Restructuring of the Irish Institutes of Technology Sector – New Knowledge or Mission Drift?[1]

Abstract

Higher education in Ireland has undergone a rapid expansion in past decades, with an associated increase in research funding and enterprise engagement, but this has been more recently undermined by austerity measures resulting from the economic recession in the end of the last decade. Discussion around the restructuring of the Irish Institutes of Technology (IoT) sector began following the OECD review of Irish higher education (2004), which recommended enhancing research infrastructure and noted the cost implications of maintaining a large number of smaller-sized higher education institutions. The National Strategy for Irish Higher Education to 2030 (2011), also referred to as the Hunt Report, was set out in the context of austerity and proposed merging the Irish Institutes of Technology (IoTs) into a smaller number of stronger institutions, followed by the potential establishment of Technological Universities (TUs).

As Ireland enters a period of economic recovery, rationalisation measures are becoming secondary to the efforts aimed at enhancing the IoT sector and enabling it to better respond to the needs of the modern society. Potential Technological Universities would take on additional functions, including building research capacity – an aim reflected in the Technological Universities Bill 2015. This paper provides a review of some of the reasons behind the restructuring internationally, and how IoTs' main characteristics compare with institutions of similar standing in other European countries. The role of higher education today is reviewed, along with the progression of research development in Ireland.

Some implications of Technological Universities are discussed, including their potential contribution to fostering research and development in Ireland, particularly in the field of applied research – but also the potential drift of vocational mission in the TUs, challenges associated with TU's additional functions, and how academic work may be changing in the newly formed institutions. It is argued that further consideration of these and other implications

[1] Tanya Zubrzycki, Ph.D. Candidate, School of Education, Trinity College Dublin, E-mail: zubrta@tcd.ie

in developing the TUs is needed through engagement with stakeholders, to enhance the outcomes for the students, regional communities, and society as a whole.

Keywords
Institutes of Technology; restructuring; higher education; research and development; knowledge-based society

Abbreviations
BERD – Business Enterprise Expenditure on R&D
HE – Higher Education
HEA – Higher Education Authority
HERD – Higher Education Expenditure on R&D
IoTs – Institutes of Technology
PRTLI – Programme for Research in Third Level Institutions
SFI – Science Foundation Ireland
IRC – Irish Research Council
OECD – Organisation for Economic Co-operation and Development
R&D – Research and Development
Thea – Technological Higher Education Association
TU – Technological University
UAS – University of Applied Sciences

1. Introduction

The last few decades have seen a significant expansion of higher education globally, with student numbers more than doubling between 1999 and 2014, "from around 95 to 207 million in the world."[2] According to OECD's recent *Benchmarking higher education system performance* report, this expansion is a result of an increasingly important societal role of higher education (HE).[3] In particular, higher education is viewed as a significant contributor to the development of research and human capital, both of which serve as a base for innovation that drives productivity and economic growth.[4]

Consistent with global trends, higher education in Ireland has undergone rapid growth in past decades, with a substantial expansion in national funding for research in science & technology, and more emphasis on collaboration between the academy and enterprise.[5] However, as noted in a recent HEA report, this growth has been "underfunded" following the economic collapse in the end of the last decade, with the national message to "do more with less."[6]

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[2] UNESCO, "Education: Gross enrolment ratio by level of education" (database) (2016), quoted in OECD, "*Benchmarking higher education system performance: Conceptual framework and data*. Enhancing Higher Education System Performance" (Paris: OECD, 2017), 9.
[3] OECD, "Benchmarking HE system performance," 9.
[4] Ibid.
[5] Ellen Hazelkorn and Amanda Moynihan, "Transforming Academic Practice: Human Resources Challenges," in *The Research Mission of Higher Education Institutes outside the University Sector*, ed. Svein Kyvik and Benedetto Lepori (Dordrecht: Springer, 2010b), 175.
[6] HEA, "Higher Education System Performance 2014-2017. Third Report of the Higher Education Authority to the Minister for Education and Skills" (Ireland: HEA, 2016), 6.

