a strong supporter of helping this to happen. **Applied research is now embedded as a strategic priority for institutes**, and practical examples of this is that entrepreneurship involving both staff and students is being embraced; one institute noted the development of a seed fund.

Institutional and wider stakeholders were in agreement that TIDA is an important programme in the commercialisation pipeline plugging a gap at the early Technology Readiness Levels. **Wider stakeholders noted that it is a good policy fit and aligns well with the new science strategy – Innovation 2020¹⁹**. One institute described TIDA as an important cog in the 'commercialisation machine' and another said that, should a hypothetical decision be taken to take away or downsize TIDA, it would represent "*one of the biggest steps backward for commercialisation in Ireland*". Wider stakeholders noted the TIDA allowed projects to be funded that were too early for Enterprise Ireland Commercialisation Fund and similar funds that support TRL4 and beyond.

Stakeholder across institutes noted that TIDA is not seen as a programme that would elicit commercial results straight away – but allows researchers to:

- 'put a toe in the water' to see if a commercialisation route was for them
- get research to a point where serious decisions could be made regarding the commercial possibilities of their technology
- answer technical questions based on serious research
- help move research up the technology readiness levels

While the **wider stakeholders shared these views**, some had reservations as to whether the projects funded always focussed on serious and commercial research.

The point was made across stakeholders that **every TIDA project is valuable because it leads to an answer**. If the technology is proven to work then the commercial possibilities could be explored with confidence and with some proof of concept. If the technology did not work then a great deal of time, effort and money could be saved through 'flagging this up early' and preventing unnecessary effort being allocated to developing the technology, and by having a robust level of data to inform this decision.

Institutional stakeholders noted that although a lot of the funding went towards addressing theoretical research problems, a number of examples were given where **TIDA was used as a tool for more 'entrepreneurial' researchers** to take their technologies to a level that decisions could be made on the best commercialisation routes to be taken for a product or process.

¹⁹ <https://www.djei.ie/en/Publications/Innovation-2020.html>

While wider stakeholders agreed with this point they emphasised that TIDA needed to maintain its focus on moving towards a commercial outcome as the key driver behind each project.

There was **curiosity amongst some institutional stakeholders around the 'joint ownership' of TIDA between Enterprise Ireland and Science Foundation Ireland**. For some this was a very good move as it makes it clear that applied research is 'pushed' by Science Foundation Ireland and 'pulled' by Enterprise Ireland. For others however it was felt that TIDA could be pulled in different directions and this would be detrimental to the programme. **Wider stakeholders viewed the programme ownership as benefitting from having both agencies involved**, especially given the key role that Enterprise Ireland plays in the commercialisation landscape and more specifically the ability to link the outputs of TIDA to other Enterprise Ireland support mechanisms.

4.2 Processes

The TIDA processes are viewed for the most part as user friendly, but a number of recurring themes emerged around:

- eligibility
- number of TIDA calls
- application time-frame
- application process
- queries
- ongoing support and monitoring
- fit in the wider public sector support landscape

In general wider stakeholders didn't know enough detail about the day to day running of TIDA to comment on the specifics around the processes, however they were able to provide insight based on their experience of this and other commercialisation programmes.

4.2.1 Eligibility

While eligibility criteria had widened institutional stakeholders still believed it could be further improved. It was felt that the current eligibility criteria is keeping good projects and potential 'entrepreneurs' away from taking research to the next commercial step. The main areas were in the requirement to have previous experience of Science Foundation Ireland funding for research or to be operating in a Science Foundation Ireland funded lab. These eligibility criteria were felt to discriminate against potentially good applications for no good reason, can lead to a 'Catch 22' situation, where younger researchers are unable to gain funding for projects that could potentially 'kick start' their academic careers, and could potentially limit the research capabilities of Ireland's Institutes of Technology. It was noted that **the move towards recognising non-Science Foundation Ireland award holders and including those that had held a competitively awarded grant worth €200k or more in the last five years was a step in the right direction**, but was still limiting to the early stage researchers who were struggling get on the individual research ladder.

4.2.2 Number of TIDA calls

There is one TIDA call each year. In some disciplines, for example life sciences, this is not believed to be a problem. However, in other areas – such as ICT/software the market is moving so quickly that the time taken to wait for a call can mean that the 'market window' has closed on potential projects. **Whilst not a unanimous view, there is a desire for there to be at least consideration given to introducing at least two calls per annum for TIDA applications**.

The open call was also suggested by a few stakeholders, however there was a more generally view that this would not work as it would not drive the right competitive behaviours and would be more inefficient. Wider stakeholders were generally happy with the one call per year approach but understood the differing sectoral needs, suggesting a two call approach could be piloted.

4.2.3 Application time-frame

The length of time over which applications are in the approval system was seen by some institutional stakeholders to compound the challenges associated with having only one annual call. The emerging view is that if TIDA is to remain credible (as a tool to support commercialisation) it must also be seen to act in a commercial timeframe, thus setting a standard from the start of the process that researchers can buy into. As with the number of calls, the view varied depending on the discipline involved, with life sciences for example seeing the approval process timescale as “*fine, bordering on quick*”. On the other hand, some felt that the timescales effectively meant that ICT proposals were “*not worth putting in*”.

4.2.4 Application process

Despite the views regarding the number of calls and the length of time it takes to gain approval, **the process is viewed as smooth and the fact that the application itself is not onerous is seen as a real bonus.** The general consensus across all stakeholders that the information required for a TIDA application is in line with what the programme is about and what it trying to achieve, though it was suggested **by wider stakeholders that a further question related to how the applicant plans to commercially take forward the developed technology may help to increase the proportion of awards that go towards projects with genuine market potential.** Those involved in the management of the TIDA process appreciate that with TIDA, potential applicants are not put off by their first contact with the approval process.

4.2.5 Queries

A point raised many times by institutional stakeholders is the **lack of ‘human interaction’ with Science Foundation Ireland during the preparation of TIDA proposals.** If a researcher has a query or requires a point of clarification that cannot be cleared with the Research or TTO offices then the only way to seek an answer is via e-mail. This system is not felt to assist the process as well as a simple and direct conversation by telephone. It is also felt that this does not allow any form of relationship building with Science Foundation Ireland; this was viewed as a key weakness particularly as many of the researchers are new to Science Foundation Ireland. Internal Science Foundation Ireland stakeholders highlighted that once contact had been made through email it was standard practice to provide a named contact point and telephone communication was offered as required.

