

National Review of State Supports for PhD Researchers

First Report

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Contents

1. Foreword	3
2. Policy Context	4
2.1 Impact 2030	4
2.2 Impact 2030 Pillar Four - Talent	4
2.3 Research Talent: a Global Market	6
2.4 International Comparators	9
3. Parameters of this Review Exercise	15
3.1 Background	15
3.2 Terms of Reference	15
3.3 Methodology	15
3.4 First Report Review Considerations	16
4. PhD Supports including Financial Supports	17
4.1 Current Financial Supports	17
4.1.1 Current Budget Stipend Allocations	18
4.1.2 Adjustments to Current Financial Supports	19
4.1.3 Attractiveness of PhD opportunities	20
4.1.4 Hypothetical Alternative Stipend	20
4.1.5 Potential Implications of any Stipend Change	21
4.1.6 Recommended Actions – Current Financial Supports	23
4.1.7 Areas for Further Examination	23
5. Graduate Outcomes	25
6. Visa requirements and duration for non-EU students	28
6.1 Context	28
6.2 Stakeholder Perspectives	28
6.3 Recommended Actions	29
6.4 Areas for Further Examination	29
7. Conclusions & Next Steps	30
Appendix A	32
Appendix B	33

1. Foreword

We were honoured to be invited by the Minister for Further and Higher Education, Research, Innovation and Science to undertake this independent review and we are delighted now to present our first report to him. Our work has been framed by Ireland's vision, under *Impact 2030*, that ***"We will be a global leader in nurturing, attracting and retaining talent to drive research and innovation in our higher education and research system, enterprises, communities and public services"***. Realising this vision will be vital to our national performance in so many areas, including climate action, digital transformation and regional enterprise development. Achieving it will depend on how well we support our greatest asset, our people, to reach their full potential in Ireland.

Our review was framed by the question "What does great look like for Ireland?". Our research and innovation system is the foundation for Ireland's pursuit of a globally competitive knowledge-based economy. People are the lifeblood of that system and PhD researchers represent the first seeds of our research talent pipeline. As our starting point, we recognise that PhD researchers are highly skilled graduates who have many career options open to them, particularly in an economy with near-full employment. They are our researchers and innovators of the future: the researchers who we will depend upon to tackle the next global pandemic and the innovators who will use research to create solutions to the multiplicity of economic and societal challenges that we face. We reviewed leading international PhD programmes and leading comparator countries and we believe Ireland should aim for these standards, acknowledging that it will take us time to get there from this starting point.

It is important to note that this review is the first of its kind in Ireland where the totality of the supports available to PhD researchers have been reviewed holistically. It reflects *Impact 2030's* objective for a consistent research student experience across funders, institutions and research disciplines. The imperative for such consistency has arisen from the variety of practices that have organically emerged as Ireland has developed its national research and innovation system over the last quarter of a century. Because of this review's unprecedented nature, for which we commend the Minister, it has surfaced an enormous range and volume of policy issues, some of which were unanticipated and some of which fall outside our scope. Many of them, if not most of them, are complex and interconnected. We encourage the Department of Further and Higher Education, Research, Innovation and Science to now continue the work that we have started on important themes that require deeper analysis than was possible in our timeframe. Many of these will require interdepartmental coordination (for example, the status of PhD researchers). We are delighted that our work has initiated those discussions, and we commend and thank all other Departments for their very constructive engagement with us during our consultation.

There have been some elements of the Review about which there has been a great level of stakeholder consensus, as well as the need for an urgent response from a PhD researcher perspective. These pertain to the general stipend level and to particular challenges that non-EU/EEA PhD researchers in Ireland are encountering. Our recommendations for these have been prioritised and are outlined below, as are our recommended areas for future further work under the Review's other elements. Progressing our recommended actions matters not only for the PhD researchers concerned. It is a matter of national importance that we attract and retain the best research talent from all sources, including ensuring it is an attractive career path for graduates of Irish universities. In doing so, we will be giving individuals, their organisations and the country, the best possible chance of future economic and societal success.

Dr Andrea Johnson and Mr David Cagney

2. Policy Context

2.1 *Impact 2030*

In May 2022, D/FHERIS launched [Impact 2030](#), Ireland's national research and innovation strategy to 2030. This is a whole-of-Government approach to the next phase of the development of the Irish research and innovation system. It leverages Ireland's performance to date and reflects how the national and global wider environment has evolved since the last national strategy was published in 2015.

Building on the ongoing economic impact of research and innovation, and in line with international policy developments, *Impact 2030* also works to ensure that it delivers wider tangible societal value and helps to address major challenges of our time. The importance of research and innovation was never more clearly demonstrated than in the global and national response to COVID-19. This experience also demonstrated the value of excellent research in all disciplines and of interdisciplinary activity, for instance, through the part played by behavioural science in increasing vaccine uptake.

2.2 *Impact 2030* Pillar Four - Talent

In line with research and innovation policy internationally, *Impact 2030* recognises that *“People lie at the heart of Ireland's national R&I performance and its international reputation. They make new discoveries and teach students. They work in, transform and create enterprises. Their work in research laboratories, libraries, hospitals, clinical research facilities and the public sector is critical to the embedding of research and a research-driven culture in these settings. The availability of R&I talent will be a key component in addressing the disruptive impacts of digitalisation, adopting climate-friendly business policies, driving new scalable start-ups, and winning Foreign Direct Investment in the future”*.

Impact 2030's dedicated Talent Pillar articulates the vision agreed across Government that, by 2030,

“We will be a global leader in nurturing, attracting and retaining talent to drive research and innovation in our higher education and, enterprises, communities and public services”.

Within this, *Impact 2030* seeks a consistency of research student experience across providers, funders and research disciplines.

Ireland nurtures future researchers and innovators through its higher education institutions and their doctoral programmes. PhD researchers and PhD graduates are critical to the institutions' future performance and the success of knowledge-intensive enterprises, both indigenous and foreign-owned, across the regions. *Impact 2030* also aims to widen the impact of PhD graduates through greater mobility into other sectors, for example, the public sector and civic society organisations.

In order to ensure there are sufficient and suitably qualified personnel to progress Ireland's R&I leadership ambitions, *Impact 2030* includes an approved national target to increase the number of researchers (FTE) per 1,000 in the labour force from a baseline of 9.52 (2019) to 15.00 by 2030. This metric was developed in collaboration with the Department of Enterprise, Trade and Employment

(D/ETE) based on its agencies' client company developmental needs. (According to data from the Central Statistics Office, it reached 10.51 by the end of 2020.) Its ambition is grounded in evaluations of research investment which attest to its role in a company's success and in its survival.

For example, D/ETE's 2016 [Review of Economic and Enterprise Impacts from Public Investment in R&D in Ireland](#) found that:

- R&D activity in agency firms (with ten or more persons engaged) is a characteristic of firms that have been driving growth in sales, exports, and value-added from 2003 to 2014.
- R&D is an activity of firms that contributed most to employment between 2000 and 2014 in agency firms in the manufacturing and services sectors; and
- Employment in R&D roles has been more resilient than employment in other roles in the manufacturing sector between 2000 and 2014.

Its 2017 [Review of Capital Expenditure on R, D & I \(2000-2016\)](#) similarly found that:

- Non-RDI-active firms were responsible for the greatest job losses during the recession, while innovation-active firms displayed greater resilience and growth in terms of rates of employment, exports and value-added.
- Pay levels in RDI-active firms were 10% ahead of the agency average and 66% higher than the economy in 2014.

The economic return to the individual PhD graduate can also be demonstrated. 4 in 5 Postgraduate Research Graduates earn salaries of more than €35,000 per annum, 9 months after graduation. This compares with 4 in 5 Bachelors degree graduates, who earn €25,000 per annum (HEA Graduate Outcomes 2021). Graduates with Level 9 awards (masters degrees and postgraduate diplomas) earned €655 per week while those graduating with an NFQ Level 10 qualification (doctoral degrees) had the highest weekly earnings of €815 per week in the first year after graduation. The recently published [HEA Graduate Outcomes Survey 2021](#) found that 90% of doctoral graduates were in employment nine months after graduation, with 85% of the total working in Ireland. This compares with 76% of honours degree graduates.

Over a ten year timeframe, data from the cohort of 2010 graduates suggests that NFQ level 10 graduates' median yearly earnings for each year in the ten years following graduation are on average €13,015 higher than graduates from NFQ level 9 qualifications. Thus in the ten years following graduation, NFQ level 10 graduates have earned an additional €130,146. [Analysis](#) of the highest earners (those in the 75th percentile, rather than the median) shows that this difference increases to €177,814. At an international level, the most recent data from [OECD](#) indicates that those holding doctoral or equivalent degrees have the highest employment rate of any educational attainment level in almost all OECD countries.

Impact 2030 recognises the importance of fostering the totality of the research talent pipeline, encompassing both the various stages of a researcher's career development and the need for enhanced mobility between sectors. In respect firstly of career stages, while this Review is concerned solely with PhD researchers, we fully acknowledge that this is the starting point of a researcher's progression. This is in line with the call in the 2021 Higher Education Research Group review for "examination in terms of the demand for researchers at different career stages and the scope for early-stage researchers to progress within the research system in higher education", with a view to "ensuring an appropriate and sustainable pipeline". Increasing the number of researchers in the labour force, as per the *Impact 2030* national target, will involve appropriate support at these different stages so that we "Invest in research talent across the full span of a research career as a foundation for an

innovative society". It will be advanced through (but not limited to) D/FHERIS's planned flagship talent programme to support researchers in their early-stages and at mid-career.