Ireland has a binary higher education system consisting of seven universities, fourteen Institutes of Technology (IoTs), and a number of colleges and private institutions. With over 93,000 students in 2016/17 academic year, the Institutes of Technology represented the second-largest sector in students enrolments after the universities with 125,000 enrolled students.[7] The IoTs are geographically spread throughout the island, which has facilitated their important regional mission.

The present paper begins with a discussion of the efforts to restructure the Irish Institutes of Technology sector. It provides a background of the events and policy initiatives leading to the proposals for IoTs mergers and potential designation of the resulting consortia as Technological Universities (TUs). The author further analyses the conception and progression of the 2015 Technological Universities Bill (TU Bill) against the backdrop of the international and Irish context for research in higher education sector. Some of the reasons behind the restructuring in other countries are discussed, as well as the progression of research development in Ireland. The paper concludes with some considerations around the potential implications of Technological Universities.

2. Towards the IoT sector restructuring

Some groundwork for the discussions about the IoT sector restructuring may have been laid in OECD's review of Irish higher education in 2004, requested by the Irish government. Underpinned by Ireland's strategic objectives, including one of "creating a world class research, development and innovation capacity,"[8] the main theme of the OECD report was "the crucial contribution of Irish higher education to a "knowledge-based economy."[9] OECD's recommendations included enhancing the existing research infrastructure and increasing the number of postgraduate students. In connection with that, the reviewers questioned the country's large number of small-size higher education institutions, as this could have implications for the costs of advancing the research infrastructure. At the same time, the report endorsed the differentiation of mission between Universities and IoTs, and "urged the government to resist pressures from IoTs for university status," thus preserving the regional and vocational mission of the Institutes of Technology.[10]

The OECD recommendations adopted by the government "reflected a shared consensus between the OECD and domestic elites on the vital role of higher education in developing a knowledge-based economy."[11] *The National Development Plan for 2007-2013* allocated budget for an extensive HE sector review. In 2011 came *The National Strategy for Higher Education to 2030* ('The Hunt Report'), outlining for the first time the proposal for mergers of IoTs into a smaller number of stronger institutions, potentially followed by designation as Technological Universities. In part, this could be due to policy convergence aimed at positioning Irish higher education and research in line with European and international systems. At the same time, Hunt Report was written in the context of economic crisis and austerity measures. Thus, the proposals for amalgamations could also be in part the result of

[7] HEA, "Higher Education System Performance: Institutional and Sectoral Profiles 2013/14" (Ireland: HEA, 2016).

[8] OECD. "Higher Education in Ireland. Reviews of National Policies for Education," (OECD publishing, 2006).

[9] John Walsh, "A Contemporary History of Irish Higher Education, 1980-2011," in *Higher Education in Ireland: Practices, Policies and Possibilities*, ed. Aidan Seery, John Walsh and Andrew Loxley (Dublin: Palgrave Macmillan, 2014), 50.

[10] Ibid.

[11] Ibid.

internal pressures to make the HE system more efficient, suggesting, for example, potential rationalisation of programmes provision between institutions.[12]

In 2015, the Technological Universities Bill (TU Bill) was introduced, defining the criteria for a merger of two or more institutes and their resulting designation as a Technological University.[13] The eligibility criteria for TU designation includes, among other requirements, having a certain percentage of academic staff with a doctoral degree (or, to a certain limit, an equivalent qualification) in specified higher level programmes, a percentage of research students out of the wider student body, and a demonstrable capacity to increase these proportions within ten years of becoming a TU. The applying institutions would also need to have established research and doctoral level programmes in at least 3 fields of education, with the capacity to raise this to at least 5 fields within 5 years of becoming a TU.[14]

The 2015 TU Bill also defines functions of a Technological University. For example, TUs would be expected to gradually expand regionally relevant research and innovation and continue to develop programmes that address the needs of business, enterprise, the professions, the community and other relevant stakeholders in the region. Furthermore, the TUs would continue to strengthen international research collaborations and mobility.[15]

