Research & Innovation Priorities for the Technological Higher Education Sector

Response to a request from the HEA Committee on Research and Graduate Education

4th May 2018

Context

Over the past 10 to 15 years, research, development, innovation and engagement (RDIE) activities in the technological higher education sector have grown substantially. According to the Survey of R&D in the Higher Education Sector 2014-2015, HERD in the technological sector has tripled since 2004. HEA data shows that there has been a 40% increase in the number of students registered for research degree programmes in the sector over the period 2012-2016. RDIE in the technological sector is intrinsically linked with teaching and learning, knowledge transfer and engagement, with a primary aim to produce research-informed graduates with skill-sets aligned to enterprise and community needs. Many research degree graduates from the sector have carried out their work in collaboration with industry/community organisations, and the growth in research degree enrolments is largely driven by the sector's reputation for mission-oriented, close-to-the-user research, and the ease with which external partners can work with our researchers. Industry/community organisations are deeply embedded in the educational programme design process across all qualification levels offered by the sector, from Higher Certificate to doctoral degree. They are also on the steering boards of Institute research centres and institutes.

The sector is performing translational research with a range of regional, national and international enterprise and community partners. Although long recognised for strong research and innovation capacity in STEM areas, particularly in working with enterprise, the sector has developed and is continuing to grow capacity in arts, media, the humanities, business and social sciences. The sector is also an incubator of new enterprise, supporting start-up and spin-out companies, and assisting those companies to engage in research and innovation. These activities, particularly in support of regional development, have led to the recent National Planning Framework to 2040 positing the idea of creating '**Technology and Innovation Poles**' around the technological higher education institutes.

At present, the sector is on the cusp of a major transformation in higher education in Ireland, namely the establishment of Technological Universities (TUs). In March 2018, the Technological Universities Act 2018 was signed into law, allowing the consortia of Institutes of Technology who have been preparing for TU designation to realise their ambitions. The first TU, arising from the merger of Dublin IT, IT Tallaght and IT Blanchardstown is on

track for designation during 2018. Three additional TU consortia are in place at present: Cork IT and IT Tralee; Waterford IT and IT Carlow; and Galway-Mayo IT, Sligo IT and Letterkenny IT. It is anticipated that further TUs can be established in the coming years.

The Technological Universities Act places research and innovation at the heart of the activities of a TU and puts particular emphasis on the contribution of TU R&I activities to economic and societal development in their regions. R&I is growing across the entire technological higher education sector - not just those Institutes currently seeking TU designation – as seen in the substantial growth of R&I activities in the sector over the past 10-15 years, evidenced by the aforementioned growth in HERD and research student numbers. An additional indicator of this growth is the significant involvement of the Institutes in SFI-funded Centres and EI/IDA Technology Centres (Institutes are active in 10 of the 17 SFI Centres and 9 of the 14 Technology Centres). The sector has partnered with Enterprise Ireland to develop a unique aspect of the Irish research landscape, the Technology Gateway programme, which is recognised for providing valuable close-to-market research solutions for industry and an industry-oriented research experience for postgraduate and post-doctoral researchers. In addition, the sector has a strong track record of successful engagement in European research funding programmes, particular INTERREG for supporting regional development in research, innovation and enterprise.[1]

To fully realise the technological higher education sector's ambitions in R&I, it is essential that the sector has the opportunity to engage strongly in national R&I centres/initiatives, and is appropriately supported to do so. The technological sector welcomes the opportunity to inform the HEA Research and Graduate Education Committee of the needs of the sector in terms of national research policy and activities.

Key Priorities

1. Resourcing & Capacity to Deliver

TU Impact*:* Whilst the Technological Universities Act 2018 brings research, development, innovation and engagement into the heart of activities of a Technological University, there is a lack of clarity about what TU designation will bring in terms of funding, supports, staffing and campus developments relevant to RDIE activities.

Access to Infrastructures/Tools: The sector welcomes the work led by the HEA regarding electronic journal access and bibliometric tools. Currently, provision of access to e-journals, databases and bibliometric tools is a matter for each Institute to handle individually. This leads to non-uniform access to these vital resources which support the sector's RDIE activities and assist with monitoring of their impact. It also leads to poor value-for-money, as individual Institutes do not have a strong negotiating position with the publishers. At present, the sector is spending approximately €5 million per annum on e-journal access alone, with substantially less coverage of journal collections than that provided by the IReL consortium. Regarding bibliometric tools, the sector would strongly value access to these to assist with validating the impact of their RDIE activities, with access provided either individually, or sectorally via THEA.

Research and Innovation Metrics: The use of data to evidence RDIE activities is increasing in importance across the higher education sector. The new Higher Education System Performance Framework contains a substantial list of metrics to monitor RDIE, and the review of the Recurrent Funding Allocation Model (RFAM) recommends the incorporation of specific RDI metrics into a calculation for a research-enabling "top-slice" for the technological sector. It is important that these metrics reflect the reality of the nature of RDIE activities in the sector.

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[1] Recent examples include: LYIT - Bryden Centre for Advanced Marine and Bio-Energy Research. Funded by INTERREG VA (Northern Ireland, Ireland, Scotland). €2.7 million to LYIT; DKIT - Border and Regions Airways Training Hub. Funded by INTERREG VA (Northern Ireland, Ireland, Scotland). Combined funding to consortium of three partners: €7.7 million; DKIT - Eastern Corridor Medical Engineering Centre. Funded by INTERREG VA (Northern Ireland, Ireland, Scotland). Combined funding to consortium of six partners: €8.2 million.