With respect to intersectoral mobility, thanks to global, societal and technological developments, there is a growing range of possible careers that PhD holders can pursue. The [OECD Ireland Skills Strategy Report](#), published on 9 May 2023, makes the following relevant recommendations so that Ireland can best leverage these opportunities:

- Advance further research to better understand current and future demand for research graduates and the mobility of research talent between academia, industry, the public and voluntary and community sectors.
- Strengthen careers guidance for research graduates and better integrate transversal skills development into research training at all levels.

These OECD recommendations resonate strongly with the views of stakeholders, based on their experience and expertise, heard during this Review. PhD researchers have the potential to make an invaluable impact on the spectrum of organisations with whom they can potentially gain employment. A more granular analysis of the nature of demand, for instance, between doctoral and Masters by research graduates, and across FDI and the indigenous enterprise sectors, would help shape provision as well as individual career choices. While this is beyond the scope of our review, we recognise that opportunities to undertake PhDs need to be matched with appropriate career opportunities on completion and we encourage D/FHERIS to continue its work in this regard.

PhD qualifications are an essential part of skills mix required for a competitive knowledge based economy. Gaining a PhD qualification is impactful for the individual, their higher education institution and the wider economy.

2.3 Research Talent: a Global Market

Our review was framed by the question "What does great look like for Ireland?". **First and foremost we recognise that PhD researchers are highly skilled graduates who have many attractive and lucrative career opportunities available to them.** In a time of near full employment in a small advanced economy like Ireland, the prospect of a four-year full-time study commitment with variable responsibilities and outcomes, needs to be an attractive career option in the short and long term.

Research and innovation operates in a global market and the quest for talent takes place in a particularly competitive sector internationally. Our research and innovation system is the foundation for Ireland's pursuit of a globally competitive knowledge-based economy. People are the lifeblood of that system and PhD researchers represent the first seeds of our research talent pipeline. They are our researchers and innovators of the future: the researchers who we will depend upon to tackle the next global pandemic and the innovators who will use research to create solutions to the multiplicity of economic and societal challenges that we face.

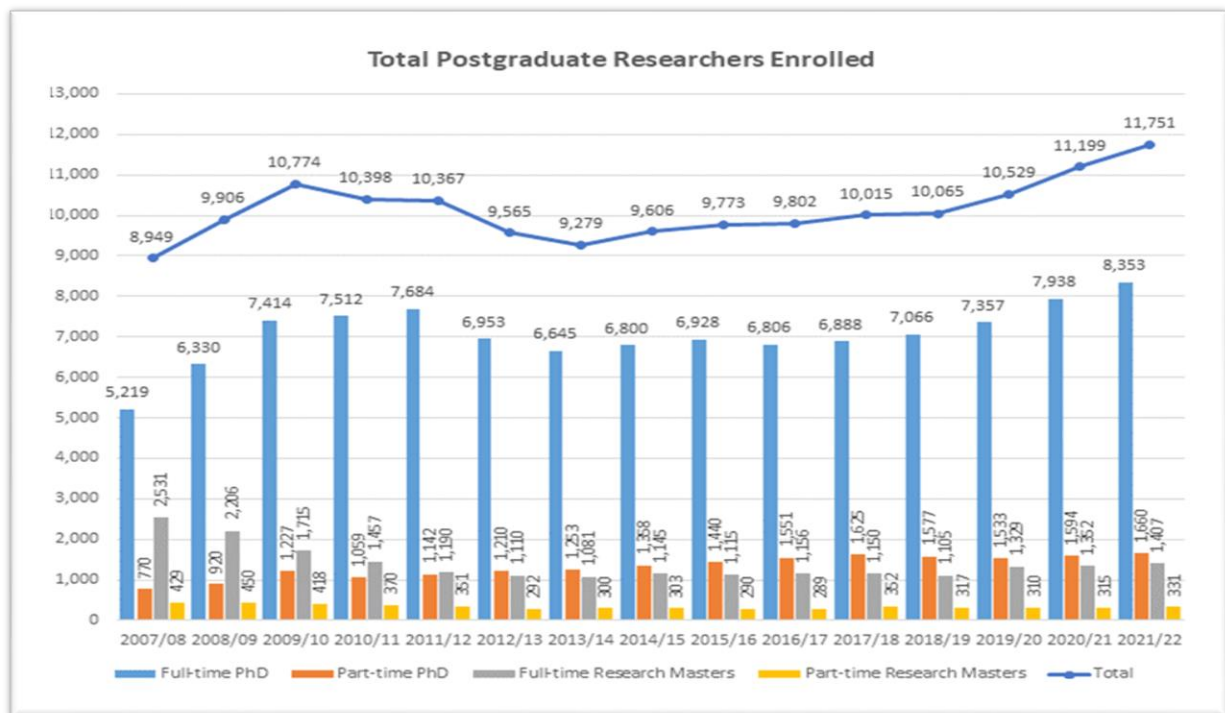
Careers in research and innovation operate in the context of a changing world of work and employment opportunities. The recently published OECD Ireland Skills Strategy Report observes that *"Countries must strive to ensure skills are used as intensively as possible in the economy, workplaces and society. Technological advancement, globalisation, demographic change, the green transition and, more recently, Brexit and the coronavirus (COVID-19) pandemic continue to challenge Ireland to raise*

productivity, innovative capacity and competitiveness. [...] Rising to this challenge is crucial to Ireland's future success."

We must position these trends too within the context of global R&I shifts: the [EU Innovation Agenda](#) cautions that **"the EU appears to be losing the global race for talent. Skilled researchers and potential academics have moved from the EU to the US, and the EU has been less successful than other OECD countries such as the US, Canada and Australia in attracting global talent at earlier career stages including at PhD level"**.

Global R&I relations are increasingly underpinned by an appetite to be at the cutting edge of technological developments, for instance, in artificial intelligence, cybersecurity and telecommunications. The European Union has moved from an open collaboration stance to one of developing strategic autonomy in particular research areas. Previously unimagined geopolitical developments are also creating a risk that existing global knowledge and talent flows may become constrained or disrupted into the future.

Within both the worlds of work and R&I, the equality, diversity and inclusion (EDI) agenda has rightly moved increasingly centre-stage. It is a priority under *Impact 2030* and we observe it as a wider D/FHERIS strategic priority. As well as being intrinsically appropriate, ensuring the talent pool is as large as possible is in everyone's interests and, while not an explicit element of this Review, equality of opportunity needs to form an integral part of any future national approach to PhD provision.



Source: Higher Education Authority Student Records System

[Statistics](#) from the HEA find that, between 2007 and 2021, PhD (Level 10 full-time and part-time) enrolments increased from 5,989 to 10,013, i.e. an increase over 67.2%. With particular regard to domiciliary of origin and available data over the five years between 2016/17 and 2021/22, PhD enrolments from:

- Ireland increased from 5,902 to 6,048, i.e. by 2.5%,

- Non-EU countries (not including the UK) increased from 1,422 to 2,677, i.e. by 88%,
- Northern Ireland increased from 32 to 81, i.e. 153%,
- Great Britain increased from 136 to 225, i.e. 65%,
- EU (Other) increased from 705 to 981, i.e. 39%.

A positive feature of the Irish research landscape is that our doctoral cohort has strong internationally diverse representation. Approximately 30% of our PhD researchers are from abroad, compared to an EU average of 20%, from which one could infer that the totality of Ireland's offering to PhD researchers is relatively more attractive than in other EU Member States. While overall enrolments have increased, these data suggest that current stipend levels here are significantly less attractive to students from Ireland in particular than those coming from other jurisdictions. This is consistent with experiences shared by stakeholders during the consultation process. Further work is required to determine the stipend levels within these cohorts.

Funding agencies and institutions are also reporting non-completions or even, in some cases, non-commencement of a PhD (after an award is made). While the emerging evidence on this is anecdotal at this juncture, it suggests that while applying for a PhD award may seem initially attractive, take-up or completion of the PhD programme is less clear. It is not clear what guidance is provided to international awardees about the cost of living in Ireland. This finding is also supported by written submissions received as part of the public consultation. There is an evidence gap here which we recommend is addressed in the future.

The strength of international PhD enrolments in Irish HEIs speaks strongly to the quality of the Irish PhD offering. The much smaller increase in domestic enrolments however indicates that, upon completion of an undergraduate programme, other career options are now more appealing. Career advice will also play an invaluable role in attracting the top talent into research careers here, both from abroad and from across Ireland. While research should always remain a global endeavour, we need to ensure that we are also nurturing our domestic talent pool, as well as attracting high quality talent from abroad. In a highly competitive and global environment, obtaining a PhD qualification here in Ireland needs to be viewed as a strategic and sought after career move for Irish university graduates, as well as attractive to international talent, if we are to develop a sustainable knowledge-intensive economy and society in Ireland.