4.2.6 On-going support and monitoring

A number of award recipients commented that **they received less contact with Science Foundation Ireland post award** (either in a supporting capacity or an auditing and monitoring capacity) than they would normally expect from a funder. While some viewed this lack of bureaucracy as a positive factor, **others felt that more ongoing advice and support would have helped them in developing their technologies as well as help identify, if applicable, the next stage in their route towards commercialisation;** wider stakeholders were in agreement with the latter point.

4.2.7 Fit in the wider public sector support landscape

There was generally a mixed view on the fit with other programmes. Some stakeholders noted **similarities between TIDA and Enterprise Ireland's Commercialisation Fund Programme, in terms of types of project supported and the objectives of the programme.** It was also suggested that, since TIDA was broadly focused on projects at Technology Readiness Levels (TRLs) 2-3 (sometimes 4), and the Commercialisation Fund was broadly aimed at TRLs 4 up to 6, **and as such there was a 'grey area' where the two funds potentially overlapped.** This was generally seen as appropriate, as it prevented projects from 'slipping through the net'.

However, **more stakeholders (particularly institutional) argued that, in spite of this, there was often a gap in the Irish commercialisation journey between the two funds,** with limited resources available for developing a prototype once a researcher has completed a TIDA project. Some institutional stakeholders highlighted that researcher were turned away from the Commercialisation Fund as their technology was too early and told to further develop it and reapply. Some wider stakeholders noted that while TIDA was viewed as a route to Enterprise Ireland Commercialisation Fund, to date only a small number of TIDAs had led to this, i.e. less than 5% since 2012. These wider stakeholders stated that **more was required to ensure the technology developed through TIDA reached a level where it was ready for the next available development stage, thereby helping minimise gaps.**

4.3 Benefits

Institutional stakeholders stated that the major benefit is that **TIDA fills a gap between research and full blown commercialisation.** This allows the TTO function to see potential products and processes emerge and for researchers to have the opportunity to see if they 'want' to take steps towards having a commercial dimension in their career.

Another real benefit of TIDA is that **the result of a project leaves it in a position to make choices on the next step** – from a position of well-informed strength. There is no wrong result – if technology does not work this saves a great deal of time, effort and money as an answer has been found.

Institutional stakeholders that what has been – for some – a surprising benefit is the range of different reasons for undertaking a TIDA that are catered for. Examples were given of:

- 'serial entrepreneurs' that are able to answer questions surrounding a technology
- researchers that are given an opportunity to test their entrepreneurial credentials and develop wide ranging applied research competences
- institute staff that are able to support and mentor more junior researchers

In all of these examples the word that emerged most often was "confidence". Confidence in the research that was undertaken, confidence in the results and confidence in taking a step down the commercialisation path.

One aspect that TIDA supports that is widely seen across all stakeholders as **a real positive is the availability of the entrepreneurship training;** this is run by the Ryan Academy and is now a compulsory element of the Programme. This is described an 'eye-opener' for researcher, giving them a real taste of what lies ahead if they intend to taking the commercialisation path sometime in the future. The great benefit is that this is a double edged support as it informs some of the approaches that they will have to adopt, whilst for others it will help them make the decision that commercialisation may not be for them and to focus on their research strengths.

Across both institutional and wider stakeholders TIDA was viewed as instrumental in supporting a shift towards applied research, especially amongst those researchers who were at an early stage in their careers; this was backed up by the researcher findings. Institutional stakeholders highlighted some concerns about the development paths for young applied researchers, noting that opportunities were harder to find, that there were limited longer term or tenured posts, and that many young researchers were moving to industry or leaving Ireland thereby taking their new skills with them. The negative impact that the Contract for Indefinite Duration (CID) was noted as a key driver of this and that this was having an impact beyond TIDA.

Wider stakeholders had some concerns that TIDA was being used to fund the development of postdoc talent, which was never its intention. They suggested that there may be a need for an alternative postdoc funding programme for this, and **that TIDA should be limited to supporting researchers with a genuine interest in commercialising their technologies.** We note that Science Foundation Ireland has expanded its early stage career development and as such the level of post docs funded through TIDA will be significantly reduced.

A final benefit mentioned by both wider and institutional stakeholders and the researcher was the **kudos associated with winning a Science Foundation Ireland award.** While TIDA is one of Science Foundation Ireland's smaller awards it still brings the branding and a robust peer reviewed assessment process that brings credibility to the winning PI and their researcher.

4.4 Improvements

Most of those interviewed stressed that they saw **TIDA as a very popular and successful programme and that any improvements that were suggested would need to be balanced to ensure that the focus of the programme remained as strong as it currently is.** Within this context, the improvements that were put forward for consideration are:

- **change eligibility criteria** to allow 'non- Science Foundation Ireland' researchers to come forward with proposals. We note that is now happening but this may need to be communicated more as there remains a view amongst wider stakeholders that the Science Foundation Ireland charter requires them to only fund research that is scientifically excellent and peer reviewed
- there should be **more than one call per annum** for TIDA proposals and the approval timescale should be reduced
- a question should be added to **the application around the commercialisation intent of the applicant** – we note the current application has a full section on this however wider stakeholder emphasised the importance of this
- the **lead-in time to project start dates should be lengthened** to allow for recruitment. It was emphasised that this issue was covered and well supported by Science Foundation Ireland who always agreed to 'no-cost' extensions to allow for recruitment
- the **one year time frame did not always meet a projects needs and project extensions** to, say, 18 months should also be considered; it was noted that the longer project would need to demonstrate that a further extension would take the project to a defined commercialisation output and further follow on funding to justify the additional support
- there should be **more 'commercial expertise' made available by Enterprise Ireland** to support projects that seem to have commercial potential; this support would help crystallise the next steps and should be at some point during the project not once the final report is submitted
- TIDA was tasked as generating a wide range of commercial outputs including patents, however there was **limited budget to fund patents** across the Irish institutional landscape and as such this target was viewed as difficult to achieve

- the entrepreneurship training is largely viewed as being very good indeed – but consideration should be given to also **delivering it in other areas outside of Dublin**; another improvement highlighted was to **split out the pitching** elements to allow the technology under development to be closer to completion so the grant holder had something more tangible to sell; the ability to capitalise on the **peer learning** was also mentioned, with a view to getting participants together following the course
- while the benefits and outputs are captured and tracked by Science Foundation Ireland for up to five years post project completion there seems to be **limited tie back to the metrics captured by Knowledge Transfer Ireland**; such that TIDA was not highlighted as an originator on the list of licences and spinouts

While these improvements were the most common ones offered one further improvement related to the TTO/research office being cut out of the loop. It was agreed however that this is really an internal issue for individual institutes to address and that the process had improved with the TTO/research office more involved as a result of the letter of intent now being a formal requirement during application submission.

