

Response to the consultation on the national research and innovation strategy 2021- 2027,

16 July 2021



Introduction

The Royal Irish Academy welcomes the opportunity to respond to the consultation by the Higher Education Authority (HEA) and the Department of Further and Higher Education, Research, Innovation and Science (DFHERIS) on the development of the national research and innovation strategy, 2021-2027.

Part I

Q1.1 How should the next Strategy articulate the role of research and innovation as a key enabler of addressing significant challenges (transition to a green, digital and sustainable knowledge-based economy)? What impact should research and innovation have on addressing such challenges?

Scholarship, research, and innovation are essential drivers of a dynamic economy, an informed society, and a vibrant culture. The multifaceted response of institutions, service providers and communities and the high level of citizen engagement with the processes required to deal with the Covid-19 pandemic, provides a basis for a new understanding of the need for specialist knowledge and for creative, collaborative, and transformative action in addressing the big societal challenges facing Ireland. The pandemic has highlighted the interdependence of multiple spheres of activity and communities, the importance of co-operation and resource sharing, international, inter-regional, inter-institutional and the fundamental necessity of building caring communities. The perspective of a wide base of disciplines is essential for an understanding of the social, cultural and ethical impact of the most significant trends that will confront Ireland and the world in the years to come including issues such as ageing, migration, racism, the growth of populism, fake news, and climate change. Open research, research integrity and trans-disciplinary research will be key foundations to maximise the impact research will have in developing trusted and accepted adaptation to these challenges.

Research is a critical input to a high-quality education system and supports the development of an engaged and scientifically informed citizenry. Public investment in R&D creates a sustained and varied flow of the most current knowledge into education at all levels informing curriculum content and directly demonstrating how research can better help us to understand, engage in and protect the world in which we live. The through flow of research evidence insights into policy discussion and public debate is a key impact metric for R&I in addressing these challenges. Science communication, public engagement, and ever stronger flows from research into all levels of teaching and learning (pre-school to higher) are key strategic enablers in addressing these big challenges.

Please see the forthcoming (Autumn 2021) RIA paper “Better Together: knowledge co-production for a sustainable society” for a highly relevant discussion on how the Irish system can increase the impact of Irish sustainability research through the co-production of knowledge.

Q1.2 How can the Strategy demonstrate the importance of research and innovation across higher education and industry for Ireland’s economic recovery and sustainable growth? How can research and innovation be recognised as central to recovery and building resilience when faced with pressing sectoral challenges and financial constraints?

Public investment in R&D when done well stimulates direct investment in R&D and applied innovation by industry, as well as indirect returns where business draws upon the knowledge and creative environment it stimulates to develop marketable products e.g. tourism, hospitality and hotel sector (“only minutes away from” major national cultural institutions”). Higher education and its research activities support private enterprise on the island to prepare and better position itself in response to future challenges: it does this through the spillover of knowledge via the supply of skilled graduates, direct R&D collaborations between HEIs and enterprise, and the publication and dissemination of research findings. A 2019 analysis estimated a spillover value of €373.1 million from research expenditure in Irish universities in 2017.¹

Research is critical to Ireland’s education system and supports the development of an engaged and scientifically informed citizenry. Public investment in R&D creates a sustained and varied flow of current knowledge into education at all levels informing curriculum content and directly demonstrating how research can better help us to understand, engage in and protect the world in which we live. From pre-schoolers learning about bees and pollinators to the undergraduates in labs and lecture halls, research seeps into and informs the very best teaching and learning offered to Ireland’s students. Public engagement activities by HE based researchers bring these benefits beyond the formal education system into our wider society through TV and radio programmes, podcasts and social media, visits to schools, local community groups, etc. A solid, trusted, diverse research and education system will put Ireland on a sound footing to navigate future challenges.