Appropriate metrics will also assist external stakeholders in understanding what RDIE "means" in a technological sector context.

Open Research*:* The sector is very much aware of the increasing importance of the Open Research/Science agenda nationally and internationally, and particularly in relation to the proposed Horizon Europe framework programme. The sector is delighted to contribute to the work of the NORF and looks forward to the appropriate resources being made available to support the implementation of Open Research in Ireland.

2. Talent

Staff Capacity*:* A significant issue which hampers the growth of RDIE in the technological sector is the capacity of academic staff to engage in RDIE. The current workload allocation model and HR/IR environment in the sector do not facilitate, incentivise or reward staff participation in RDIE activities. The Review of Lecturing being undertaken by the Department of Education and Skills must provide solutions to enable academic staff to develop RDIE activities as a core element of their role. The lack of appropriate promotion opportunities for research-active staff is an additional concern: for example, a professorship is an honorary role available in certain Institutes only.

Supporting Research Staff: Structural deficiencies in researcher careers are broadly uniform across the higher education sector. They include the lack of a structured progression to employment within academia (recognising that these opportunities are limited), unclear pathways to exiting academic employment, and varying levels of learning and development opportunities across higher education. In the absence of a national Researcher Careers Framework (RCF), several Institutes have put in place their own. The sector has input to the national RCF proposal prepared by the Irish Universities Association and looks forward to its implementation and appropriate funding to support the professional development aspects of the RCF being made available. One additional matter that affects researchers in the technological sector is the absence of pension provision. THEA and the TUI have made substantial progress on this matter over the past year and look forward to researchers from the sector being permitted to join the Single Public Services Pension scheme during 2019 at the latest. However, this will affect the national budget for research and innovation, as the sector will require all national funders to provide a 20% employer's pension contribution.

Postgraduate Research Education*:* As mentioned at the outset of this paper, the number of students registered on research degree programmes in the Institutes has grown by 40% since 2012. This growth is substantially driven by the eligibility requirements for TU designation, which require applicant Institutes to demonstrate that they have at least 4% research students (research students registered on a programme at masters and doctorate level as percentage of students on a programme at honours degree level and above), with growth to 7% research students within 10 years. In addition, the Institutes involved in the Technology Gateway programme require a pipeline of research students to deliver on industry-sponsored projects. In addition to seeking external competitive research funding, many Institutes are using their own internal funding to subsidise postgraduate enrolments by offering postgraduate scholarships/seed funding. An over-reliance on the use of internal funding is not sustainable in the long term, and where external funding is available, it often does not cover the full economic cost of delivering the degree. In addition, the sector is challenged in expanding research degree provision into new discipline areas by QQI regulations which require Institutes to complete a lengthy three-phase process (Approval, Accreditation, Delegation of Authority) to gain permission to deliver doctoral degrees in a particular research area. These regulations are at odds with national ambition to increase doctoral degree enrolments, in particular in areas related to enterprise needs, as articulated in Innovation 2020.

3. Funding

Funding is a substantial constraint on Institutes actively and strongly engaging in RDIE. The three main issues are:

RFAM: The review of the RFAM recommended the introduction of a research & innovation top-slice for the sector, however its implementation is based on more funding becoming available, with no time-line for implementation. In addition, the RFAM review did not specifically take into account the formation of Technological Universities, and does not foresee a dedicated funding model for these new institutions. A lack of dedicated research & innovation funding via Institutes' core funding hampers the ability to, for example, maintain and upgrade equipment and support the operation of the campus business incubators.

Inability to Borrow: A borrowing framework for the sector is foreseen in the legislation but has never been enacted, hampering the sector's ability to, for example, provide state-of-the-art RDIE infrastructure. Recently, the EIB's InnovFin – EU Finance for innovators fund was highlighted as an RDIE capacity-building mechanism for higher education, but at present the sector cannot take advantage of this (and similar) opportunities.

Access to Research Funding: Despite the tripling of HERD across the sector since 2004, many state-funded research programmes have eligibility criteria which prevent researchers from the Institutes from applying to them. When Institute research staff are eligible, they find it challenging to secure the funding if they have a track record of industry-oriented or even European funding (as an example, for many of their Calls, SFI will only accept EU grants as eligible if the researcher is a Co-PI or WorkPackage leader). The Programme for Research in Third-Level Institutions, being fully open to all higher education institutions, was transformative for RDIE in the technological sector, and a new Cycle of PRTLI (as foreseen in Innovation 2020) would assist with continued growth of activity.

4. Joined-Up Irish Higher Education and Research System

The sector very much welcomes the HEA's proposed initiatives on a joined-up Irish higher education and research system but would like to see this taken further. One issue is the lack of coherence between the proposed Horizon Europe programme and the National Research Priority Areas, which will affect Ireland's ability to compete in this next Framework Programme. Finally, while it is clear that higher education has an anchoring role to play in the realisation of our national ambitions in the area of research and innovation, recently it seems like the higher education voice has been somewhat lost in the discussions at government level. This problem is not unique to higher education – government places some weight on the contribution of business to creating the "knowledge economy" but, according to the business research community, does not adequately consult with them on relevant matters, for example, the refresh of the National Priority Research Areas. The recent Consultation on the Proposed Centres for Research Training is indicative of this problem – a proposal for new structures in the area of doctoral education would have been strengthened by being run as a joint consultation by DES and DBEI. Higher education needs to speak with a louder and more unified voice regarding the development of the national research and innovation system, and THEA and its member Institutes look forward to adding their voice to those of our colleagues across higher education to reinforce its position at the centre of that national system.