IoTs offer Honours Bachelor degree programmes and are engaged to varying levels in the provision of Masters and Doctoral education (levels 8-10 of the Irish National Framework of Qualifications). However, they also have a strong presence at levels 6 and 7, providing, for example, the majority of Ordinary Bachelor degree courses in Ireland.[16] This differentiates them from existing universities which focus mainly on levels 8-10, and facilitates the IoTs' traditional mission of "vocational-focused education with a strong emphasis on the region and small and medium-sized enterprises."[17] The Hunt Report argued against any loss of this mission, stating that this would be detrimental to the breadth of higher education provision and the Irish society, as the IoTs also enrol a very diverse student base.[18] The TU Bill addresses this by promoting excellence in teaching and learning at "all levels of higher education within the Framework" as part of the Technological University functions.[19] The vocational mission is further supported in the 2015 Bill with a TU function to serve the community and public interest by "fostering close and effective relationships" with a provider of further education in the region where its campuses are located, among other relevant relationships.[20]

Furthermore, it would be important to consider the potential implications of TU designation for the academic staff in existing IoTs. Hazelkorn and Moynihan point out that "the majority of existing academic staff within the IoT sector have been employed to teach," and emphasise how the rising demand for postgraduate qualifications and research challenge the traditional concept of academic work in the IoTs.[21] The requirement to increase the proportion of staff holding doctoral qualifications and intensify research in the TUs would

[12] Government of Ireland. "The National Strategy for Higher Education to 2030. Strategy Group Report," (Ireland: Department of Education and Skills, 2011).
[13] Government of Ireland. "Technological Universities Bill 2015", as initiated (No. 121, Ireland, 2015).
[14] "Technological Universities Bill 2015", as initiated.
[15] "Technological Universities Bill 2015", as initiated.
[16] Simon Marginson, "Criteria for Technological University Designation" (Dublin: HEA, 2011), 5.
[17] Ellen Hazelkorn, "Restructuring the Higher Education Landscape". *University World News*, no. 240, 23 (September, 2012): 2.
[18] "The National Strategy for Higher Education to 2030," 102.
[19] "Technological Universities Bill 2015", as initiated, 19.
[20] Ibid., 20.
[21] Hazelkorn and Moynihan, "Transforming Academic Practice": 194.

mean obtaining higher qualifications for some of the existing staff, or incorporating these criteria in the recruitment strategy. There would also be a need for some of the academic staff to advance their fields of research, further develop PhD supervision, and apply for more research funding.

At the same time, the academics in the Irish HE sector surveyed as part of the "Country Report for Ireland" (2015) found their working environment characterised by deteriorating working conditions, decreased funding for the sector, and reported a lack of influence and involvement in decision-making process within their institutions, among other issues.[22] In the IoT sector, while student enrolments increased by 19% (representing 16,294 more students) between 2008 and 2014, the number of IoTs academic staff teaching them experienced a 7% reduction between 2007 and 2014.[23] In terms of funding, the IoT sector in Ireland experienced the largest cuts in funding of 32%, when compared to 26% for universities and 24% for colleges.[24] A further 12% increase in student numbers is anticipated in the sector by 2020.[25]

The Teachers' Union of Ireland, representing IoT academic staff members, raised a number of concerns relating to the 2015 Technological Universities Bill.[26] This resulted in a consultation process and proposed changes to the TU Bill, including protection of terms and conditions for academic staff and strengthening of the regional mission of a Technological University.[27] As of January 2018, the TU Bill incorporating amendments was going through the legislative process to be passed into law.

Currently, the following four consortia are "engaged with the process to become designated as Technological Universities":

1) TU4Dublin (Dublin Institute of Technology, Institute of Technology Tallaght, Institute of Technology Blanchardstown),

2) Technological University for the South-East (TUSE – consisting of Waterford Institute of Technology and Institute of Technology Carlow),

3) Munster Technological University (MTU – consisting of Cork Institute of Technology and Institute of Technology Tralee),

4) Connacht-Ulster Alliance (CUA – consisting of Galway-Mayo Institute of Technology, Institute of Technology Sligo and Letterkenny Institute of Technology).[28]

These four separate consortia comprising 10 of the country's 14 IoTs are shown in **Figure 1**. The 4 Institutes of Technology that are not part of the four consortia are shown in circles and include Dundalk Institute of Technology, Athlone Institute of Technology, Limerick Institute of Technology and Dún Laoghaire Institute of Art, Design + Technology.