Researchers and scientists are highly trusted by the wider public: more than 80 per cent of respondents to a March 2021 poll by SFI said they trusted scientists and 94% agreed that research was important. A continued trust in science by the public is crucial: without this, research cannot contribute to society and its impact will be diminished as a result. Research integrity and research ethics must be a cornerstone of this strategy.

Q1.3 How can the Strategy articulate the value of human capital from the research system in meeting high-end skills needs? What should the objective of the next Strategy be in relation to identifying human capital needs from the research system?

¹ Indecon, 2019, 11

The starting point for the framework for national research should be a people based one: researchers create the research and the research system, and policy should be framed with the perspective of providing the best mix of rewards, incentives and stretch goals for attracting, developing and retaining the very best people and creating a variety of attractive career options outside of traditional academia.

The strategy should foreground how research and society benefit from having a diverse community of researchers in terms of gender, race and ethnicity, discipline and fields of study, independent scholars and research teams, across all the career stages from early career to senior, who conduct curiosity driven research or focus on applied innovation or research for policy, whose work is connected to and helps progress community or regional challenges or contributes to international scholarship.

It should also articulate how research feeds into education. Strong relationships between research and education help create a well-educated and informed society able to engage and understand the challenges and options facing Ireland and provides a well-educated graduate population for the public and private work force.

The next strategy should follow a broad definition of “people needs” look like. It should include specific actions for dedicated support and professional roles such as technicians, librarians, digital archivists, recognising the contribution these specialist roles make to high quality research and the delivery of the open research agenda. It should articulate the needs of people across the various stages of the researcher career recognising in particular that ERCs need a much wider and more diverse set of supports to support what is likely to be a much more diverse career spanning public and private in research and non-research active occupations.

HE is the major research performer in the state and if our national ambition is to use research as a springboard to achieve other ambitions, increasing the number of HE-based based research roles and opportunities should be a key strategic priority in order to maximise the investment in and potential return from HE education and training of ECRs. It should recognise the sharp drop-off rate of ECRs from public research into private and public sector occupations arises in many cases from the precarity of the careers available in academia post-PhD. It must work with other government departments to develop an economic strategy that creates meaningful high value jobs in the private and public sectors that can maximise investment and skills held by PhD graduates.

Q1.4 How do we frame our national policy to ensure that we have a well-balanced system of research to enable Ireland to be at the forefront of global research and innovation?

The national policy for research must support excellent basic and curiosity driven research; challenge-based research which builds on excellent fundamental research for innovation and application; and mission-based research. The next strategy should recognise the fundamental need for these differing types of research to help push the boundaries of knowledge as well as to address specific narrowly focused

challenges. It should recognise that the process by which challenge-based research is defined and scoped must include a range of disciplines from across the sciences, humanities and social sciences.

Balance should be understood as encompassing a variety of characteristics including balancing by disciplines, funding, research types, contributions, and impacts, rewarding and investing in economic, cultural and social innovation, achieving a diversity of people within the research system, single discipline, transdisciplinary and multi-disciplinary research contributions, regional and international impact.

Balance also means recognising Ireland's leading areas of research strength and how these can be leveraged for impact, and a commitment to build the potential of other areas of the research base to the same level of excellence. It needs a continuum of funding across the ecosystem from PI led grants (at early, mid and senior career levels), fellowships for ECRs, to programme and centres type awards- across a spectrum of TRLs- from fundamental to more applied – as well as research centres and multi-PI programme grants.

The Strategy needs to recognise the way the benefits of different research approaches take varying periods of time to be fully realised and its accompanying actions plans should take account of this. The Academy favours a broad and inclusive definition of impact which goes beyond narrowly defined direct causations and allows for wider and more nuanced benefits including for example the role played by research in legitimately scrutinising and criticising public polices and institutions.

Q1.5 How should the role of research for policy be supported and positioned in the next Strategy?

Researchers and scientists are highly trusted by the wider public: more than 80 per cent of respondents to a March 2021 poll by SFI said they trusted scientists, 94% agreed that research was important and 85% agreed that scientists have a professional responsibility to talk about research findings with the public. Maintaining academic freedom, research integrity, and ensuring research is performed to the highest ethical standards is critical to maintaining this level of public trust in publicly funded research and its insights.