4.5 The future

The big issue regarding the future was firstly **that TIDA was very important to supporting the mission of institutes to bring forward more applied research to support the economy**. The second was around **where the home for this funding mechanism will lie**. This raised the question: will TIDA continue to be a jointly funded programme between Science Foundation Ireland and Enterprise Ireland.

There are mixed views regarding this but a common theme across stakeholders is that this is an area **where 'clarity of mission' is required**. Institutional stakeholders like the support of Science Foundation Ireland in bringing forward research projects, they liked the kudos associated with winning a Science Foundation Ireland peer reviewed award and they also like the fact that Enterprise Ireland is involved to support the commercial element. Whilst this indicates strong support for the current joint approach, there is a level of concern that TIDA could become a 'political football' between two government agencies.

A further concern voiced mainly from wider stakeholders is in **finding ways to recognise the contribution that TIDA makes to the commercialisation process**. Because some TIDA projects start 'way back' in the process the contribution is in bringing research to the starting line. There are a few projects that will contribute tangible early stage results but these are currently in the minority. The reason that this is a **concern is because of the focus that is now given to demonstrating results** and TIDA does not currently do this to the same level as the recognised criteria for other – further down the line – programmes such as the Enterprise Ireland Commercialisation Fund. This may be addressed either through more on-going tracking by Science Foundation Ireland, although we note that they track for up to five years post completion of project, or more likely **through the involvement of a third party, such as Knowledge Transfer Ireland**, in evaluating the impacts of Irish public sector interventions taken as a whole.

5 International Review

An additional objective of the evaluation was to undertake a review of similar programmes in international regions and countries. In discussion with Science Foundation Ireland we agreed to review:

- Finland
- Denmark
- New Zealand
- Singapore
- Israel
- Scotland
- Brussels

We also agreed to review a programme run in North America as it contained an entrepreneurship training element.

We undertook a process of web based research to determine the extent to which there were programmes similar to TIDA. From this review, while we were able to find many applied research and innovation grants with a small number of comparable programmes in the 'proof of concept' space. A summary of the findings is presented below.

In summary:

- Finland – Tekes has developed a programme of support that focusses on commercialisation of the concept. These are one year long, university-led projects with two annual calls
- Denmark – The Danish Agency for Science and Technology previously provided a POC style programme through The National Network of Technology Transfer, however the programme seems to have been stopped as no information is available
- New Zealand – the Ministry of Science and Innovation lead the strategy for support, however their POC style programme are undertaken at a regional level through the network of eight universities
- Singapore – a POC programme is delivered by the National Research Foundation. University researchers can apply for 12 month projects and up to S\$250,000 to support development of commercialisable prototypes; two calls per year
- Israel – the Ministry of Science, Technology and Space provides a range of supports for academic researchers but no further information provided
- Scotland – Scottish Enterprise had moved away from funding their one year POC programme for academics towards a larger programme focussed on achieving high growth start ups. They still however fund the Royal Society of Edinburgh to deliver the Enterprise Fellowship programme which funds academics for one year to move their technology closer to market with a aiming of a spin out or licence; the programme includes entrepreneurship training
- North America - The National Science Foundation (NSF) Innovation Corps (I-Corps™) is a set of activities and programs that prepares scientists and engineers to extend their focus beyond the laboratory. Combining experience and guidance from established entrepreneurs with a targeted curriculum, I-Corps is a public-private partnership program that teaches grantees to identify product opportunities that can emerge from academic research, and **offers entrepreneurship training to student participants**

5.1 Finland – Tekes

Tekes can fund research projects, where scientists take the development of an idea further while preparing for the commercialisation of the idea into new business. Tekes funding can be applied by Finnish research organisations.

Tekes run a **New knowledge and business from research ideas projects**, the project group prepares the commercialisation of the research idea. The project examines possible paths to utilisation and the most promising route and method for taking the idea further. In addition, the possibilities of using the idea in the business of start-ups to be set up or developing it into new business in an existing company are investigated.

The project produces knowledge and competence that are significant for utilising a research idea. The research part of the project focuses on issues that play a key role in the commercialisation of the concept.

In preparation for commercialisation, eligible actions include:

- examination of the research idea from the perspective of commercialisation (Proof of Relevance)
- examinations of novelty
- determination of customer value
- surveys of competitors
- examinations of intellectual property rights
- experimental verification of the viability of an idea (Proof of Concept)
- mapping of funding models
- mapping of business models

New knowledge and business from research projects are up to one year in duration. No information was provided on level of funding.

No business participation is required in this project type. However, companies may lend their expertise to the work of the project's steering group. It should be noted that a participating company does not have a right of first refusal to the project results.

Two application rounds for research projects take place annually, in the spring and the autumn and applications are submitted online application. If necessary, funding is granted as phase funding, in which case eligibility for further funding will be assessed at the end of each phase. In addition to the results achieved, the assessment looks at new paths forward and whether or not the results achieved lend credibility to continuing the project.

Information source: http://www.tekes.fi/en/funding/research_organisations/new-knowledge-and-business-from-research-ideas/

5.2 Denmark – The Danish Agency for Science technology and Innovation

The Danish Agency for Science Technology and Innovation through the National Network for Technology Transfer did offer a proof of concept scheme to support the evaluation, development, and eventual commercialisation of early-stage technology from universities. However all links have now been removed and a number of calls have been cancelled due to budget cuts.