Competition for research talent also necessarily involves successful progression within a PhD programme and retention of PhD graduates on completion. We need to pay greater heed to the retention of domestic and other research graduates, upon completion of their PhDs, in Ireland. While this is beyond the scope of our review, we recognise that opportunities to undertake PhDs need to be matched with appropriate career opportunities on completion and we encourage D/FHERIS to continue its work in this regard. If we are to maximise the contributions of our PhD graduates, be that in enterprise, academia, civil society or the public sectors, we need to ensure that the wider research talent pipeline is as attractive and accessible as possible.

Global competition for talent in the research and innovation sector is intense and the context is changing with geo-political developments. While Ireland is an attractive international location for PhD education, it is important to build on this attractiveness and also ensure Irish students consider PhD qualification as an attractive career option in an economy at full employment with elevated costs of living.

2.4 International Comparators

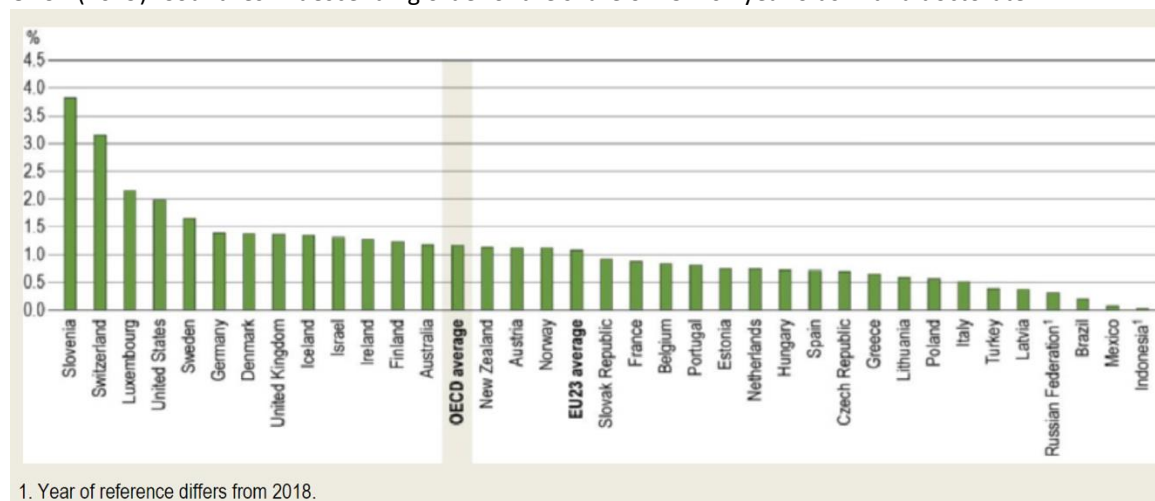
Impact 2030 sets the ambition of Ireland being “...a global leader in nurturing, attracting and retaining talent to drive research and innovation in our higher education and, enterprises, communities and public services”. Recognising that research and innovation operates in a global environment, that PhD researchers are highly skilled graduates with many options, and the need to make PhD careers attractive for both domestic and international graduates, we reviewed how PhD supports operate in a number of similar countries. The D/FHERIS secretariat helpfully provided information relating a number of small advanced economies it is currently researching as appropriate comparators for Ireland, across all aspects of its further, higher education, research, innovation and science mandate.

We also reviewed one of the internationally renowned programmes for supporting PhD researchers worldwide. The EU’s flagship research and innovation funding programme within Horizon Europe is the Marie-Curie Skłodowska Actions. Pillar One of this programme supports doctoral students. This is awarded on an open international competitive process and offers a gross salary in the region of €48,000 per annum (subject to minor adjustments in each country). On top of this, it also offers (if applicable) a family allowance of €11,320 and a special needs allowance (calculated on the basis of individual need) for PhD candidates with disabilities. This scheme is recognised internationally as “best-in-class” in its supports for PhD students and other individual researchers. While we are not suggesting that Irish PhD supports move to that scale, it provides a striking comparator against which to consider current Irish stipend levels and our related recommendations. We believe however Ireland should be aiming for these standards in the long term, acknowledging that it will take our system some time to get there from this starting point.

Ireland’s performance in Research and Innovation

The overall upward trajectory of enrolment levels in PhDs in Ireland reflects global trends: according to the OECD, the share of doctorate level attainment in the population aged 25-64 year olds has grown on average 25% during the five years from 2014 to 2019. The [OECD](#) also finds that Ireland’s share of the population with doctorate is above EU and OECD averages, situated between that of Israel and Finland.

OECD (2019): Countries in descending order of the share of 25 – 64 year olds with a doctorate.



1. Year of reference differs from 2018.

In term of the Global Innovation index, Ireland ranks 23rd overall and performs above the high-income group average in six pillars, including institutions (16th), human capital and research (23rd), Infrastructure (15th), and knowledge and technology outputs (14th)¹. The annual [European Innovation² Scoreboard](#) (EIS) provides a comparative assessment of the research and innovation performance of EU Member States and selected third countries, and the relative strengths and weaknesses of their research and innovation systems using a comprehensive range of measurements. In 2022, Ireland's performance was 118.9% of the EU average, classifying it as a "Strong Innovator", however the Impact 2030 ambition is to be an Innovation Leader.

With specific regard to Human Resources, Ireland's 2022 performance on the European Innovation Scorecard was 169% of the EU average. This included

- Doctorate graduates (per 1,000 population aged 25-34) at 144.5% of the EU average, an 11.4% increase between 2015 and 2022.

Under Attractive Research Systems³, Ireland's performance included:

- Foreign doctorate students at 207% of the EU average, a 68% increase between 2015 and 2022.

These data suggest, consistent with the HEA statistics, that Ireland is internationally competitive in terms of its PhD offering. This is critical to Ireland's reputation as a country that values knowledge, talent and ideas, and to our *Impact 2030* ambitions for an increasingly research-intensive labour force. However, as well as attracting global talent in this way, we must also nurture domestic talent, including importantly those to be considered through an EDI lens.

Internationally, there are varying forms and levels of financial supports, both within and across countries. It appears also that more European funders are paying PhD students a taxed salary rather than a stipend. The stipend level itself is relevant to both welfare considerations for current researchers, as well as equity considerations for people thinking about future doctoral study (with the expectation of higher rewards later). The status of PhD researchers, as a student or employee of the institution, is one of the most complex issues we encountered in this review. It requires further detailed analysis before we, as Review Co-Chairs, would make any final recommendations.

Table 1 outlines PhD support arrangements in a comparator small advanced economies and it can be seen that practices vary between countries. While it must be noted that direct comparisons are difficult to make, this is a set of countries with which Ireland competes and that score well on international research and innovation scorecards, including talent indices. The Irish PhD stipend level is at the lower end of provision and countries which perform well on global innovation and talent indices have PhD supports in the range of €27k to €52k.

Several countries are also reviewing this area. In the UK PhD candidates are treated as students and may apply for a stipend. Following an extensive consultation and review started in 2022, [UKRI's](#) minimum stipend for the 2023/24 academic year will be GBP18,622 (€21,114) per annum and it has increased by 20% (in cash terms) over the last two years. In New Zealand, PhD candidates are also treated as students and may receive a scholarship from the host higher education institution. For example, the University of Otago currently offers a doctoral scholarship of \$30,696 (€17,534) per annum subject to certain [terms and conditions](#), plus a tuition fee waiver capped at the domestic rate for three years. In Italy, for instance at the [University of Bocconi](#), students may receive a tax-free "merit-based fellowship" of €20,000 per annum plus a tuition fee waiver.

¹ <https://www.globalinnovationindex.org/analysis-economy>

² Human Resources measures the availability of a high-skilled and educated workforce.

³ Attractive Research Systems measures the international competitiveness of the science base.

Table 1 Small Advanced Economy Country Comparators – Talent Indicators and PhD Support Arrangements

Country	Structure	IMD World Talent Ranking 2022	EU Innovation Scoreboard (2022) Ranking	EU Innovation Scoreboard (2022)	Global innovation index [4] (Income group rank (Region rank*))	Innovation Scorecard – Human Capital and Research	Income Quintile Share ratio (\$80/20)**	Labour force participation[5]	Proportion of population 25-34 with tertiary qualification [6]	Participation Lifelong learning	Total public spend on tertiary education as % govt spend (including non secondary VET)	PhD Support Arrangements[7]
Ireland	Further Education (VET) Higher Education, Skills Research and Innovation policy are under the remit of a single Government Department which sits at the juncture of social and economic policy.	15	6	Strong Innovator	22 (15)	23	3.83	80.3% (OECD, 2021) 76% (CSO, Dec 2022)	0.629	13.60%	3.9%	SFI/IRC pay €19k per annum (inclusive of Budget 2023 measure), untaxed. A contribution is made for fees. A range of practices exist elsewhere in HEIs.

⁴ [Global Innovation Index, 2022; WIPO 2022](#)

⁵ <https://data.oecd.org/emp/labour-force-participation-rate.htm> (The labour force participation rates is calculated as the labour force divided by the total working-age population. The working age population refers to people aged 15 to 64.)