The pandemic has demonstrated the immense resources and expertise within the Irish academic research base that can be drawn on to inform public policymaking and decision-making for the public good. Higher-education institutions (HEIs) are major research performers in Ireland, bringing together world-class expertise from the full range of disciplines in the natural and life sciences, engineering, computer sciences, arts, humanities, social sciences and medicine. This is a hugely significant resource for policymakers who seek to develop evidence-based policy.

The 2021 [roadmap paper on Research for Public Policy](#) by the RIA and the Irish Research Council calls for the development of a national science advice mechanism to connect the expertise in the academic research community to the Irish government's policy and information needs in a structured and transparent manner.

The three key structural elements within the proposed model draw heavily upon the European Commission's Science Advice Mechanism but adapted to the Irish context would include:

- a central government lead that helps to channel and manage requests for advice, works with the group of chief scientific advisors and is the recipient of the final scientific opinion—this role could be fulfilled by the DFHERIS or another central government department, such as the Department of Public Expenditure and Reform (DPER);
- a group of chief scientific advisors—identified by an independent selection panel, composed of multidisciplinary representation from the sciences, arts, humanities and social sciences; and
- academic knowledge brokerage via a collaborative network managed through the HEIs and the RIA, such as a national policy challenge platform or a higher-education research for policy network, on the lines of the UK's Universities Policy Engagement Network—this would perform the function of the SAPEA in the European model.

The Strategy should revisit the existing role of and governance arrangements for Ireland's Chief Science Advisor to ensure its complete independence. A critical first step would be to ensure that the office holder of the CSA role is not participating in the governance, management or administration of any public research funding agencies to avoid any possible perception of a conflict of interest or bias.

Q1.6 What should the next Strategy's ambitions be in terms of research and innovation as an enabler of balanced regional growth?

We need to build relationships in and across communities on the island to become better informed and much more inclusive in how we define problems and find solutions. We need to build trust between researchers and communities at a regional and national level. We need to encourage the participation of Irish researchers in local, national and global research networks, policy for research and research for policy fora to build recognition of the wealth of knowledge and scholarship in Ireland and to ensure that solutions at the global level are informed by a diversity of voices, not just the G8.

In order to best encourage regional growth in research and in enterprise, the strategic ambitions should include:

- Objectives for regional growth which are measurable at a regional level
- Metrics which place a deliberate focus on regional impact as well as regional investment
- A means to ensure regional vision and the needs of the local R&I environment are clearly visible in regional R&I initiatives, as opposed to a simple repetition of national objectives overlaid on a region.

- A commitment to fostering strong civic partners and champions for R&I at regional levels to give both a sense of ownership and a role in leadership of regional R&I initiatives
- Mechanisms to foster inter-regional collaborations to increase impact.

Q1.7 How should the next Strategy articulate the **role of our research and innovation system in driving connectivity and collaboration on an all-island, EU and international level?** How should our national priorities draw upon and align with revised **European Research Area** priorities?

Research is intrinsically collaborative and international. Ireland is a small open economy and the challenges we face are greater than any one discipline or field of study within the country can resolve even when working together. Ireland's strategy needs to be collaborative and outward facing: rewarding those who bring together the expertise within their discipline disregarding institutional affiliations, as well as building researchers capacity to engage with international collaboration. The Strategy should clearly state a vision for how Ireland will invest in supporting excellent research to enable our researchers to become sought-after contributors to international research partnerships.

Research is experiencing significant cultural changes at the global level. Ireland's research strategy must recognise and show leadership in responding to these changes most particularly those brought about by the adoption of the SF DORA principles, open research, citizen science and co-design and co-production of research. Ireland has clear potential as a small open research system to develop actions in respect of each of these areas and to use these to demonstrate our system's agility, flexibility and inherent willingness and capacity to innovate in how we do, assess and use research.