Figure 1.

[22] Maria Clarke, Aidan Kenny, Andrew Loxley. *Creating a Supportive Working Environment for Academics in Higher Education: Country Report Ireland* (Ireland: Federation of University Teachers, Teachers Union of Ireland and Education International Res., 2015), 11.
[23] DES and HEA data in Clarke et al., "*Country Report Ireland,*" 47-49.
[24] Clarke et al., "*Country Report Ireland,*" 11.
[25] HEA, "Financial Review of the Institutes of Technology," 7.
[26] Tanya Zubrzycki, "Restructuring of the Irish Institutes of Technology Sector." (*SRHE Newsletter and News Blog*, www.srheblog.com, 2017).
[27] Merrionstreet.ie. "Minister Bruton and Minister Mitchell O'Connor Secure Government Approval to Progress Technological Universities Bill" [Release]" (Irish Government News Service, 17 July 2017).
[28] Adapted from Merrionstreet.ie "Release".
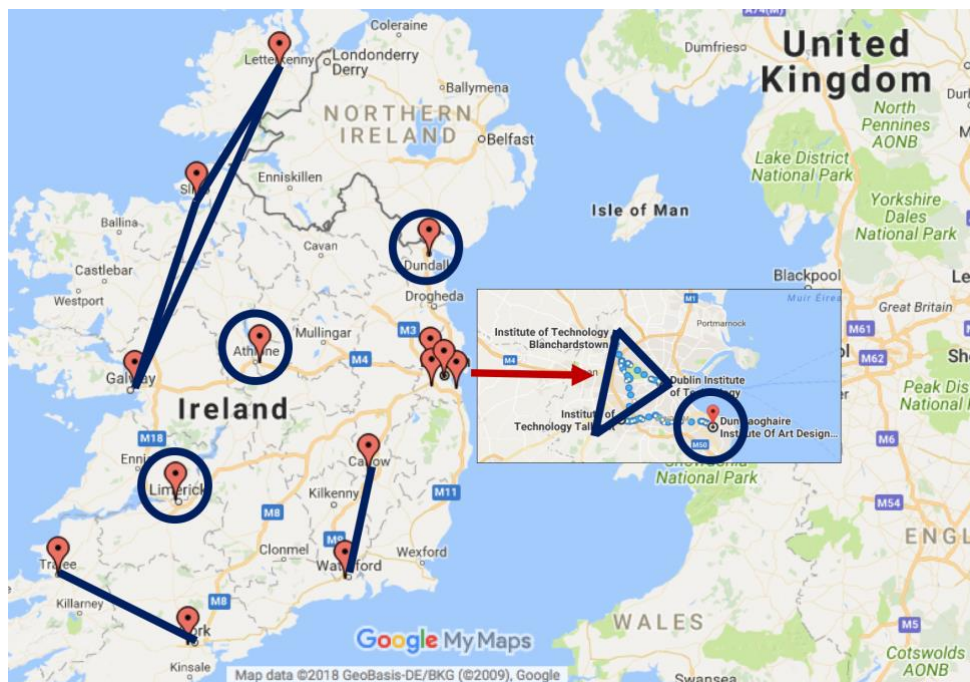
Figure 1. Adapted from Education in Ireland. "View all Institutes of Technology." Accessed 30/11/2017. http://www.educationinireland.com/en/Where-can-I-study-/View-all-Institutes-of-Technology/.

3. International experience

A recent book by Richard Thorn on the history of the Institutes of Technology (originally Regional Technical Colleges) highlights their important role in increasing participation rates in Irish higher education "from being the preserve of an elite to mass participation."[29] Thorn notes that the opportunity to become Technological Universities provides the IoTs with a chance to "consider futures other than as institutes of technology" – a provision that led to "some focusing on university status, with others choosing to remain as institutes of technology."[30]