5.3 New Zealand – Ministry of Science and Innovation (MSI)

The Ministry of Science and Innovation (MSI) is the Government's lead agency charged with driving the science and innovation sector in New Zealand. It is also tasked with directing knowledge and technology transfer from the science and innovation sector to businesses and other research users. MSI was established on 1 February 2011 and is part of a broader Government focus to boost the science and innovation sector's contribution to economic growth.

University Commercialisation Offices of New Zealand (UCONZ) - was formed in 2005 to bring together the commercialisation offices of the country's eight universities and to establish closer links with commercial research partners.

A number of university have proof of concept funds or similar, for example:

- In November 2015 Applications for the inaugural Canterbury Proof of Concept Grant were opened, with \$50,000 grants to help commercialise new ideas, technologies or discoveries
- University of Otago has an annual Proof of Concept Competition open exclusively to University of Otago researchers. Otago Innovation Ltd is the University owned company that undertakes the University's commercialisation activities. Commercialisation can take many years and involves not only developmental research but also an understanding of markets, competitors and different business structures. As the University's commercialisation arm, and in recognition of the University's strategic intent to make commercialisation one of its key outcomes, Otago Innovation made grant available to a University researcher, or team, for Proof of Concept to help further research with commercial potential – no information was provided on value of length of project

Information source: <http://www.mbie.govt.nz/info-services/science-innovation>

5.4 Singapore – National Research Foundation (NRF)

The National Research Foundation launched a POC grant scheme to provide funding to researchers from public hospitals and institutes of higher learning (IHLs) to enable them to carry out further research on their inventions or ideas. The resulting product or application could then be licensed to interested companies or be marketed by a new company.

The POC grant is funded by the NRF under the National Framework for Innovation and Enterprise (NFIE). The NFIE is a comprehensive programme to grow innovation and entrepreneurship in Singapore. The NFIE has two goals: to commercialise cutting-edge technologies through the formation of start-up companies; and to encourage universities and polytechnics to pursue academic entrepreneurship.

POC project proposals are evaluated on a range of criteria such as project scope, innovativeness, technical soundness, market potential, manufacturability and scalability. Awardees are given 12 months to turn their ideas into commercialisable prototypes. Funding is up to S\$250,000. Calls are half yearly and in all areas of science and technology; generally fund 10 to 12 projects at each call.

Information source: <http://www.nrf.gov.sg/innovation-enterprise/national-framework-for-research-innovation-and-enterprise/proof-of-concept-grant>

5.5 Israel – Ministry of Science, Technology and Space

The Ministry's national programme for the development of Israel's scientific and technological infrastructures seeks to utilise the country's professional manpower and to realise the economic potential of those science and technology fields where Israel has a comparative advantage. The programme provides a framework for Ministry investment in research projects in national priority fields. Over 80% of the Ministry's budget is channelled toward research in academic institutions and research institutes, and toward cultivating human and physical scientific infrastructures. The aim is to create a critical mass of knowledge in national priority fields and to nurture the younger generation of scientists, thereby ensuring Israel's ability to face the challenges of the future.

The Ministry provides a range of supports including and programme of research grants to serve as a bridge between basic and applied research, and to reduce the amount of time needed for technological ideas to be translated into practical use. For this purpose the Ministry awards research grants of one to two million shekels each year.

There was no further information available on these grants.

Information source: <http://most.gov.il/English/research/Pages/default.aspx>

5.6 Scotland – Scottish Enterprise (SE)

The support for commercialisation of ideas from universities in Scotland has changed considerably over the last five years. Scottish Enterprise, lead agency for innovation support previously supported academic researchers through £100,000 POC grants to support the development of commercialisable research. The support has now been subsumed in their High-Growth Spinout Programme which supports the pre-commercialisation of leading-edge technologies emerging from Scotland's universities, research institutes and NHS Boards.

The Programme consists of three phases:

- **Proof of Commercial Opportunity** – to take commercially focussed (not blue sky) research proposals to a point at which the technology has been partially de-risked and shown to have commercial potential
- **Proof of Company** – to build on the technical work completed in the previous phase to move towards a working prototype that can be shown to have beneficial effects in a relevant environment, and prepare to transition the intellectual assets into a company setting
- **Proof of Investment** (available to companies spinning out as a result of support through the High-Growth Spinout Programme) – to secure significant private sector equity finance

The Programme awards cover 100% of direct project costs prior to company formation. The programme does not pay overhead costs. Support is divided into three phases, with progress from one phase to the next being dependent on rigorous assessment. Grants can be up to £500,000 and over a two to three year period as there is no maximum time. The Programme operates over four calls per year.

Information source: <http://www.scottish-enterprise.com/services/support-for-entrepreneurs/high-growth-spinout-programme/overview#>

5.7 Scotland – Royal Society of Edinburgh (RSE)/Scottish Enterprise

RSE Enterprise Fellowships enable promising science and technology researchers to grow into successful entrepreneurs. Awardees get to focus solely on refining their business ideas, whilst gaining access to some of the best commercial training and mentorship available in the United Kingdom.

Since 1996, over 180 individuals have benefited from this competitive and prestigious programme which is supported by Scottish Enterprise, BBSRC, STFC and HIE.

The programme is designed to encourage and enable the development of a new business based in Scotland around a technological idea developed by the Enterprise Fellow, either individually or with others, and within which the Enterprise Fellow would be expected to play a leading, though not necessarily the leading, role.

The Enterprise Fellowship programme provides entrepreneurship and business skills training through the participating Training Provider which will be directly relevant to the Fellow as they seek to build their new business. Fellows are expected to attend all the elements of the training and complete any requested assignments. When not attending the business skills training the Fellows will be expected to progress the development of their idea from a commercial perspective. Enterprise Fellows are required to devote all their time to the Fellowship as this is a full-time award.

The programme supports researchers with entrepreneurial ambition by providing:

- 12 month salary
- business training
- business mentors
- access to professional financial/entrepreneurial networks
- business development funding

The business training is provided by the Entrepreneur Business School, includes a 4-day bootcamp followed by 10 workshops.

Impact assessments conducted in 2008 and 2013 stated that from 180 awards, 80 companies were formed (of which over 60 were still trading at time of assessment), they had raised over £70m in follow on investment of which 90% was from private sources.