Research and scholarship have a critical role to play in supporting Ireland's reputation as a great place to live, raise children, work and invest but also to foster collaboration with other countries to tackle global challenges. Collaboration between researchers from different countries can help create pathways for working together on controversial issues or just generally advancing knowledge more generally, divorced from political issues (The CERN particle accelerators in Europe is an exemplar of this type of value). This soft power is likely to become increasingly important in the coming years and Ireland should draw upon the international networks and relationships developed by its researchers as a way of positively engaging with other systems. It must also recognise that international collaboration carries risks: some research culture and systems differ in significant ways to that of Western Europe and the Strategy must assert the primacy of academic freedom and research independent, integrity and ethics as the cornerstone of the Irish system.

The European Research Area priorities will be increasingly important and the Strategy must support the deepening of national capacity to engage with its opportunities: the ERA is intended to supplement not replace national funding and supports.

Q1.8 Are there additional strategic priorities not covered in Part One that you wish to address in your submission?

The Academy would encourage the Strategy to address the following issues more explicitly:

- Investment in fundamental, discovery oriented, bottom-up research as core principle of research funding governance structures
- the primacy of academic freedom and research independent, integrity and ethics as the cornerstone of the Irish system and research practice
- A sense of the unique contribution research makes to Ireland's international reputation as, for example, a custodian of cultural values, and its relationship to education, teaching and learning at all levels of education
- An inclusive research system which encourages a diversity of disciplines and people, and which recognises a diversity of contributions, influences and impacts across different parts of the system (from the lone scholar to the research team, technicians to archivists, STEM to AHSS)
- demonstrate how research and innovation is important to help us learn about the world in all its dimensions and how it can help people, communities, regions, societies and economies to flourish. The strategy should embrace a wider perspective for the contribution and importance of research to Ireland including cultural and societal recovery, recognising that innovation is equally at the social or creative level as at the economic and industrial level.

The Covid-19 crisis has pushed society into a heightened digital engagement but conversely also created a much greater public outpouring of appreciation and desire to access our natural heritage, performance arts and cultural spaces. The next strategy should look to:

- Extend eligibility to all competitive public research grants schemes to the heritage and cultural sector and its practitioners
- Ensure the development of Ireland's open science infrastructure is inclusive of heritage and cultural research data and research outputs
- Ensure that natural heritage and cultural expertise is represented within expert scientific advisory groups to government
- Build on natural synergies between its aims and objectives and those of Ireland's national heritage strategy, *Heritage Ireland 2030* to further build and resource heritage research and research capacity.

Part Two: Delivering on the vision across six areas of strategic action

Area 1: Use a mission-oriented approach to tackle grand challenges such as climate and digital transitions

Q2.1 What could the role of a mission-based approach to solving grand challenges be within the national R&I ecosystem? What structures could be used to deliver on this? How do we reconcile a mission-based approach with Research Prioritisation?

Mission based research is intrinsically multi-disciplinary with all relevant disciplines involved in the co-design of the Mission questions and definition as well as its programme of research. Mission based research should build upon Ireland's core and emerging areas of excellence in research and innovation and align with priority national policy issues in the economic, social, cultural and environmental spheres.

A mission-based approach can be complementary to research prioritisation where there is a diversity of research funding programmes and where research prioritisation does not become the de facto principal selection criteria for the allocation of public R&D investment.