⁶ [Population with a Tertiary Education: OECD](#)

⁷ There are significant variations in terms of supports (stipends/salaries/fee waivers) for PhD candidates. The information provided here is indicative and summary only.

Country	Structure	IMD World Talent Ranking 2022	EU Innovation Scoreboard (2022) Ranking	EU Innovation Scoreboard (2022)	Global innovation index [4] (Income group rank (Region rank*))	Innovation Scorecard – Human Capital and Research	Income Quintile Share ratio (S80/20)**	Labour force participation[5]	Proportion of population 25-34 with tertiary qualification [6]	Participation Lifelong learning	Total public spend on tertiary education as % govt spend (including non secondary VET)	PhD Support Arrangements[7]
Austria	<i>The Federal Ministry of Education, Science and Research</i> manages the entirety of the Austrian education system, but shares governance responsibilities of apprenticeships with the <i>Federal Ministry of Labour and Economy</i> . The <i>Federal Ministry of Education, Science and Federal Ministry of Labour and Economy</i> also represent Austrian interest in the fields of research and science.	8	8	Strong Innovator	16 (9)	11	4.08	81%	42.4%	14.6%	4.8%	A salary of c.€39k per annum which is, taxed. Unclear if additional fees paid.
Denmark	<i>The Ministry of Higher Education and Science</i> is responsible for the governance of the higher education, research and innovation sectors, while VET falls under the remit of the <i>Ministry of Children and Education</i>	5	3	Innovation leader	10 (7)	10	3.93	84.1%	49%	22.3%	5.5%	A salary of c.€35k per annum which is taxed.
Finland	<i>The Ministry of Education and Culture</i> is responsible for policy development in relation to the country's higher and vocational education sectors. <i>The Ministry of Economic Affairs and Employment</i> is responsible for implementing innovation policy.	6	2	Innovation leader	9 (6)	8	3.58	84.3%	40.1%	30.5%	3.5%	No standard stipend or salary payment. A range of scholarships provided.

Country	Structure	IMD World Talent Ranking 2022	EU Innovation Scoreboard (2022) Ranking	EU Innovation Scoreboard (2022)	Global innovation index [4] (Income group rank (Region rank*))	Innovation Scorecard – Human Capital and Research	Income Quintile Share ratio (S80/20)**	Labour force participation[5]	Proportion of population 25-34 with tertiary qualification [6]	Participation Lifelong learning	Total public spend on tertiary education as % govt spend (including non secondary VET)	PhD Support Arrangements[7]
The Netherlands	<i>The Ministry of Education, Culture and Science</i> oversees the operation of the entire Dutch education system and is supported by <i>the Ministry of Economic Affairs and Climate Policy</i> in developing research and innovation policy.	9	4	Innovation leader	5 (4)	14	3.88	84.80%	55.60%	26.60%	5.4%	A salary of c.€52k to c.€78k per annum which is taxed. Unclear if additional fees paid.
New Zealand	<i>The Ministry of Education</i> oversees the management of New Zealand's tertiary education sector. The core ministry for promoting science, technology and innovation the <i>Ministry of Business, Innovation and Employment</i>	31			23 (6 – SEA, EA & Oceania)	18	5.4 (2020)	85.60%	45.30%		4.5%	No standard stipend or salary payment. A range of scholarships provided.
Portugal	The Ministry of Science, Technology and Higher Education has responsibility for supporting the tertiary education system and the research and innovation sector. The primary VET sector is overseen by the <i>Ministry for Education</i> .	24	17	Moderate Innovator	32 (20)	22	4.9	84.30%	47.50%	12.90%	4.7%	No standard stipend payments. A range of scholarships provided.
Sweden	<i>The Ministry of Education and Research</i> is responsible for the success of Sweden's education sectors, including VET, higher education and research policy. Innovation is overseen by <i>Ministry of Climate and Enterprise</i> .	2	1	Best performer in EU	3 (2)	6	4.04	89.10%	49.20%	28.60%	4.8%	A salary of €27.3k per annum which is taxed. No fees are payable.

<p>UK / NI **** (NI specific rates in Red)</p>	<p>At UK level, the recently established (Feb 2023) Department for Science, Innovation and Technology holding responsibility for driving innovation that will deliver improved public services, create new better-paid jobs and grow the economy. This includes the UK Government's Research and Development schemes, optimising public investment to support areas of relative UK strength and increase the level of private investment in an effort to make the UK economy the "most innovative" in the world</p> <p>The <i>Department for the Economy</i> is responsible for overseeing the management of Northern Ireland's higher and further education, research and innovation systems.</p> <p>In England, the Department for Education holds responsibility for higher and further education policy, apprenticeships and wider skills.</p>	-	-	<p>Strong Innovator ****</p>	<p>4 {3} *****</p>	<p>6 *****</p>	<p>5.63 *****</p>	<p>69% <u>8(Dec 2022 rate for NI)</u>^[8]</p>	<p>57.5% ***** <u>(NI Age 16+ with L4 qualifications or above 32.11%)</u>^[9]</p>	<p><u>10.9</u>^[10]</p>		<p>UK (UKRI) recently recommended a minimum stipend for the 2023/24 academic year of GBP18,622 (€21,114) per annum.</p>
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⁸ [Dec 2022 employment/NI Census 2021 population ages 15-64](#), NISRA

⁹ [NI Census 2021, March 2023 Release](#)

¹⁰ [Creating a culture of lifelong learning in Northern Ireland - OECD, 2020](#)

3. Parameters of this Review Exercise

3.1 Background

Against the policy context outlined in Section 2 above, in October 2022, the Minister for Further and Higher Education, Research, Innovation and Science [announced](#) an independent National Review of State Supports for PhD Researchers. The aim of this Review is to advance *Impact 2030*'s vision, with particular regard to Pillar Four Research Talent

“We will be a global leader in nurturing, attracting and retaining talent to drive research and innovation in our higher education and research system, enterprises, communities and public services”.

A key element within this is the **shared ambition for a consistent research student experience across funders, institutions and research disciplines**. We were delighted to be invited by the Minister, based on our wide professional experience across higher education, industry and the civil service, to undertake this experience with secretariat support from Department officials.

3.2 Terms of Reference

The Terms of Reference comprise a review of the following:

- I. Current PhD researcher supports including financial supports,
- II. The adequacy, consistency and equity of current arrangements across research funders and higher education institutions, including equity and welfare considerations,
- III. The status of PhD researchers (student, employee) including a review of international comparators and models,
- IV. Impact on the funding of research programmes of any adjustments to current supports,
- V. Graduate outcomes for PhD graduates,
- VI. Visa requirements and duration for non-EU students.

3.3 Methodology

The approach undertaken has comprised of

- A desk review of relevant available policy documents and data.
- We have undertaken a period of extensive and comprehensive stakeholder engagement, mindful that this is the first review of this type about supports for PhD researchers in Ireland (previous initiatives have typically focused on institutional quality assurance considerations). Meetings have been held with more than 35 stakeholder organisations to understand their perspectives and to explore key issues with them. These have included meetings with the higher education institutions, trade unions, public funders, enterprise representative bodies and others. For details about stakeholders met, please see Appendix A.
- We have deliberately structured our consultation process so that PhD Researchers have had a direct opportunity to share their experiences and the impacts of funders and institutional approaches to PhD supports. With this in mind, we held an all-day in-person workshop on 8 March with the student organisations.
- In addition, an online consultation process was held from 24 February until 13 March 2023. 750 written submissions have been received and extracts from them, as well as the key messages arising from the meetings held, have been synthesised.

- Examination of international practice, including desk review of available relevant material from the OECD, the EU and the UK, as well as short video conference meetings with the relevant Ministries in Denmark, Finland and Sweden (who are internationally recognised as driving international good practice in the advancement of national research and innovation systems).
- Secretariat and evidence gathering support from D/FHERIS to fact check, gather and synthesise data. At various points in the review we requested D/FHERIS provide additional explanatory text to contextualise this report and to reflect work to date across the full Terms of Reference.

3.4 First Report Review Considerations

The considerations detailed below are based on the dialogue and understanding *at this point in time*. There are a range of issues which require further analysis and investigation, outside of the comprehensive consultation to date. Where further work is required, it is outlined below. There are, however, some pressing and urgent areas where we believe we have enough information to make preliminary recommendations, namely on the living **stipend issue and supports for non-EU PhD candidates**. With regard to the status of all elements of the Terms of Reference, the following table outlines the status in this first report.

Element	
<i>Current PhD researcher supports including financial supports</i>	This is considered in this report under Section 4.1 Financial Supports. While the consultation process surfaced a range of inputs and issues regarding supports for PhD researchers, across both financial and non-financial supports, we have focused on the former, with particular regard to stipend levels. We note that non-financial supports are often related to the status of the PhD researcher.
<i>The adequacy, consistency and equity of current arrangements across research funders and higher education institutions, including equity and welfare considerations</i>	The adequacy of existing arrangements is considered in this report under Section 4.1. The consistency and equity of approach requires further analysis which was not feasible to complete in the available timeframe and we are recommending further work on this.
<i>The status of PhD researchers (student, employee) including a review of international comparators and models</i>	We examined international comparators for guidance in relation to this and our recommendation on the status of PhD candidates is that this issue requires further analysis due to the complexity and significance of any change on the R&I system, funders and research performers.
<i>Impact on the funding of research programmes of any adjustments to current supports</i>	Considered in this report under Section 5.3.
<i>Graduate outcomes for PhD graduates</i>	Considered in this report under Section 4.3.
<i>Visa requirements and duration for non-EU students.</i>	Considered in this report under Section 6.