Information source: https://www.royalsoced.org.uk/564_EnterpriseFellowships.html

5.8 Brussels – European Research Council (ERC)

Offer a **"Proof of Concept" funding scheme open to researchers who have already been awarded an ERC grant**. Its purpose is to help ERC grantees explore the innovation potential of their research or support commercialisation of the results of their ERC-funded research. The funding is up to €150,000, and last 18 months. Calls are published once per year with three deadlines. Applications can be submitted at any time however will only be assessed during three rounds.

ERC note that this type of high-risk/high-gain research at the frontiers of knowledge that the ERC promotes often generates unexpected or new opportunities for commercial and societal applications. The ERC is committed to ensure the full exploitation of the excellent, useful ideas it funds. The Proof of Concept funding helps ERC grant-holders bridge the gap between their research and the earliest stage of a marketable innovation.

The grant is evaluated on the following criteria:

1. **Excellence (Innovation potential):** Proposals will have to demonstrate that the proposed Proof of Concept activity could greatly help move the output of research towards the initial steps of pre-commercialisation.
2. **Impact:** The proposed Proof of Concept is expected to generate economic and /or societal benefits.
3. **Quality and efficiency of the implementation** (Quality of the Proof of Concept plan): The proposed Proof of Concept is based on a sound approach for establishing technical and commercial feasibility of the project.

Information source: <https://erc.europa.eu/funding-and-grants/funding-schemes/proof-concept>

5.9 North America – NSF Innovation Corps Programme

The National Science Foundation (NSF) Innovation Corps (I-Corps™) is a set of activities and programs that prepares scientists and engineers to extend their focus beyond the laboratory and broadens the impact of select, NSF-funded, basic-research projects with the aim of commercialising technology that has been supported by the NSF. It does this as follows:

- the approach to entrepreneurship uses techniques developed to validate each commercial opportunity in a recognised, effective way: customer and business model development
- the vehicle for commercialization activities will most often be start-ups founded by the I-Corps participants; successful I-Corps projects will be prepared for business formation
- the I-Corps programs feed the NSF Small Business Innovation Research (SBIR) and Small Business Technology Transfer (STTR) programs
- NSF will work with the private sector to bring additional resources to the table (in the form of partnerships and finance), when warranted

Combining experience and guidance from established entrepreneurs with a targeted curriculum, I-Corps is a public-private partnership program that teaches grantees to identify product opportunities that can emerge from academic research, and **offers entrepreneurship training to student participants.**

I-Corps Teams – composed of academic researchers, student entrepreneurs and business mentors--participate in the I-Corps curriculum. The curriculum is administered via **online instruction and on-site activities** through one of several **I-Corps Nodes.**

I-Corps Sites are academic institutions that catalyse additional groups to explore potential I-Corps Team projects and other entrepreneurial opportunities that build on basic research.

NSF highlight that the I-Corps program is designed to strengthen the innovation ecosystem at local and national levels.

Information source: http://www.nsf.gov/news/special_reports/i-corps/index.jsp

6 Conclusions

The following conclusions have been drawn from our assessment of performance and our consultations with researchers and wider stakeholders.

6.1 TIDA is working well

All stakeholders were in agreement that **the TIDA Programme was working well, was well liked, with many viewing it as a very strong programme.** They noted a wide range of benefits which had come directly from TIDA including meeting government priorities to support innovation, entrepreneurship and commercialisation of research. **TIDA was seen as the only programme that allowed researchers at an early stage in their careers to “dip their toe in the water of commercialisation” while also supporting them establish their careers.**

The changes to the programme, including broadening the entry criteria, making the entrepreneurship training compulsory and including a letter of support from the TTO were all viewed as beneficial to the reach and importance of the Programme.

Despite it working well stakeholders noted some improvements; these are presented later in this section.

6.2 TIDA processes were user friendly with some room for improvement

For the majority TIDA processes were viewed as **user friendly and generally well-managed, with many citing the application process as straightforward.** However there were a number of recurring themes which if improved would make TIDA operate more effectively, these include:

- eligibility criteria – despite changes this was still viewed as limiting with many thinking the thresholds needed further lowering while maintaining excellence
- number of calls – while the majority liked the call process, one call per year was viewed as insufficient; this was particularly the case in ICT/software, where the time taken to wait for a call and the decision process, could often mean the market window had closed. There was a desire from most to increase to at least two calls per annum and open call was generally not the favoured approach
- application time-frame – this was generally viewed as “too long”, although it was dependent on the sector the impact this would have with those in ICT noting “it was often not worth putting an application in”. Wider and institutional stakeholders felt that TIDA must start to operate under more commercial timeframes if it was to remain a credible tool. If a two call approach was adopted then the timescales would have to tighten to accommodate this
- dealing with queries – the current system was viewed as lacking human interaction and a named contact point. It was felt that a simple telephone clarification system would improve this as well as help build the relationship between Science Foundation Ireland and new researchers
- ongoing support and monitoring viewed as very light touch - while there were mixed views on this with some liking the lack of bureaucracy and being left to “get on with it”, more felt that increased support would help to drive their technologies forward and would help support, where applicable, the next stage of technology development
- improved communication and market of the benefits of TIDA – researchers and stakeholders were able to highlight a wide range of benefit and impacts arising from TIDA, however Science Foundation Ireland don't proactively share the positive news stories and we suggest more could be done to communicate this. This could be aligned to future peer to peer support

- gap in the public sector support landscape – while the Enterprise Ireland Commercialisation Fund was viewed as the next logical step to develop the outputs from TIDA less than 5% had progressed to this. Researchers and institutional stakeholders felt there was often a gap when TIDA was finished and before further funding could be achieved. Reasons included the technology not being ready for commercialisation fund and the application process not happening soon enough for one to lead onto the other. The latter was viewed as an easier fix

6.3 Application process and support viewed as very good

Overall the process was described as **smooth and straightforward and well aligned to the programme objectives**. If support was required, it was accessible through Science Foundation Ireland and at an institutional level; the latter being more frequently accessed. While development points had been noted by some around increased focus on the commercialisation and markets for the technology, the current application has a full section on commercial opportunity which suggests this has already been taken on board; however, we are uncertain the extent to which it is reviewed at the peer review process.