The structures needed to deliver mission-based research include:

- A strong higher education research base across the full range of disciplines
- A diverse public research funding base to support basic fundamental research across all disciplines, seed-funding to build multi and trans-disciplinary research networks and co-design of initiatives
- Greater use of future and foresight scoping mechanisms to identify emerging areas of challenge and use of co-production methodologies via a national research for policy platform bringing together researchers, government, civil society to define and agree the mission
- Significant additional funding: mission-based funding requires very large investment to be done properly. If Ireland is to seriously pursue this type of research significant additional funding will have to be channelled to this over and above that already feeding into the system, with sufficient flexibility to channel funding to emerging mission areas
- Recognition within funding and decision-making matrix that the assessment of mission-based research requires differentiated metrics and targets different to those of traditional research projects with specific targets, mission orientated research can often include unintended outcomes and impact.
- It is known that the success of mission-based research depends on long historical trajectories, such as past research and innovation activities that have contributed to the creation of knowledge and to the development of specialised capacities. In an Irish context there is the need to place an emphasis on basic research as the foundation for successful mission-based approaches.

Area 2: Ensure research and innovation powers our economic recovery

Q2.2 How can we ensure that we support enterprises to engage in research, development and innovation or become more research, development and innovation active? How can we

encourage greater levels of industry and academic collaboration or collaboration between SMEs and multinational companies? How can we support innovation in and of itself within enterprise? How can we improve the knowledge transfer system?

The Academy's Engineering Sciences Committee recommends:

- Expansion of existing programmes with a demonstrable excellent track record of knowledge transfer. A good example is the EI Innovation Partnership programme which has worked well to increase collaboration and knowledge transfer between companies and the public research system. The most recent Innovation 2020 Progress report in 2019 noted that a target of 70 companies participating in projects was expected to be achieved.
- Establishment of a new enterprise liaison positions to promote collaboration between the enterprise sector and the public research system as per the as of yet unmet commitment in Innovation 2020. The KTI Strategic Plan 2018-2021 proposed three "Connector posts" to work between the enterprise sector and the public research system. However, it is not evident that approval for these posts has been provided to date.
- Innovation 2020 contained an action to promote "innovation in the digital society". The successor to innovation 2020 needs to go beyond this and include action to exploit the opportunities for knowledge transfer offered by digital technologies. This was a key recommendation within the 2019 OECD report on University Industry collaboration.

Area 3: Support the talent pipeline at the heart of our research and innovation system

Q2.3 How do we deliver a pipeline of talent for academia, industry and public service? How can we best support researchers on their career pathway?

I. Enhance career advice and support for PhDs students and post docs

There is a need to enhance career advice and support for PhDs and post docs, for example by providing detailed advice, mentoring, internships and placements to ensure that the full spectrum of career possibilities is known from an early stage. The Irish Survey of Student Engagement for Postgraduate Research Students (ISSE-PGR) piloted in 2018 is a very useful monitoring tool. Whilst the ISSE-PGR survey covers a wide range of areas and has a dedicated set of questions related to career aspirations, there are no survey questions related to level of satisfaction with the provision of support by HEIs in formulating such career plans and goals. There is no national monitoring tool equivalent to ISSE-PGR is available for the post-doc researcher cohort, particularly early stage post-docs. It is recognised that post-docs are of course employees rather than students and that monitoring takes place locally at institutional level, but there appears to be no means to take an aggregate view of this at a national level

2. Grow bilateral mobility of researchers between academia and industry

Innovation 2020 focused on enhancing existing support for the flow of researchers between academia and industry and increasing the share of PhD researchers transferring from SFI research teams to industry. All of the measures introduced so far are very worthwhile, but the focus is largely on researchers moving to industry as a long-term career move, usually after completing a PhD. There is less focus on mobility between academia and industry for more senior academics/researchers for short periods in the order of 1-2 years. There are of course considerable logistical, and HR related challenges attached to such mobility, but also considerable benefits to the staff and their institutions.

3. Investigate and put in place measures to mitigate the impact of COVID-19 on progression for researchers.

There is an increasing body of evidence that the restrictions imposed by the pandemic are having a negative effect on research careers, for example as recognised by the OECD in a 2021 report in an analysis of the challenges within science systems, many of which are accentuated by COVID-19. There are also specific COVID related issues for the careers of female researchers which will need to be highlighted in future see for example the 2021 report by the US National Academies of Science, Engineering and Medicine, “Impact of COVID-19 on the Careers of Women in Academic Sciences, Engineering, and Medicine”.