There are multiple examples of the efforts to restructure vocational institutes in different countries over the last few decades.[31] For the purposes of this review, it is useful to briefly consider some of the reasons behind the restructuring internationally, and identify how IoTs' main characteristics compare with those of similar sectors in other countries. In one report, a team of international authors (File et al.) provide a comparative analysis of sectors they refer to as 'Universities of Applied Sciences' (UAS) in several European countries, including Ireland.[32] File et al. found "strong similarities in the objectives underlying these merger processes. Essentially they are about maturing systems that need to be taken to the 'next level'," often reflecting "policy responses to perceived deficiencies in existing systems that needed larger institutions to effectively deal with particular challenges."[33] The authors of the report note that in the last two decades of the last century and early 2000s, policy-induced mergers were a popular way of restructuring higher education systems, featuring in "the

[29] Breandán Mac Conamhna, foreword to Richard Thorn, *No Artificial Limits: Ireland's Regional Technical Colleges* (Dublin: IPA, 2018), ix.

[30] Richard, Thorn. *No Artificial Limits: Ireland's Regional Technical Colleges* (Dublin: IPA, 2018), xi.

[31] Siobhan Harkin and Ellen Hazelkorn, "Restructuring Irish Higher Education through Collaboration and Merger," in *Mergers and alliances in higher education: International practice and emerging opportunities*, ed. Adrian Curaj et al. (Springer, 2015).

[32] Jon File et al. "Policy challenges for the Portuguese polytechnic sector: a report for the Portuguese Polytechnics Coordinating Council (CISSP)." (The Netherlands: CHEPS, 2013).

[33] Leo Goedegebuure in File et al. "Policy challenges for the Portuguese polytechnic sector," 50.

Netherlands, Australia, Norway, China, Hungary, Flanders and South Africa."[34]

More recently, the trend has continued: Kyvik and Stensaker discuss how in Norway, "inspired by a process in which four small colleges in Sweden managed to achieve the status of a (network) university in 2005, many Norwegian university colleges also became interested in the strategic option of merger as a means to achieve university status."[35] The authors identify 14 merger initiatives in Norway in the last decade, with only 4 of them brought to completion: the authors further observe some common characteristics of the failed mergers including similar profile of merging colleges, regional pressure to merge to attain university status, and geographical distances; at the same time, for completed mergers, two institutions appeared to have a better chance than three or more, and leadership roles were important parts of the negotiations, among other factors.[36] In another analysis, File et al. note that UASs in Norway are allowed to 'upgrade' to university status if they "fulfil criteria which pertain specifically to the university sphere, such as 'strong research intensity.'"[37]

In terms of the sector's main characteristics, File et al. conclude that Irish IoTs are an exception, as they already offer PhDs, with another exception being Norway, while vocational institutes in comparator European countries typically only offer qualifications up to Bachelors and Masters level.[38] The authors note that the Irish IoTs have been developing "in the direction of Universities" and, in terms of their research function, are viewed as both education and research organisations, similar to their counterparts in Switzerland, Germany, Austria and Norway, while higher vocational institutions in other European countries under scrutiny are seen as mass education institutions, or as partners in research networks.[39]

4. Progression of Research and Development in Ireland

To better understand the Technological Universities' potential role in the Irish higher education and society, it is also useful to consider today's role of higher education, and trace the progression of research development in Ireland. As discussed earlier, OECD views the global expansion of higher education over the last few decades as a result of its increasingly important role. In particular, the OECD considers higher education to be a significant contributor to the development of *research* and *human capital*, both of which serve as a base for innovation that drives productivity and economic growth.[40]

For example, in terms of research, the OECD emphasises the role of HE in provision of training up to doctoral levels, since countries with a higher proportion of doctoral holders have also shown higher rates of research and development (R&D) intensity and innovation. Innovation is also driven by HE collaborations with external organisations contributing to the transfer of knowledge and technology. Furthermore, international mobility of highly skilled students and academics as part of HE fosters international collaboration, which is "strongly associated with research excellence."[41]

[34] Ibid., 49.
[35] Svein Kyvik and Bjorn Stensaker. "Factors Affecting the Decision to Merge: The case of strategic mergers in Norwegian higher education," *Tertiary Education and Management* 19, no.4, (2013): 326
[36] Kyvik and Stensaker, "Factors Affecting the Decision to Merge."
[37] Leon Cremonini and Jon File in File et al. "Policy challenges for the Portuguese polytechnic sector," 120.
[38] File et al., "Policy challenges for the Portuguese polytechnic sector," 41,21.
[39] Ibid., 21,23.
[40] OECD, "Benchmarking HE system performance," 9.
[41] Ibid.