The outstanding areas of the Terms of Reference, for which deeper analysis is required because of their complexity and interdepartmental interdependencies, are:

- Consistency and equity of existing approaches to how PhD candidates are supported
- Status of PhD candidate, i.e. student vs employee

4. PhD Supports including Financial Supports

In this section we outline the current quantitative picture, stakeholder perspectives and international comparisons where relevant, in terms of current financial supports and their adequacy.

4.1 Current Financial Supports

Similar to most countries, financial assistance to PhD researchers provided directly or indirectly by the State primarily comes in three forms (not all of which are available to all PhD researchers):

- Stipends either awarded through competitive research funding agencies, such as the Irish Research Council and Science Foundation Ireland, or from the host higher education institution;
- Fee waivers or contributions to same;
- Remuneration for academic support activities undertaken by the candidates, for instance, tutoring and demonstration for undergraduate students (as distinct from training and skills development provided to them as a central element of their PhD formation).

There are no national guidelines on such supports. The totality of the supports available to PhD researchers has never been reviewed holistically before and we found that a variety of practices have organically emerged as Ireland has developed its national research and innovation system over the last quarter of a century. As such there are a lack of reliable benchmarks and frameworks to draw upon. Funding agencies and autonomous higher education institutions have discretion to set the level of financial assistance that they deem appropriate.

Of the approximately 10,000 annual doctoral enrolments, the following stipend arrangements apply:

- Approximately 3,000 are funded by Science Foundation Ireland and the Irish Research Council, who (since 2021) all receive a stipend of €18,500. As part of the 2023 [Budget](#) Cost of Living measures, these stipends have been increased to €19,000.
- About 2,000 are funded by the higher education institutions themselves, receiving stipends believed typically to range from €5,000 to €18,500.
- About 4,000 PhDs are categorised as self-funding. This is understood to include persons funded by their employers and also to include many studying on a part-time basis.
- About 1,000 are funded by various other sources (including Teagasc, the Health Research Board, the Environmental Protection Agency, the Sustainable Energy Authority of Ireland, as well as European funding programmes). National statutory research funders are understood to typically pay a stipend of the same order as the Irish Research Council and Science Foundation Ireland.
- Horizon Europe Marie-Curie awardees receive a higher level of support but the number of enrolments is small.

There are varying inter-institutional and intra-institutional approaches to fee waivers for PhD researchers. All PhD researchers funded by the IRC and SFI receive a contribution to their fees for a fixed period of time. For PhD Researchers funded by HEIs practices vary between and within institutions. With respect to academic support activities such as tutoring and demonstration, there is also considerable variability (the latter partly as a function of disciplinary differences). Some PhD candidates are obliged to undertake such activities as part of their PhD. Within this category of PhD candidates who are obliged to teach, some are remunerated and some who are not. It is not always clear whether PhD researchers in this category receive academic credit for this activity (e.g. pedagogical experience/training). This issue has been the subject of work with regard to a more consistent approach over the last 12-18 months at the Advisory Forum for the [National Framework for Doctoral Education](#).

4.1.1 Current Budget Stipend Allocations

The following table outlines current public expenditure on stipend supports for PhD researchers. This is not the full cost to the State of PhD education as it does not cover investments in academic supervision, research capacity, research infrastructures and others.

<i>Funded by</i>	<i>Enrolments</i>	<i>Stipend</i>	<i>Total Current Public Funding</i>
<i>SFI/ IRC</i>	3,000	€19,000	€57,000,000
<i>Higher Education Institutions</i>	2,000	€9,640*	€19,280,000
<i>Other Competitive Funders**</i>	1,000	€18,500	€18,500,000
<i>Self-funded</i>	4,000***	-	-
Total	~10,000	n/a	€94,780,000

* HEI awards are wide-ranging, typically anything from €5,000 to €18,500. IUA's estimated average per awardee: €9,640

** EU Marie Curie excluded; assumed to be not significant.

*** Excluded on the basis that these are funded by individuals.

Stakeholder perspectives on Current Financial Supports

Almost all stakeholders that participated in the Review consultation held that current stipend levels are inadequate. We were struck by the near unanimity of this issue across the different cohorts: institutions, funding agencies, enterprise representative bodies, and PhD researchers. This is in notable contrast to typical engagements about remuneration in which those awarding funding might hold a different position to those in receipt of it. The need for consistency and clarity in approach to stipend levels and eligibility was a universally held view, with the urgency of the situation also highlighted by many.

For PhD researchers, the cost of living, with particular regard to accommodation costs, was emphasised in our meetings with student groups and in the 750 written submissions received. Regarding rents, several called for a “Dublin weighting”. In addition to accommodation, difficulties in meeting other costs of living such as heating, food and any social activities were raised. Many individual submissions advised that the situation is resulting in stress and mental health issues. We fully acknowledge these concerns and challenges and it would be remiss of us not to report upon them. At the same time, we recognise that these pressures are being faced by many groups across society and that Government has put in measures to help alleviate them.

Our review and our recommendations must be designed to consider the longer-term and to “future-proof” the development of Ireland’s research and innovation system, at the heart of which lies people, in keeping with *Impact 2030*’s vision and objectives. Organisations met during the consultation process, as well as in their written submissions, spoke of the potential consequences of the current stipend level for nurturing, attracting and retaining talent. A number of those who cited this issue

noted that its effect was even more pronounced when trying to attract candidates from Ireland, an experience borne out by the HEA statistics. Stakeholders, including industry representative bodies, higher education institutions and funding agencies, spoke of the potential negative impact of this for Ireland's wider research system because of the importance of PhD researchers within that.

Some stakeholders advised that the stipend level poses a risk to the calibre and diversity of the PhD candidate because the pool is being inadvertently restricted on the basis of affordability. From the individual's perspective it was pointed out that the affordability of undertaking a PhD is unsurprisingly affecting underrepresented groups disproportionately such as those who are socioeconomically disadvantaged, people with disabilities, people with caring responsibilities and those from Traveller backgrounds. This has wide ranging implications for equality, diversity and inclusion within our research system, and for ensuring this dimension is captured in research projects themselves. From a HEI's perspective, it can often mean that an "*acceptable rather than optimal*" PhD candidate is recruited, or that candidates with reduced financial means may not be in a position to apply for a PhD programme.

This latter observation was raised several times in stakeholder meetings and written submissions. Current arrangements, in which only those who can study on a full-time basis are eligible for a SUSI maintenance grant or, in several cases, for a stipend from one of the funding agencies were highlighted. Their consequences run counter to *Impact 2030* and wider D/FHERIS objectives for a more inclusive research system.

This issue also requires careful and detailed analysis across the relevant D/FHERIS units and also with other relevant Departments so that any stipend increase does not (unintentionally) negatively affect other allowances. [Catherine's Law](#) (2021) legislated for this specific issue and a stipend level of €20,000 is the current threshold above which students lose their eligibility for the disability allowance. The importance of this Review's comprehensive approach, and D/FHERIS' further work now, in considering stipend levels within this wider context cannot be overemphasised. In addition to stipend levels, PhD researchers' obligations and remuneration for academic support activities were raised often, concerns primarily cited in respect of consistency and transparency. Varying approaches to fee waivers were also noted in the context of current supports.

4.1.2 Adjustments to Current Financial Supports

Internationally, there are varying forms and levels of financial supports, both within and across countries and direct comparisons with other small advanced economies like Ireland are insightful but not definitive. This is partly connected to the status of the PhD researcher in these countries, e.g. student or employee of the institution, and this requires further detailed analysis before we, as Review Co-Chairs, would make any final recommendations on status. We have used *Impact 2030*'s ambition to be a global leader as our north star however, mindful of programmes such as the Horizon Europe Marie Skłodowska-Curie Actions programme which is recognised internationally as "best-in-class" in its supports for PhD researchers. While we are not suggesting that Irish PhD supports move to that scale in the short to medium term, it provides a striking comparator against which to consider current Irish stipend levels and our related recommendations. We believe Ireland should aim for these standards in the long term, acknowledging that it will take us time to get there from this starting point.

Because the totality of the supports available to PhD researchers has never been reviewed holistically before, a variety of practices have organically emerged as Ireland has developed its national research and innovation system over the last quarter of a century. As such we found we have a lack of reliable benchmarks and frameworks to draw upon.

For example, even though it is widely used in the system, there is a limited evidence base for the premise that the 2008 stipend level offered by SFI is an appropriate starting point, or whether it was proportionate or sufficient for its objectives at the time. As a result we have used a combination of available evidence from graduate outcomes, international comparators, national custom and practice, a number of proxy measures and stakeholder perspectives to guide our recommendations. We consider a hypothetical alternative stipend scenario using 2008 SFI stipend as a baseline, even though it is problematic, and extrapolating what today's stipend may have been in this alternative scenario. We also reflect on the potential ramifications of any stipend increase that we may recommend, in terms of additional budgetary requirements and/or enrolment numbers, also taking into account stakeholder perspectives. Based on this analysis, we recommend a number of actions, and areas for further examination.