4. Enhance the supports and learning within the PhD structure to build key communication, team working and other skills to enhance the employability of Phds in non-academic sectors.

Area 4: Build a strong research and innovation environment grounded in excellence

(Sub-headings: Build a world class environment for research and innovation; Make excellence our consistent goal; Optimise public funding for research and innovation)

Q2.4.1 What are the key priorities in determining research infrastructure needs across the system, both for higher education and for industry? How can we ensure best value for money for investment in research infrastructure?

Key principles for future investment in research infrastructures:

- Ensure a full-discipline definition and understanding of research infrastructures embracing libraries and archives, national history collections, as well as laboratories and equipment, and the people who run and develop such infrastructures.
- Research infrastructure calls should also include opportunities for infrastructure capacity building e.g. technicians, training and upskilling
- The enactment of public legislation in areas other than HE and research has had unanticipated consequences in hindering areas of RI development e.g. development of a shared national biobank. A

nation wide conversation on data and privacy to achieve a consensus on use of bio-data for research purposes should be pursued.

- All publicly funded research infrastructures should be shared and delivered collaboratively to the community of public researchers working in the relevant area regardless of institutional affiliation
- Research infrastructure investment calls should prioritise and reward highly collaborative bids that bring together the community of researchers in the country
- Build an inclusive open science infrastructure e.g., capable of harnessing and supporting heritage and cultural research data and research outputs.

Lack of investment research infrastructures has led to a significant dependency on obsolete equipment and facilities in the Irish HE sector (see the RIA 2018 report, [Future Proofing and Improving Research Infrastructures in Ireland](#)). The requirement for a new cycle of PRTL or equivalent infrastructure was explicitly stated in the Innovation 2020 mid-term report and the National Development Plan and needs to be prioritised as a matter of urgency. This funding should be independent of the agencies e.g., separate from the SFI equipment call. Investment to-date has been largely focussed on the purchase of once-off, unique high-value instrumentation to be accessed nationally from a single location. While the national infrastructure approach has been enabling, it must also be recognised that there is a second category of locally available “workhorse” equipment essential for all activities.

Fostering an ‘Open’ research environment requires a longer-term investment in research infrastructure with dedicated, 5-year rolling funding streams, that include support for the necessary ‘people/technical staff’ required and are linked to a demonstration of the continued value and impact of the infrastructure in supporting research, innovation and public engagement.

Q2.4.2 What support and structure needs to be provided to embed good research practices across the system? How can researchers be incentivised to engage with this agenda?

A vision for the future must have research integrity at its core to safeguard public trust in and support for research.

The National Research Integrity Forum has provided huge support and a dedicated focus on supporting and securing good research practice and providing research integrity training across the HE and public research system. This success needs to be sustained. However, the new strategy needs to consider research integrity challenges in an era where R&I activity is becoming increasingly internationalised.

National research integrity and research ethics policies and processes must respond to the challenges faced by increased international research collaboration. The increase in international R&I collaboration poses a particular challenging due to differences in definitions, policies, standards and procedures between countries. Practical problems associated with dealing with possible breaches of research integrity across

national boundaries, for example due to linguistic or cultural barriers and the lack of familiarity with different systems, need to be recognized and solutions identified.

A 2021 discussion paper by ALLEA entitled “Fact or Fake”² describes and discusses the problems and the consequences of science disinformation in three areas of concern, namely climate change, vaccines and pandemics, and what research can do to increase awareness and minimize harm caused by the spread of disinformation. It highlights the societal value of the scientific method, research integrity, open science communication and the resulting trust in science.

Q2.4.3 Do we need to review or reform public funding structures for research and innovation? What should public funding priorities be over the course of the next national Strategy?