6.4 TIDA is a route into the commercialisation pipeline

TIDA has positioned itself as a key route into the commercialisation pipeline, with some viewing it as the only mechanism to support pre TRL4 research if you are not linked to a Science Foundation Ireland applied or similar industry-focus research centre. TIDA has taken over the space that the Enterprise Ireland Proof of Concept programme used to fill, previously part of Commercialisation Fund and is now viewed as a route into this programme.

We believe however that is too narrow a view and the TIDA can and more often does provide researchers the ability to apply for funding from other areas, such as Innovation Partnerships, other Science Foundation Ireland grants, Innovation Vouchers and also wider state and non-state funding and that these potential funding routes could be marketed more. We note that Science Foundation Ireland has broadened its range of early career programmes and expect that there will be a reduction in the use of TIDA to develop postdoc talent.

6.5 Applications and success rates have increased

Since the programme was established in 2009 **applications have more than doubled** from 67 to 138 in 2013, and almost tripled in value from €5.3m to €12.7m. **Success rates have also been increased** from 2011 such that in 2013 almost two from three applications were successful after peer review. We believe this is one of the highest success rates of all Science Foundation Ireland programmes. Volume of applications and success rates varied considerably across institutes, with the top 6 institutes (TCD, UCD, NUIG, DCU, RCSI and UCC) accounting for 77% of applications and 72% of the successful ones. Interestingly DCU had the highest success rate at 95%, followed by UCC at 72% which was way above the average; perhaps some of the other institutes could learn from them.

Institutional stakeholders viewed the improving success rates as a result of a better application process which has benefited from the increased involvement of the TTO and research office during the preparation of the letter of support.

6.6 TIDA has been instrumental in affecting attitudinal change in applied research

There was general consensus amongst researchers that **TIDA was instrumental in supporting a shift towards applied research**. Researchers stated that without this support their projects would generally have not have happened, and almost half (48%) had been involved in further applied research. Most researches had also developed a wider range of applied research competences as a direct result of TIDA, with the highest in the plan, manage, deliver applied research projects and the ability to more easily recognise commercial opportunities. As a result of this over two thirds agreed that members of their research teams are more likely to move into industry as a result of the TIDA programme.

While **institutional stakeholders agree with these changes they highlighted concerns about the development paths for applied researchers**, noting that opportunities and posts were harder to find, that there were limited tenured posts, and that many young researchers were leaving Ireland or moving to industry, thereby taking their new skills with them.

6.7 Project has a clear place in the wider funding landscape

While TIDA and Enterprise Ireland's Commercialisation Fund Programme have many similarities in terms of types of project supported and the objectives of the programme, **it is clear that they complement one another and exist to serve different target groups**.

The research funding element of TIDA is generally targeted towards researchers who, hitherto, had primarily focused their careers on basic primary research, and is designed to encourage them to look for the commercial applications of a technology at TRL levels 2-3 (sometimes 4). The Commercialisation Fund, in contrast, is aimed at technologies at TRL levels 4 upwards, and is more specifically focused on identifying a route to market for the technology. **It is therefore clear that they complement one another and exist to serve different target groups and different Technology Readiness Levels**.

The entrepreneurship training element of TIDA also fills a unique space in the support landscape, which is not duplicated by any other programme.

6.8 Entrepreneurship training programme is well received

The entrepreneurship training programme, which is now a compulsory element of the programme, was extremely well received by researchers and both wider and institutional stakeholders. Delivered via the Ryan Academy in Dublin over 5 weeks, the course has now increased the original 8 sessions to 14 and regularly reviews the delivery. Some improvements were cited:

- broaden delivery beyond Dublin – although more highlighted that the Academy was quite accessible via public transport and was on the outskirts of the city
- run the course in a shorter timescales i.e. over 2 weeks intensive rather than 5 weeks at 2 days – however some felt that this would impact negatively on grants holders with family and would impact on application of learning
- split the pitching element to later in the grant development to allow the technology to be closer to a useable end point
- create increased opportunities for participants to capitalise on the peer to peer learning and maximise the potential for future collaborations across institutes and disciplines; splitting out the pitching would enable participants to come together at a later date

6.9 Awardees are getting both scientific outputs and commercial outputs (early stage)

TIDA has generated extensive applied research, educational and networking benefits for awardees with researchers noting strengthening of expertise in core research areas, improved teaching and improved external networks with other institutes or research organisations. The Programme has also helped to generate reputational benefits for both the institute and for researchers. There has also **been a wide range of commercial benefits** with 49% of researchers having an invention disclosure developed and 37% a patent as a result of TIDA. Just under half (48%) have also been involved in follow-on applied research projects that are closer to the market, while 44% have ongoing industry engagement.

Overall there was high levels of satisfaction with the Programme amongst researchers with 82% rating it 'good' or 'very good' and when compared to other support programmes 57% of researchers believe the TIDA Programme is better suited to their research needs. TIDA is seen to be supporting TRL levels 2-3 and sometimes 4 with researchers rating them highest in terms of quality of support provided. **TIDA is seen as one of many influencing factors on institutes overall commercialisation and research activities** – researchers also note the contribution of other programmes and the general culture of the institute.

While the benefits and outputs are captured and tracked by Science Foundation Ireland for up to five years post project completion to ensure that all future benefits are also captured, **there seems to be limited tie back to the metrics captured by Knowledge Transfer Ireland (KTI)**; such that TIDA was not highlighted as an originator on their list of licences and spinouts.

7 Recommendations

Based on the conclusions and findings from the evaluation we have developed a range of recommendations.

7.1 Continue to fund TIDA

TIDA has performed well as an early stage commercialisation support mechanism which has led to PIs and researchers accessing wider applied research support to further develop their TIDA technology. The Programme was viewed as meeting its objectives, encouraging early stage researchers to test the applied research field and operating in an area where there was limited other support. As a result we suggest TIDA continues to be funded.

7.2 Development of an approach to plug the gap between TIDA and Commercialisation Fund

Where TIDA reaches the end of funding and has an identified commercial potential but is not ready for further funding, **Science Foundation Ireland and Enterprise Ireland should agree an additional support mechanism to help make it 'funding ready'**; this maybe in the form of an extension to the existing project. Additional support should only be agreed if the researcher and project is able to demonstrate the ability to lead onto an application for future support such as from Commercial Fund or similar. Plugging this 'perceived gap' also has the potential to support continuity of the researcher's funding encouraging them to stay longer with the project.²⁰ We note that despite a gap being articulated, 84% of respondent researchers had still gone onto access further commercialisation support, which suggest TIDA was an excellent foundation on which to do this.