In regards to human capital, OECD points out that HE develops "the advanced skills needed for modern economies" and can collaborate with industry to improve productivity through "enabling workers to cope with change." Among other contributions, HE also promotes the "social cohesion", or the "willingness of members of a society to cooperate with each other in order to survive and prosper" through its contribution to the social, cultural and environmental development of societies."[42]

In Ireland, it was not until the 1990s that "enhancing research capability within higher education emerged as a key policy objective for the Irish state."[43] This was followed by establishment of several research-promoting organisations: the launch of PRTLI (Programme for Research in Third Level Institutions) in 1998, signposting a "new consensus that investment in research conducted in HE institutions was a crucial element in sustaining economic development"; the creation of SFI (Science Foundation Ireland) in 2000 to administer funds aimed at supporting research activity in specific areas such as Information and Communication Technology, biotechnology and renewable energy; and the creation of IRC (Irish Research Council) to support funding and organisation of research in higher education.[44] The Hunt Report in 2011 emphasises an important role that publicly funded higher education institutions play in the overall research and development activities, as part of the Irish knowledge-based economy.[45]

Internationally, the efforts to invest into research and development as part of the countries' national strategy have been on the rise for several decades. In Ireland, the percentage of GDP spending on research and development (R&D) – has increased from 0.66% in 1981 to 1.72% in 2011, representing a significant increase over the last 30 years.[46] However, when placed in an international context, the numbers are less impressive, as OECD average GDP spending on research and development was 1.99% in 1981 and 2.3% in 2010, while European Union countries spent on average 1.63% in 1981 and 1.93% in 2011 – with Finland in particular allocating 1.16% and 3.7% to R&D in these years, placing Ireland below the mean.[47]

Loxley analyses the position of Ireland between 1981-2011 across GERD (R&D as % of GDP), HERD (Higher Education Expenditure on R&D) and BERD (Business Enterprise Expenditure on R&D) and notes that spending has increased overall, except in the area of BERD. In particular, the proportion of HERD financed by industry declined to 4.3% in 2011 (and below 6.1% OECD average), after peaking at 10.2% in 1990.[48] According to Loxley, this seems to suggest that the shift in funding from industry into higher education "has not materialised and that the bulk of the funding for research remains firmly in the public domain."[49]

Analysis in the 2016 HEA report shows that more recently, increases in R&D spending continue to indicate significant progress, but remain below the average EU levels and "well below that of innovation leaders."[50]

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[42] Ibid.
[43] Walsh, "A Contemporary History of Irish Higher Education, 1980-2011," 48.
[44] Ibid., 49.
[45] "The National Strategy for Higher Education to 2030".
[46] Andrew Loxley, "From Seaweed & Peat to Pills & Very Small Things: Knowledge Production and Higher Education in the Irish Context," in *Higher Education in Ireland: Practices, Policies and Possibilities*, ed. Aidan Seery, John Walsh and Andrew Loxley (UK: Palgrave Macmillan, 2014), 66.
[47] Loxley, "Knowledge Production and Higher Education," 66.
[48] Ibid., 67-68.
[49] Ibid.
[50] HEA, "Third Report of the Higher Education Authority," 54.

5. Restructuring of the IoT Sector – New Knowledge or Mission Drift?

The existing literature offers a variety of views on the IoT sector restructuring, and the proposed Technological Universities. According to the comparative analysis by File et al. mentioned in section 3, the Irish IoTs are already closer to universities than 'Universities of Applied Sciences' sector institutions in many other European countries. Harkin and Hazelkorn argue that for the IoTs, the "ultimate prize of technological university status is crucial."[51] Hazelkorn and Moynihan emphasise the "growing realisation that national capacity and capability is unlikely to be met by reliance on universities alone," coupled with the concern over "the lack of critical mass in key fields of science and yawning investment/funding gap vis-à-vis per nations," building the case for the IoTs to find their niche in the Irish R&D.[52] Despite the potential benefits of the Technological Universities' contribution to intensifying research and development in Ireland and enhancing regional development and innovation, the restructuring of this scale can be challenging.