- Ireland needs a substantial national debate involving all stakeholders on the appropriate research funding mix that will optimise outcomes for all research endeavours in Ireland and makes best use of the substantial funding being provided by the state.
- A continuous cycle of Research Prioritisation post 2023 needs to be put in place to identify strategic areas of opportunity on a rolling basis, taking account of the latest and likely future advances in science and technology.
- There is no mechanism for a whole-of-system review of the performance, impact and effectiveness of public research funding agencies or agencies with a substantial funding element (e.g., Enterprise Ireland) and their performance and impact. This should be addressed in the next Strategy.
- A 2020 policy analysis by Trinity College Dublin entitled “The value of investigator-led research to the growth of Ireland’s Innovation Economy”, focused on the need to restore balance to the current system of research-funding in Ireland. One of its conclusions was: “if funding continues to be concentrated in SFI Centres at the expense of investigator-led research, there will be adverse consequences for Ireland’s future as a knowledge-driven society, including direct economic impacts, such as a drop off in spin-out companies which are so crucial to job creation and a resilient, diversified tech economy”. The policy analysis also recommended that a 2:1 ratio should be introduced for funding between investigator-led and collaborative industry research.
- A similar concern in regard to the balance of funding was also expressed in the most recent HEA System Performance Framework Report (HEA, 2020) under System Objective 4 – Excellent Public Research System, issues arising. Specifically, it was noted that: “The original Research Prioritisation exercise committed to maintaining underpinning expertise across emerging enterprise research areas. Higher education institutions are reporting that this is happening less and less, and that limited national

² <https://allea.org/wp-content/uploads/2021/04/Fact-or-Fake-Discussion-Paper.pdf>

investment is being increasingly funnelled into a smaller number of large centres to the detriment of the research base”.

- Finally there is significant competitive overlap between SFI and Enterprise Ireland (EI) at a programme level in the funding of research and development jointly with industry. Reducing this overlap in favour of EI could allow for a rebalancing of the SFI funding mix to focus on more basic investigator led funding, without an increase in the overall SFI funding envelope.
- Future research prioritisation should place a special emphasis on research at critical overlaps between certain priority areas, for example the overlap between the ICT and Energy priority areas. Forecasts suggest that the total electrical energy demand of ICT will accelerate in the 2020s, rising to 21% of global demand by 2030, compared to circa 8-9% currently. Such research also needs to build in social and behavioural sciences components to inform public debate on these issues, understand peoples’ concerns and build a consensus on viable policy options to reconcile for example energy needs with societal needs.

Area 5: Make Ireland a regionally rooted and globally connected island of innovation

Q2.5.1 How can the Strategy best ensure that it delivers on regional priorities and promotes regional balance while pursuing excellence and impact? How can the TU sector be supported to drive their research agenda?

The nature of education and research for the technology sector is now global, driven by societal challenges and needs which are also global in nature. The link implied in this question between regional priorities and the driving the research agenda of the TU Sector only is an out-of-date construct, which is more aligned with the creation of the original regional technical education sector in the 1960’s rather than the R&I needs of Ireland in 2021.

A successor to Innovation 2020 needs to clearly recognise the vital international role of the TU sector in positioning Ireland’s HE system as a Global Innovation Leader and of the role of the TU sector in growing research and postgraduate education in Ireland. In order to allow the TU sector to fulfil these roles a variety of supports needed to be provided to allow TUs to increase their existing research and innovation capacity. For example TUs must be adequately supported and equipped to compete successfully for research funding both in Ireland and further afield. Furthermore, beyond funding, attracting the very best talent to undertake research is equally important and specific measures are needed to promote TU research internationally along with measures to attract international research talent.

Q2.5.2 How can we best support the development of all island collaboration on research and innovation?

[The 5 July announcement of an Irish government fund to support all-island research is warmly welcomed and the state is commended for its leadership in this area.](#)

Area 6: Foster a more collaborative and impactful system

Q2.6.1 How can we effectively ensure that knowledge is transferred as widely as possible to ensure greater impact of research?