7.3 Increased commercialisation focus in TIDA applications

Since TIDA was established the application form has developed significantly, especially around commercialisation outputs, but has remained straightforward; the latter being very important to applicants. We suggest however more could be done to firm up the commercialisation plans, with the addition of a specific section/series of questions around applicant's commercialisation plans and the types of support they hope to access as the next step to project development.

7.4 Introduce a light touch interim review

To minimise the likelihood of the gap, **we suggest an interim review approach focused on the need for continued support to deliver an identified commercial benefit**; Science Foundation Ireland will still need to maintain its peer review standard. This review should occur in late Q3 or early Q4 to allow sufficient time for agree need for funding before current TIDA runs out. We note that the application asks for future commercial plans including future funding mechanisms and a planned review would help assess progress.

We suggest the review should be conducted by Science Foundation Ireland and Enterprise Ireland staff, possibly the Commercialisation Specialists, and the institute's TTO as they would be part of the team who would be responsible for supporting the commercialisation of the new technology. This would also help with the need for increased ongoing support post award, which was highlighted as requirement by some researchers.

²⁰ Possible only if CID does not apply

7.5 Broaden eligibility criteria

While it was agreed that the **changes to the eligibility criteria were positive, there is still scope to further improve these, will maintaining excellence.** The main suggestion would be to further expand access to this programme for those previously funded by other agencies. This is currently at €200k for one Science Foundation Ireland award in the last five years, which could either be changed to include other agencies or could be made up of multiple awards; one of which must be in excess of €100k to show ability to win high levels of funding. This would help increase the eligibility criteria for researchers who have accessed other forms of support beyond Science Foundation Ireland.

7.6 Increase number of calls

One call per year was viewed as insufficient; this was particularly the case in ICT/software, where the time taken could often mean the market window had closed. We suggest that **Science Foundation Ireland look to pilot a two call approach, possibly for the ICT/software sector** in the first instance to test the extent to which the applications increase.

7.7 Shorten time from application to award

There was consensus that the **time from submission to award notification was too long** as applicants did not hear until mid-November and were expected to recruit a researcher for a 1 January start. We suggest that where possible the assessment process be tightened to allow increased time for recruitment, but this be monitored with the aim that recruitment should happen within three months from award.

7.8 Increase flexibility in the start date

Aligned to the recommendation above, **if the application process can be tightened this will impact positively on the start date** with less impact on no cost extensions and the associated paperwork. However, if the process cannot be tightened then Science Foundation Ireland should explore the ability to have more flexibility in the start date to allow it to align with recruitment; again a three-month maximum delayed start should be agreed to minimise impact on spend profile.

7.9 Increase the communication with Science Foundation Ireland

Science Foundation Ireland's communication approach strives to be efficient, which sometimes necessitates tools such as generic email addresses. Science Foundation Ireland should however consider **moving away from an unnamed email contact point to having a named contact point or dedicated helpline** to support both applicants and grant holders. This was viewed as particularly helpful for new researchers and first time applicants to build a relationship with Science Foundation Ireland Science Foundation Ireland as well as get more hands on support.

7.10 Improve communication around the roles of Science Foundation Ireland and Enterprise Ireland

There was some curiosity around the 'joint ownership' of TIDA between Enterprise Ireland and Science Foundation Ireland with some viewing this as good and others believing it to be detrimental to the programme as this could pull the programme in different directions. **Science Foundation Ireland and Enterprise Ireland should provide more communication to applicants and stakeholder as to their roles in the Programme.** This could be done through the website, on the application form and in any wider communication. In addition, both parties should take more responsibility to promote the TIDA programme, particularly given its unique place in early stage TRL support.

7.11 Increase output verification

Science Foundation Ireland verify some of the outputs from the self-reported data but not all. It would be beneficial for Science Foundation Ireland to verify the wider self-reported outputs **to remove double counting and to capture not only those who are accessing further commercialisation funding but the value of this.**

7.12 Expand the entrepreneurship training element

Since the entrepreneurship training was introduced it has gone from strength to strength. Given the extremely positive feedback we suggest **Science Foundation Ireland should consider expanding the reach of the existing training scheme**, potentially to include additional providers across Ireland; this would include encouraging more researchers to attend and making it more accessible to those outside Dublin. This could be achieved through **utilising complementary, highly prestigious, and international training offerings including the addition of a distance learning component similar to the NSF I-Corps programme in North America.** A programme of this nature could inspire a new generation of technology entrepreneurs.

7.13 Creation of an alumni to support peer development

Grant holders or their researchers already come together through the Entrepreneurship Training Programme, however there is no formal opportunity for follow up; although some researchers have noted collaboration with peers after the programme was finished. **We suggest the creation of an alumni of participants to capitalise on the peer to peer learning and maximise the potential for future collaborations across institutes and disciplines.** The alumni could be further used to share their experiences about the programme with new awardees, showing them what is possible and the journey they undertook to get there.

7.14 Split the pitching element from the entrepreneurship training course

The course now includes 14 sessions run over 2 day per week for 5 weeks – the majority are full days. Many grant holders indicated that it would have been beneficial to **separate out the pitching elements of the course to enable them to further develop their technology into something more tangible.** We suggest that the Ryan Academy look to piloting this approach; this would also allow an opportunity for grant holders to come together again during the Programme and share how things were progressing.

7.15 Build on Science Foundation Ireland post award monitoring to ensure TIDA originator is captured

Benefits and outputs are captured and tracked by Science Foundation Ireland on an annual basis for up to five years post project completion. To improve the understanding of where TIDA has impacted on the development of licences and spin outs – which is a key objective of TIDA – **it will be important to align these with the information already captured by Knowledge Transfer Ireland.** This would allow Knowledge Transfer Ireland to show where TIDA has been an originator.