With the increased focus on advancing teaching at levels 9-10 (Masters and Doctorate programmes), it will be important to prevent the potential mission drift at lower levels of the higher education framework in Technological Universities. As discussed in section 2, the TU Bill addresses this by promoting teaching and learning at all levels of the HE framework.

In consultation paper for the Irish government, Marginson advises that, "if TUs begin to vacate levels 6-8 they weaken their distinctive mission, there is academic drift and the TU sector begins to self-destruct, reducing the diversity of higher education," and cites international experience of maintaining levels 6-10:

> There are significant international examples of an institution of 6-10 form. For example Victoria University and RMIT university in my own city of Melbourne in Australia cover the same levels. RMIT University also has a distinctively vocational mission across the university, and it emphasizes applied research—as do all of the former institutes of technology that were upgraded to university status in 1988-1990.[53]

In terms of the regional commitment, Marginson argues that, based on the history and activities of Irish IoTs, the newly created TUs sector in Ireland would be more orientated towards research and serving local communities than, for example, its German counterpart which is shaped by a much larger manufacturing sector.[54] When compared to Dutch sector, Marginson finds the IoTs similarly orientated towards local communities, but ahead in research. He concludes that:

> Because this kind of mission is already in part understood in Ireland", it should be possible to achieve it in such a way that a strong TU and a strong classical university can exist comfortably side-by-side in the same city. This is already the case in countries such as Germany and Australia.[55]

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[51] Harkin and Hazelkorn, "Restructuring Irish Higher Education," 9.
[52] Hazelkorn and Moynihan, "Transforming Academic Practice," 193.
[53] Marginson, "Criteria for Technological University Designation", 5.
[54] Ibid., 4.
[55] Ibid.

In relation to research, HEA proposes for TUs to be principally focused on "applied, problem-oriented research and discovery, with effective knowledge transfer alongside the provision of consulting/problem solving services that are particularly relevant to the region".[56] Marginson also envisions applied research mission to be one of the main strengths of the Irish model of a TU, emphasising that it would be connected to "high end professional and occupational training" and facilitate relations with enterprise locally, nationally and globally. Thus the approach to research in TUs would be "deep rather than broad" in select fields, and gradual, so the quality is not compromised by pressure for quick expansion of research fields, and allowing the academic staff to build capacity for supervision of PhDs.[57]

In terms of the research mission, according to Marginson, while TUs would mainly focus on applied research driven by client relations, this should not necessarily preclude from engaging in fundamental research (particularly in the "domains adjacent to the applied research work"), which is also traditionally carried out in universities, to facilitate equality when applying for research funding alongside the existing universities' and their PhDs and graduates.[58]

Finally, it would be important to consider the potential implications of TU designation for the academic staff in existing IoTs, as they would be responsible for facilitating the generation and transfer of knowledge and skills from academia to the industry and enterprise under the enhanced model. As discussed in section 2, the student enrolments in the IoT sector have continued to grow in the last decade while the number of academic staff has decreased, and so did the funding for the sector.[59] Furthermore, the requirement to increase the proportion of staff holding doctoral degrees and intensify research in the TUs could have implications for some of the academics in the IoTs who have traditionally engaged primarily in teaching. A further study may be needed to determine whether these members of academic staff feel the need to obtain additional credentials for their specific fields of teaching.

Continuous and meaningful engagement with all the relevant stakeholders is needed with regards to how to develop the TUs, supporting their potential contribution to development of research and human capital in Ireland, and considering issues around the IoTs' vocational and regional mission, as well as adequate funding of teaching and research in the potential TUs – to enhance the outcomes for students, regional communities and society as a whole.

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[56] HEA, "Towards a Future Higher Education Landscape." (Dublin: Higher Education Authority, 2012), 14.
[57] Ibid., 8.
[58] Ibid., 9.
[59] DES and HEA data in Clarke et al., "Country Report Ireland", 2015, 47-49.

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