The public engagement mission of research and science must be a central element of the next national strategy. A 2021 analysis by ALLEA - the European Federation of Academies, calls for

- initiatives to raise science literacy and digital media literacy,
- more dialogue in science communication practices
- a stronger focus on communicating how science works
- serious engagement with the public when exercising or communicating research
- valuing the virtue of intellectual humility when communicating scientific evidence
- the maintenance of good research practices and high ethical standards to ensure integrity and trustworthiness,
- accountable, honest, transparent, tailored and effective science advice mechanisms
- a European Centre/Network for Science Communication and a European Code of Conduct for Science Communication (ALLEA , 2021).

Q2.6.2 What structures are needed at national/government level to support the research and innovation system? How can collaboration, coordination and engagement be strengthened? What should be the specific role of the new Department for Further and Higher Education, Research, Innovation and Science vis-à-vis other Government Departments?

- The next Strategy should give consideration to maximising the range of incentives and approaches to fostering collaboration within the public research system, which should as appropriate include mandatory conditions involving collaboration across a significant number of funding programmes.
- There have been a number of successes in increasing collaboration which can provide useful learning for future strategic actions, for example specific sectors and their related organisations have launched research funding schemes which focus on and encourage collaborative research in the public research system, Of particular note is the 2019 funding call by the Department of Agriculture, Food and Marine which effectively made collaboration between different organisations mandatory by incorporating a requirement that applications to the funding call with a budget over €600,000 needed to involve at least two and up to four research performing organisations.

- It is accepted that making collaboration between Research Performing Organisations (RPOs) mandatory, often for higher value awards, needs to be selectively applied and may not be applicable in all cases.
- It is noteworthy in regard to collaboration that in developing its new Strategy to 2025 “Shaping Our Future”, SFI undertook an extensive consultation process across the research community. The recommendation most commonly arising from the consultation process was for SFI to take “a more collaborative approach with funding agencies to build a more effective and efficient national research and innovation system”.
- Ireland should support models of collaborative research such as co-production, where researchers work in partnership with for example, patients and caregivers, clinicians, policy-makers, health system leaders and others who identify a problem and have the authority or ability to implement the research recommendations.
- Public involvement in research needs to be included in structures relating to research strategy, policy and oversight. This requires more dedicated funding and resources in areas such as public discourse/dialogue, citizen jury / assembly-type approaches, science communication and engagement of minority groups.

Q2.6.3 How do we ensure that we engage with multiple communities and stakeholders to both inform policy development and communicate the impact and relevance of R&I to citizens, communities, regions and our national and EU partners? How does your organisation engage on R&I issues with citizens and community organisations? What is your experience of engagement with national R&I organisations?

The RIA pursues an active strategy of identifying and nominating Irish experts to participate in European Union and global science policy working groups. This both showcases the depth of expertise within the Irish system but also ensures that such debates hear from a diversity of perspectives including those working within smaller scale research systems. Irish experts have been highly influential in these for a and are held in high esteem by their European and global counterparts. The RIA also supports the participation of Irish researchers in multiple research policy international groups including groups on Open Science, Research Integrity, Research Assessment and Publication: again, this ensures that Irish perspectives feed into these debates and also ensure that the learning from these groups is brought back to and feeds into Irish debate ensuring that Irish policy discussion is informed by the most current international thinking. Participation in these groups is often self funded by the RIA or by the experts host institution and represents an unseen cost carried by HEIs but one which has national and international impacts far beyond the institution. This type of activity should be more adequately recognised and supported by the Strategy.

The 2021 ALLEA report ‘Fact or Fake’ calls for more open conversations on an equal footing between researchers and a wider public, arguing that allowing room for uncertainties, assumptions, values and social

questions could lead to greater mutual understanding and trust. For instance, the model of citizen assemblies on science based policy is designed to bring science closer to the people and engage the public, e.g. on climate science (Suiter, 2016), and Ireland could broaden and formalise the use of citizen assemblies to build greater public engagement with research.

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