4.1.3 Attractiveness of PhD opportunities

Our review was framed by the question “What does great look like for Ireland?”. **First and foremost we recognise that PhD researchers are highly skilled graduates who have many attractive and lucrative career opportunities available to them.** In a time of near full employment in a small advanced economy like Ireland, the prospect of a four-year full-time study commitment with variable responsibilities and outcomes, may not be as attractive as in other times. One of the most compelling arguments is that 4 in 5 Bachelors degree graduates in Ireland earn €25,000 per annum, nine months after graduation (HEA Graduate Outcomes 2021). While overall PhD enrolments in Ireland have increased, these data suggest that current stipend levels here are significantly less attractive to students from Ireland than alternative career pathways. The much smaller increase in domestic PhD enrolments indicates that, upon completion of an undergraduate programme, other career options are now more appealing. This may not be true in many international countries from which Ireland recruits PhD researchers. While research should always remain a global endeavour, we need to ensure that we are also nurturing our domestic talent, as well as attracting high quality talent from abroad. In a highly competitive and global environment, obtaining a PhD qualification here in Ireland needs to be viewed as a strategic and sought after career move for Irish university graduates, as well as attractive to international talent, if we are to develop a sustainable knowledge-intensive economy and society in Ireland.

4.1.4 Hypothetical Alternative Stipend

Although not without its challenges, it is helpful to understand how the stipend level may hypothetically have evolved. For the purposes of analysis, the SFI stipend in 2008 is being used as the baseline figure, noting our reservations that the premise that the 2008 SFI stipend level is an appropriate starting point, or whether it was proportionate or sufficient for its objectives at the time. We use the hypothetical scenario of applying the Consumer Price Index to the 2008 SFI stipend. Without a reliable benchmark or framework, this scenario is valuable to help provide guidance along with international comparators and stakeholder perspectives.

By way of context to the trajectory of the SFI stipend from €20,000 in 2008 to €19,000 currently:

- In 2009, it was reduced from €20,000 to €18,000 on foot of the Financial Measures in the Public Interest (FEMPI) Act.

- In 2016, arising from the Lansdowne Road Agreement, the SFI stipend was increased from €18,000 to €18,500 and remained unchanged until 2021.
- IRC-funded students received a lower stipend of €16,000 prior to 2021 when it was increased to €18,500 to bring it into line with the SFI stipend.
- In Budget 2023, SFI/ IRC stipends were increased by €500, bringing them to €19,000.

If the SFI stipend level of €20,000 were to be adjusted based on the Consumer Price Index¹¹, this would result in a hypothetical 2023 stipend level of €23,551.

4.1.5 Potential Implications of any Stipend Change

As independent Chairs, we are conscious of the potential implications of any stipend change on the public finances, on the activities of funding agencies and of higher education institutions, noting the many other competing resource demands upon them. D/FHERIS has advised that current stipend funding comes from a multiplicity of sources, including the funding agencies of other Departments, the relevant D/FHERIS agencies (Science Foundation Ireland and the Irish Research Council), the HEA's block grant funding to the institutions, industry and the EU. Significant additional work will therefore be required in order to implement any recommended stipend change which, for Irish public funders (including the HEA), will need to be managed through the Estimates process, core grant allocation to HEIs and through national development planning. It must be noted also that as autonomous institutions, HEIs have discretion over their own internal budget allocation.

We explored a number of options as to how a recommendation to increase the level of stipend could be facilitated in a number of different ways. We believe there is a strong case for additional budget investment to this area, as a way of future proofing the Irish talent pipeline while public finances are buoyant at present. Within existing budgetary constraints there may be options to increase the stipend but reduce the cohort of PhD researchers. A phased introduction is a possible also. There may also be options to holistically review PhD numbers with respect to career opportunities available on completion (e.g. balance investment in state funding of post-doctoral positions with investment in PhD places).

Examples of the potential cost the State of changing stipend levels are provided below:

A: If enrolments remain at current levels and if the stipend is increased to €25,000, what is the additional budgetary requirement?

<i>Funded by</i>	<i>Enrolments</i>	<i>Stipend change</i>	<i>Additional annual budgetary requirement</i>
<i>SFI/ IRC</i>	3,000	+€6,000	€18,000,000
<i>HEIs</i>	2,000	+€15,360	€30,720,000
<i>Other funders</i>	1,000	+€6,500	€6,500,000
Total	6,000		€55,220,000

¹¹ Using CSO's CPI calculator, €20,000 in December 2008 converts into €23,551 in March 2023.

B: If enrolments remain at current levels and if the stipend is increased to €22,000, what is the additional budgetary requirement?

<i>Funded by</i>	<i>Enrolments</i>	<i>Stipend change</i>	<i>Additional annual budgetary requirement</i>
<i>SFI/ IRC</i>	3,000	+€3,000	€9,000,000
<i>HEIs</i>	2,000	+€12,360	€24,720,000
<i>Other funders</i>	1,000	+€3,500	€3,500,000
Total	6,000		€37,220,000

C: If budgets remain the same and if the stipend is increased to €25,000, what is the impact on PhD enrolments?

<i>Funded by</i>	<i>Annual Budget</i>	<i>Annual Enrolments</i>	<i>Enrolments Change</i>
<i>SFI/ IRC</i>	€57,000,000	2,280	-720
<i>HEIs</i>	€19,280,000	771	-1,229
<i>Other funders</i>	€18,500,000	740	-260
Total	€105,500,000	3,791	-2,209

Clearly a reduction of over one third of State funded PhD enrolments would not be consistent with the policy objectives we outlined in Section 2. We acknowledge that in the absence of additional exchequer funding, which we recognise cannot be assured at this stage given other competing demands on Government finances, consideration may need to be given to some phasing of stipend increases. It is imperative to avoid a sudden and negative disruption to the intake of PhD researchers, which would have a long term and retrograde implications for Ireland’s research and innovation ambitions.

Stakeholder Perspectives

The primary potential ramification highlighted by stakeholders was the trade-off between budget and enrolment numbers: budgets need to be increased if enrolments are not to be cut. This needs detailed examination, by D/FHERIS in the first instance, to ensure that any recommendations here do not constrain the development of Ireland’s research and innovation system. In particular the impact of any proposed changes on tax consequences for individuals needs to be coordinated with the Revenue Commissioners.

A second – unintended – possible impact would be the effect of any stipend change on students' eligibility for other 'allowances' such as medical cards and for disability. This requires detailed analysis by D/FHERIS in cooperation with other Departments and is a strong example of the interconnected nature of many of the policy issues that we have surfaced during this Review.

Thirdly, it was highlighted that, while there are no explicit targets or quantification of how many PhD enrolments will be appropriate in future years, the Technological University legislation entails a near doubling of existing research student enrolments. For this to happen, an estimated additional 3,000 in research student enrolments across the Technological Universities may be required (noting that this target can be met by Level 9 Masters by Research students too). This issue requires additional work by D/FHERIS in order to ensure that any increased investment in the provision of PhD candidate supports in the established universities (because they have markedly more PhD enrolments) is not to the detriment of either the Technological Universities' wider research capacity-building requirements or the wider strategic development of the national research and innovation system.

Several stakeholders raised the possible implications of any stipend change for postdoctoral researchers. The first point on the IUA Researcher Salary Scale (effective 01/10/2023), is €42,783 (gross). This underlines the importance of considering any stipend change within the wider context of strengthening Ireland's research talent pipeline, and ensuring that researchers at all career stages are appropriately supported.

Also to be considered is that use could be made of the National Training Fund. This would require detailed analysis and consultation having regard to support at other qualification levels. As an employer-led fund, it would naturally need strong support from enterprise.

4.1.6 Recommended Actions – Current Financial Supports

There is agreement among all stakeholders that the current stipend of circa €18,000 to €19,000 per annum is insufficient for the needs of PhD researchers having regard to the economic context in which they are studying and the current cost of living challenges. While stakeholders for the most part did not specify a particular figure, those that did indicated that a stipend of circa €24,000/ €25,000 per annum would be desirable. Indeed, it is interesting to note that Trinity College Dublin has increased its internal post graduate research schemes stipend to €25,000 in March 2023.

RECOMMENDATION : Having regard to the above we are recommending that the stipend be increased significantly. The optimum target we recommend is €25,000, subject to the availability of funding. Increases should take effect from the start of the academic year 2023/2024 but no later than 1st January 2024. We are also recommending that the stipend is adjusted thereafter in alignment with public service pay increases, increases in student grants, social welfare rates or other indices which reflect ongoing changes to the cost of living.

4.1.7 Areas for Further Examination

A number of related issues arose in relation to this aspect of the Terms of Reference which require further consideration. These are summarised here :-

➤ ***De-Coupling Stipend from for any Teaching/Demonstrating Duties:***

In response to national policy directions, the Irish University Association has started this process, and we should note the difficulty with University of Galway and Postgraduate Workers Organisation Galway submission around this particular area. This requires a consistent approach across all HEI's and to be costed out and budgeted for, as it directly impacts teaching and learning budgets also. It is also worth noting that based on our meeting with Revenue, there is a potential tax exposure for PhD researchers, and we would recommend urgent exploration of this issue with all relevant stakeholders.