7.16 Need for increased internal resource

We have highlighted a number of recommendation that are likely to involve further support from Science Foundation Ireland and partners, including:

- establishing an interim review process
- increasing flexibility of start date which will have grant management implications
- increasing funding calls
- named email and ongoing support
- liaison with Knowledge Transfer Ireland

We therefore suggest that should you take on these recommendations that **Science Foundation Ireland should increase the resource of the team** and possibly assign a TIDA Programme manager who would have responsibility for the day to day management and wider support and communication role.

Frontline
February 2016

List of Consultees

Researchers (77)

Greg Hughes	Dublin City University
Mary Pryce	Dublin City University
Prof Tia Keyes	Dublin City University
Prof Liam Barry	Dublin City University
Dr Ronan Murphy	Dublin City University
Patrick McNally	Dublin City University
Aidan Meade	Dublin Institute of Technology
David Dowling	Carlow Institute of Technology
Rhodri Ceredig	National University of Ireland - Galway
Thomas Barry	National University of Ireland - Galway
Adrienne Gorman	National University of Ireland - Galway
Andrew Flaws	National University of Ireland - Galway
Donal Leech	National University of Ireland - Galway
Stephen Cunningham	National University of Ireland - Galway
Bob Lahue	National University of Ireland - Galway
Prof Abhay Pandit	National University of Ireland - Galway
John Lowry	National University of Ireland - Galway
Bryan Hennelly	National University of Ireland - Maynooth
Paul Moynagh	National University of Ireland - Maynooth
Leonie Young	National University of Ireland - Maynooth
Ann Hopkins	Royal College of Surgeons
Stephen Kelly	Royal College of Surgeons
Fergal O'Brien	Royal College of Surgeons
Prehn	Royal College of Surgeons
Marc Devocelle	Royal College of Surgeons
Suresh Pillai	Royal College of Surgeons
Siobhan McLean	Sligo Institute of Technology
Joanna Tierney	Tallaght Institute of Technology
Paula Colavita	Tralee Institute of Technology
Jacintha O'Sullivan	Trinity College Dublin
John Donegan	Trinity College Dublin
DR. Ramesh Babu	Trinity College Dublin
Marina Lynch	Trinity College Dublin
Patrick Walsh	Trinity College Dublin
Prof. Dr. Mathias O. Senge	Trinity College Dublin
Kingston Mills	Trinity College Dublin
Lynette	Tyndall National Institute
Brian Corbett	Tyndall National Institute
Jian Zhao	Tyndall National Institute
Alan Mathewson	Tyndall National Institute
Emanuele Pelucchi	Tyndall National Institute
Peter Kennedy	Tyndall National Institute
Eric Moore	Tyndall National Institute and University College Cork
Brendan Roycroft	Tyndall National Institute, University College Cork
Nic Wilson	Tyndall National Institute, University College Cork
Dean Venables	University College Cork
Anita McGuire	University College Cork
Ger McGlaken	University College Cork
Ruslan Dmitriev	University College Cork
Andy Ruth	University College Cork
James Rohan	University College Cork
Jennifer Mahony	University College Cork
Richard Winfield	University College Cork
Donagh O'Mahony	University College Cork
Dr Paul Hurley	University College Cork
Des Field	University College Cork
Colm O'Dwyer	University College Cork
Mark Tangney	University College Cork
Tom Moore	University College Cork
Gerry O'Sullivan	University College Cork
Michael Gilchrist	University College Dublin
David McHugh	University College Dublin
Madeline Murphy	University College Dublin
David O'Connell	University College Dublin

Dominic Zerulla
Gerry O'Sullivan
Eoin Casey
Breandan Kennedy
Professor David Brayden
Kevin M Ryan
Conor Ryan
Elfed Lewis
Gary Walsh
Gabriel Leen
Patrick Frawley
Ruairí de Fréin
Laurence Fitzhenry
Brendan Jennings

University College Dublin
University of Limerick
Waterford Institute of Technology
Waterford Institute of Technology
Waterford Institute of Technology

Unsuccessful Applicants (12)

Charlie Spillane
Gemma Kinsella
Marc Devocelle
Celine Marmion
Daniel Kelly
Peter Kennedy
Anita McGuire
Ger McKlaken
Paul Young
Patricia Maguire
Padraig Cunningham
Emmeline Hill

National University of Ireland - Galway
National University of Ireland - Maynooth
Royal College of Surgeons Ireland
Royal College of Surgeons Ireland
Trinity College Dublin
Tyndall National Institute and University College Cork
University College Cork
University College Cork
University College Cork
University College Dublin
University College Dublin
University College Dublin

Institutional Stakeholders (31)

Ronan Coleman
Niall Smith
James O'Sullivan
Peter McLaughlin
Jack McDonnell
Ken Campbell
Dave Corkery
Siobhan Cusack
Jill Haynes
Anita McGuire
Patrick Morrissey
David McGovern
Eoin O'Reilly
Karl Quinn
Emma O'Neill
Anne Louise Holloway
Alan Harvey
Ena Walsh
Hugh Hayden
Orla Feely
Ray Stallings
Aoife Gallagher
Fiona Manning
John Bolan
Margaret Woods
John Whelan
Graham McMullin
Emily Verker
Jacintha Thornton
Gary Lupton
Donal Leech

Cork Institute of Technology
Cork Institute of Technology
Waterford Institute of Technology
Waterford Institute of Technology
Tallaght Institute of Technology
Tallaght Institute of Technology
University College Cork
University College Cork
University College Cork
University College Cork
Tyndall National Institute
Tyndall National Institute
Tyndall National Institute
Dublin City University
Dublin City University
Dublin City University
Dublin City University
University College Dublin
University College Dublin
University College Dublin
Royal College of Surgeons Ireland
Royal College of Surgeons Ireland
Royal College of Surgeons Ireland
Trinity College Dublin
National University of Ireland - Galway
National University of Ireland - Galway
National University of Ireland - Galway

Non Institutional/Wider Stakeholders (9)

Alison Campbell
Niamh Collins
Marcus Breathnach
Gearoid Mooney
Deirdre Glenn
Darrin Morrissey
Lisa Murphy
Peter Clifford
Fiona Mansergh

Knowledge Transfer Ireland
Ryan Academy
DJEI
Enterprise Ireland
Enterprise Ireland
Science Foundation Ireland
Science Foundation Ireland
Science Foundation Ireland
Science Foundation Ireland