➤ ***Accommodation Credit:***

We recognise that accommodation issues pose significant challenges for Government given the competing demands from a variety of interest groups. Never the less in terms of our remit the issue of the availability and affordability of accommodation for PhD researchers was raised by almost all stakeholders. Given the disproportional impact of rental prices on the stipend, a targeted accommodation allowance/credit be explored through an appropriate mechanism e.g. SUSI. We do not envisage that this would be universally applied to all PhD researchers, however some mechanism to address additional for those in rental accommodation needs to be explored.

➤ ***Fee Waiver:***

A variety of practices to PhD fees have organically emerged as Ireland has developed its national research and innovation system over the last quarter of a century. While SFI and IRC make a contribution towards HEI fees, the practices across HEIs appear to vary. A consistent approach is required across all HEI's and this is a potentially a significant additional cost which needs to be costed and budgeted for. As part of this exercise it will be important to understand how the PhD fee is determined, how a fee waiver is determined and what supports PhD researchers receive in return.

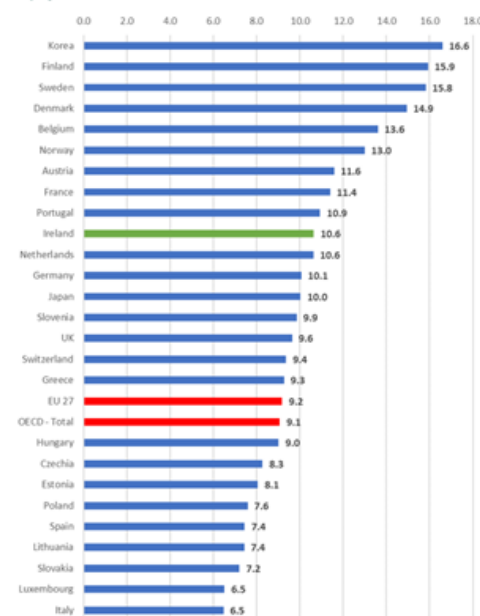
5. Graduate Outcomes

The EU's [Innovation Agenda](#) advises that “A new wave of innovation is on its way: deep tech innovation, which is rooted in cutting edge science, technology and engineering, often combining advances in the physical, biological and digital spheres and with the potential to deliver transformative solutions in the face of global challenges”. The fundamental objective of *Impact 2030* is to ensure that our investment in research and innovation advances these solutions and maximises their benefits for Ireland. The primary way in which this will be achieved will be through investment in the totality of our research talent pipeline and the resultant difference that they can make across multiple sectors.

The Strategy recognises that “a diversity of career paths is crucial, both for the organisation and the individual, in order to address career precarity and to maximise impact that researchers can make on so many organisations in so many ways”. PhD graduates can succeed in a wide variety of roles. We commend the work currently underway by the Advisory Forum for the National Framework for Doctoral Education on PhD career profiling so that greater visibility is given to the huge range of potential opportunities. Greater parity of esteem, including among researchers themselves, for different roles and different sectors is essential to the success of *Impact 2030*.

The recently published DFHERIS [R&D Budget 2021-2022](#) finds that there were 10.6 researchers per 1,000 employed in Ireland in 2020. This compares with EU27 and OECD averages respectively of 9.2 and 9.1. Countries to which Ireland look for leading international practice in their research and innovation systems’ performance, and their success in developing knowledge-based economies, show notably higher levels: Finland and Sweden at 15.9 and 15.8 researchers per 1,000 employed respectively.

Figure 18: International Comparison of Researchers per Thousand Total Employment, 2020



Source: OECD, Main Science and Technology Indicators.

The economic return to the individual PhD graduate can also be demonstrated. 4 in 5 Postgraduate Research Graduates earn salaries of more than €35,000 per annum, 9 months after graduation. This compares with 4 in 5 Bachelors degree graduates, who earn €25,000 per annum (HEA Graduate Outcomes 2021). Graduates with Level 9 awards (masters degrees and postgraduate diplomas) earned €655 per week while those graduating with an NFQ Level 10 qualification (doctoral degrees) had the

highest weekly earnings of €815 per week in the first year after graduation. The recently published [HEA Graduate Outcomes Survey 2021](#) found that 90% of doctoral graduates were in employment nine months after graduation, with 85% of the total working in Ireland. This compares with 76% of honours degree graduates.

Over a ten year timeframe, data from the cohort of 2010 graduates suggests that NFQ level 10 graduates' median yearly earnings for each year in the ten years following graduation are on average €13,015 higher than graduates from NFQ level 9 qualifications. Thus in the ten years following graduation, NFQ level 10 graduates have earned an additional €130,146. [Analysis](#) of the highest earners (those in the 75th percentile, rather than the median) shows that this difference increases to €177,814. At an international level, the most recent data from [OECD](#) indicates that those holding doctoral or equivalent degrees have the highest employment rate of any educational attainment level in almost all OECD countries.

According to the Higher Education Authority's [2021 Graduate Outcomes Survey](#):

- 90% of postgraduate research graduates were in employment nine months after graduation, compared with 76% of honours graduates.
- Of the employed graduates, 84.5% are working in Ireland, while 15.5% are working overseas nine months after graduation.
- 81% of postgraduate research graduates were earning more than €35,000 per annum nine months after graduation. This compares with 59% of postgraduate taught graduates and 33% of undergraduate bachelors earning more than €35,000 per annum nine months after graduation.

A further [Review of Doctoral Graduate Outcomes](#)¹² by the Higher Education Authority found that:

- 92% of doctoral graduates were in employment nine months after graduation.
- The largest group of graduates were working in the Education sector (44%), followed by Professional, Scientific and Technical activities (17%), Human Health and Social Work (14%), Industry (9%) and ICT (4%).
- Those most likely to go into Industry or Professional, Scientific and Technical Activities studied:
 - Natural Sciences, Mathematics and Statistics;
 - Engineering Manufacturing and Construction;
 - Health and Welfare.
- CSO data has found that the main sectors of employment for graduates 10 years after graduation (graduates of 2010) were Education, Industry and Professional, Scientific and Technical sectors.
- CSO data also found that median salaries increased from €755 per week one year after graduation to €1,360 per week 10 years after graduation.

According to [Census 2016](#) (Census 2022 figures not yet available) in April 2016:

- 28,759 people had a doctorate (Ph.D.) level qualification. This represented an increase of 30.9% on the 2011 figure of 21,970 and an increase of 99.5% on the 2006 figure of 14,412.
- Science, mathematics and computing were the most common areas of study accounting for 35% of all Ph.Ds, followed by health and welfare (17.7%) and social sciences, business and law (17.3%).
- There were 812 Ph.D. holders who were either unemployed or looking for their first job, giving an unemployment rate for the group of 3.4 per cent.
- Of those at work, 23,296 persons (57.3 %) worked in either the education or human health and social work industries.

¹² This was a short review (based on the graduate outcomes survey) of doctoral graduates over the three years 2017, 2018 and 2020 nine months after their graduation.

5.1. Stakeholder Perspectives

Many stakeholders emphasised that the reality is that the vast majority of PhD graduates will not remain in academia long-term, which is consistent with international trends and that PhD candidates should be better supported to prepare for more diverse career paths, such as enterprise and the public sector. This is a particularly important consideration if the career ambition of students enrolling on PhD programmes is a career in academia. Improved career advice for a diversity of career trajectories is therefore very important. Many stakeholders emphasised the need for transferable skills development, for example in entrepreneurship, research commercialisation and innovation, whilst still respecting the centrality of the research itself to the successful completion of a PhD.

With regard to demand beyond academia for PhD graduates, enterprise representatives advised that, on an anecdotal basis, there is unmet industry demand, both in the FDI and indigenous enterprise bases. It was proposed that further focused analysis of this issue should assist in clarifying the nature of such demand, e.g. differences when considering company scale and ownership, any disciplinary variations, PhD versus Masters by Research students, and the variety of roles that a PhD graduate may take up (i.e. not limited to a possibly narrowly defined researcher position). This aligns with the OECD's Skills Strategy recommendations. Other employment opportunities beyond both academia and industry were also noted, for instance, in the public and civic society sectors.

The PhD supervisor's role, and their capability to support PhD candidates in their career progression, was noted also. Other actions proposed in support of a more diversified spectrum of career opportunities included:

- Placements while undertaking the PhD,
- Peer supports,
- Alumni networks.

In terms of placements, while they can be very valuable, the resources involved in matching students with placement opportunity was noted.

Several stakeholders raised concerns about the absence of a systematic approach to the career tracking of PhD graduates. It was noted by others that the National Doctoral Advisory Forum is undertaking an exercise on this. The potential to improve recognition of the "value" of PhD graduates to a range of employers, and in a range of roles, was suggested.

Recommendation

We believe there is a need to bring together all stakeholders to discuss career pathways and sustainable career options. We acknowledge there are a number of initiatives underway in this space. There is also a willingness by PhD representative organisations to engage in these and they have suggested a workshop on career pathways. Their hope is that they can co-create solutions which will make career pathways more structured and visible. The elephant in the room is that only one in five PhDs will end up working in academia. We heard strongly from the student organisations that more honest conversations need to be had with potential PhD researchers, as to the possible options available to them.

6. Visa requirements and duration for non-EU students

6.1 Context

As noted earlier, the attraction of talent and internationalisation of Ireland's research community is a vital and welcome ingredient in our research and innovation system's performance. It helps to drive research quality and provides a benchmark for Ireland's global reputation as somewhere that values cutting-edge research and researchers.

According to Higher Education Authority statistics, approximately one quarter of postgraduate research enrolments (not including Great Britain or Northern Ireland) come from outside the EU/ European Economic Area. In the 2021/22 academic year, there were 2,677 Non-EU PhD enrolments and 236 enrolled in Masters by Research here. It is clear that Ireland is seen as an attractive location for to undertake a PhD.

Having secured a place on a higher education course, individuals coming to Ireland may be required to apply for a student (Stamp 2) visa to enter the State. Registration is provided for an initial 12-month period and can be renewed subject to research/ academic progression. A Stamp 2 indicates permission to undertake a specified course on a full time basis, subject to conditions. It is not reckonable as residence when applying for citizenship by naturalisation. For non-EU students in Ireland wishing to travel to the Schengen area (for example for research conferences), regulations and visa costs are determined by destination country.

6.2 Stakeholder Perspectives

This element of the Review received perhaps the greatest degree of consensus surrounding particular issues faced by non-EU PhD candidates. Commonly recognised challenges include:

- PhD researchers are typically older than undergraduate students, and may have more family responsibilities
- Linked to this, the inability of spouses to work under the Stamp 2 student visa
- Costs and delays associated with visa registration and annually required renewals
- Costs associated with mandatory health insurance
- Challenges in securing visas for travel to conferences, an important part of a researcher's career development and exacerbated by Ireland being outside the Schengen Area,
- A maximum stay-back period of two years ('Stay Back') for PhD graduates under the Third-Level Graduate Programme
- The years spent here undertaking a PhD not being reckonable as residence when applying for citizenship.

Some stakeholders also suggested that PhD researchers who accept a PhD place in an Irish HEI may not be fully aware of the living environment here, with particular regard to the cost of living, including accommodation. Consequences in terms of stress and mental wellbeing were highlighted across a number of submissions.

Interdepartmental dialogue between relevant Government departments, subsequent to this Review will be required, to make progress on the above issues, noting differences between impacts of administrative arrangements and those arising from legislation in place.

6.3 Recommended Actions

RECOMMENDATION: From discussions with Department of Justice and Department of Enterprise, Trade and Employment officials, it was recognised that, subject to a business case, these matters could be looked at for non-EU PhD researchers, with a view to mitigating if not eliminating some of the more challenging aspects. We recommend that D/FHERIS continue the dialogue with the Departments of Justice and of Enterprise, Trade and Employment. Issues to address following initial consultation for PhD researchers include the following:

- Irish Residence (IRP) and stamp types for PhDs,
- Family Reunification and spousal access to labour market,
- Private medical insurance (AG judgement),
- Schengen Visas,
- Hosting Agreements,
- Extension of Stay Back allowance.

We note that these may need to be explored holistically for consistency with non-EU undergraduate students and to avoid unintended consequences for PhD researchers.

6.4 Areas for Further Examination

We noted that the internationally renowned EU Marie Curie Doctoral programme includes a Mobility Allowance to promote high quality international applications. We believe it is worthwhile to explore the feasibility of introducing a mobility allowance, in order to make it attractive for PhD candidates to re-locate here.

We note also, given the ambition of *Impact 2030* in relation to research talent, the attractiveness of Ireland as a location to undertake PhD research, the agreed targets for research intensity in the workforce and demonstrable skills shortages in the domestic economy, a more strategic approach to attracting and retaining PhD graduates of Irish HEIs in the long term would seem to be worth exploring further.

7. Conclusions & Next Steps

The considerations presented in this report are based on the dialogue and understanding *at this point in time*. We have offered preliminary recommendations, concerning the stipend and treatment of non-EU PhD's, in order that time can be allowed for D/FHERIS to evaluate these, in the wider context of any annual budget cycles and governance. Any mitigation of these two issues would have immense impact on the lived experience of our PhD researchers.

We have been very cognisant that any recommendations have potential impacts across the ecosystem and we have been keen to understand any possible intentional and unintentional consequences.

Our rich and comprehensive consultation to-date has illustrated the diverse, nuanced and multi-faceted voices and lived-experiences. Given the complexity and interconnectedness of the many issues raised in the course of the consultation process, we believe that the Department should consider establishing a task force/steering group comprising of representatives from all stakeholder groups, including the PhD researcher organisations, to work through these matters, with the aim of agreeing and implementing solutions within a 12 to 18 month period, which we think is realistic having regard to the issues involved. We would be happy to jointly lead such a task force if the Department were of the view that given our involvement to date this would be desirable.

We would like to take the opportunity at this point to comment on three emerging macro themes, that the review has brought into sharp focus, and through which all future actions should be considered.

Firstly the landscape. PhD researchers are part of a **complex eco-system**, with both obvious and sometimes intangible, relationships, structures and governance. Some of these are legacy and we should absolutely challenge their veracity in today's provision of world-class researcher talent.

In understanding this complex eco-system, our interaction with the PhD researcher through their representative organisations, has been invaluable. Their interaction with us has been one of partnership, willingness to engage and a very clear ask about inclusive, participatory and meaningful engagement going forward. This is an important dialogue to roll forward, with an opportunity to actively co-create solutions.

From the outset of the review the **lack of hard data**, with the reliance on the anecdotal has been problematic. Stepping back and examining this from a national and global perspective, there are two key data sets which have to be urgently established. One is a comprehensive PhD researcher record which captures key data and the *actual* experience of our PhD researchers. We believe that the HEA would be a suitable host organisation, and we believe they open to exploring this more.

The second is a national position on the required numbers and skills of our future PhD researchers, whether that be Horizon Scanning or the research equivalent of workforce planning. What does great look like for *Ireland Inc* in post-graduate research?

The challenges within the Terms of Reference of the review has illustrated the necessity and real opportunity to take a **whole-of-government approach**, especially in the area of visa requirements and

social protection. We are encouraged by the willingness of multiple departments and agencies to engage and “*join the dots*”.

We note also that public finances are buoyant at present and now may be the opportune time to make a significant investment in our research and innovation talent pipeline to future-proof it.

Lastly, we wanted to acknowledge the willingness and co-operation of all the stakeholders we have met. They have graciously given their time and expertise and answered all questions, some of them often prefaced by “*can we ask a stupid question?*”. We would also like to acknowledge the superb secretariat and evidence synthesis support from our D/FHERIS colleagues.

We are happy to clarify or expand on any of the above and look forward to agreeing next steps.

David Cagney & Dr Andrea C Johnson
23 May 2023

Appointment of Independent Review Co-Chairs

In November 2022, the Minister [appointed](#) Dr Andrea Johnson and David Cagney to undertake this exercise.

Dr Andrea Johnson is the Chairperson of Women in Technology & Science Ireland (WITS) and Vice President of Technology at Workhuman.

David Cagney has recently retired as Chief Human Resource Officer for the Civil Service, a role he was appointed to in September 2015. Prior to joining the Civil Service, he held the position of Director of Human Resources at the Dublin Institute of Technology and previously worked in a variety of other HR roles.

Stakeholder Consultation Meetings

Stakeholders met include the following:

Participated in the 8 March workshop:

- Irish Research Staff Association (IRSA)
- Non-EU/ EEA PhD Students Society Ireland
- National Disabled Postgraduate Advisory Committee (NDPAC)
- Postgraduate Workers Organisation (PWO)
- Union of Students in Ireland (USI)
- Irish Council for International Students (ICOS)
- AHEAD
- Women in Technology and Science (WITS)

Also (in chronological order of meetings):

- Eithne Guilfoyle (National Framework for Doctoral Education refresh)
- Technological Higher Education Association (THEA)
- Irish Federation of University Teachers (IFUT)
- Teachers Union of Ireland (TUI)
- Science Foundation Ireland (SFI)
- Higher Education Authority (HEA)
- IBEC
- American Chamber of Commerce (AmCham)
- Enterprise Ireland
- Sustainable Energy Authority of Ireland (SEAI)
- Department of Justice
- Irish Universities Association (IUA)
- Teagasc
- Health Research Board (HRB)
- Higher Education Authority (HEA)
- Irish Research Council (IRC)
- Department of Enterprise, Trade and Employment (DETE)
- Services Industrial Professional and Technical Union (SIPTU)
- Quality and Qualifications Ireland (QQI)
- IUA Deans of Graduate Studies
- Revenue Commissioners
- National Disabled Postgraduate Advisory Committee (NDPAC)
- Department of Social Protection

▪ **International consultations held:**

- Ministry for Higher Education and Science, Denmark
- Ministry of Higher Education and Science, Finland
- Ministry of Education and Research, Sweden