HEA Forward-Look Forum

From Regional Clusters to Knowledge Hubs: Unlocking the Potential

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Briefing Paper

The ultimate vision for regional clusters is that they will function to create dynamic and innovative 'regions of knowledge' capable of increasing regional capacity, capability and global competitiveness in order to contribute significantly to social, cultural and economic development (HEA, 2013, 13).

Context

As globalisation accelerates, national boundaries are becoming more porous. In many contexts, globally-competitive "regions of knowledge" or mega-regions hold the key to sustainable social and economic development. This requires regions to be dynamic in their approach to social and economic development in order to enhance their competitive advantage. This corresponds to a growing realisation that the most successful innovation-intensive regions are based on a greater diversity of educational and research opportunities and perspectives, preparing people to work in jobs we don't yet know about. Accordingly, the policies now being pursued by many countries are geared towards strengthening the role of higher education.

Ever since the success of Silicon Valley, there has been significant interest, around the world, in introducing policies to replicate the formula of a city or region of knowledge with "high-tech innovation and productivity, magnets for the professional class, with powerful research universities as their intellectual centers".[1] This has leveraged ideas about clusters and innovation systems, and transformed thinking about the "knowledge triangle" and "triple helix" (higher education, business and government) leading to the emergence of the concept of the "quadruple helix" (higher education, business, government and civil society).

Successful regions are seen to be those which attract key resources of talent and capital,[2] and involve "interactions within a network of different actors".[3] Contrary to global rankings which focus on *individual* institutional performance, successful mega-regions depend on specialized clusters of myriad societal actors exchanging ideas and personnel. Different concepts describe these developments—such as innovation hubs, knowledge precincts, global cities, and mega-regions—while at institutional level, emphasis is being placed on engagement, "third mission"

or "third pillar" activities. Higher education institutions (HEIs) are seen to reside at the heart of the knowledge eco-system as an "anchor tenant".

The *National Strategy for Higher Education to 2030* identified engagement with external stakeholders and the formation of regional clusters as ways to build greater collaboration and co-operation between HEIs, and between HEIs and other stakeholders. It endorsed the idea of "engagement" emphasizing that the "the multidimensional nature of many of the social, economic and civic challenges means that they require multi-disciplinary approaches". Collaboration, locally, regionally, nationally and internationally, is seen as being critical to the overall development of the higher education and research eco-system, and to ensuring Ireland's continuing competitiveness. The HEA's 'Report to the Minister for Education and Skills on System Reconfiguration' (2013) also identified the importance of "dynamic and innovative 'regions of knowledge'".[4] The report states:

> The ultimate vision for regional clusters is that they will function to create dynamic and innovative 'regions of knowledge' capable of increasing regional capacity, capability and global competitiveness in order to contribute significantly to social, cultural and economic development. They will do this by exploiting the strengths of individual institutions within the cluster and by maximising their collective capacity which will be greater than the sum of their individual strengths. These clusters will bring together higher education institutions to engage actively with enterprises, community organisations and regional authorities to provide education and research programmes and to engage in knowledge exchange.

All higher education institutions are expected to actively participate in regional clusters. Over the last year, the clusters have begun to review opportunities for the co-ordination of teaching and learning; planning, organisation and the efficient use of resources; flexible student-pathways and progression; and services to enterprise and society.[5]

The 2nd Forward-Look Forum will focus specifically on regional collaboration between higher education institutions and local/regional stakeholders. It will look at what is happening in Ireland and internationally as different regions adopt a collaborative approach between higher education, enterprise, civil society, and government. It will provide an opportunity to take forward issues raised during the inaugural Forward-Look Forum, held in May 2014, and to focus attention on the potential for regional clusters to make a collective impact nationally and globally. The objective of the 2nd Forum is to:

- Develop collective thinking about how regional clusters can play a more dynamic and engaged role in social, cultural and economic development;
- Widen understanding of innovation as inclusive of technological, business and social innovation, and all disciplines and stakeholders;

- Deepen thinking about embedding engagement as a cross-cutting and horizontal link between teaching and research rather than a separate activity;
- Provide an opportunity to create real synergies across and between different policy areas;
- Help build mutual understanding and public consensus around the value and contribution of higher education to social, cultural and economic sustainability.

From regional clusters to knowledge hubs

Higher education's connection *to* and relationship *with* wider society is not a new phenomenon. Since the establishment of the University of Bologna in 1088, the mission of higher education has been to advance knowledge in the belief that society would benefit from the scholarly expertise generated. The modern European university was strongly influenced by the scientific revolution, as well as by the ideas of Wilhelm von Humboldt (1767–1835) and John Henry Cardinal Newman (1801–1890). In the US, "service" has been included as a key mission of both private and public universities since the late 19th century. Land grant universities, developed under the 1862 Morrill Act, were the first "mass" HEIs, established to meet the needs of a changing social-class structure rather than simply concentrating on the historic core of classical studies. The commitment was to provide a place "where any person can find instruction in any study",[6] combined with a pledge that knowledge would serve society. About the same time, in the UK, '[l]ocal entrepreneurs and civic leaders responded to the needs for scientific knowledge and a healthy and skilled workforce by founding universities to underpin the economic success of the cities in the nation's heartland.[7]

Over the years, several sets of ideas have contributed to thinking about the role of regional clusters and knowledge hubs, and especially the contribution of higher education.

- *Successful global cities and mega-regions* are critical to building the capacity to attract key resources of talent and capital. In the 20th century, cities and regions derived their significance as "leading export centres for industrial manufacturing"; in the 21st century, they are the sites for the production of highly specialised services and financial goods.[8] Florida advises: "Keep your eye on countries and the regions within them that seek to attract all sorts of people and nurture creativity: that is now the key element of global competition, more than flows of goods and services of capital."[9]
- *Innovation clusters or systems* typically illustrate a critical mass of activity, derived from the interactive character of the generation of ideas, scientific research, and the development and introduction of new products and processes.[10] They have traditionally been associated with industrial development strategies and on the role played by individual institutions in this. Porter, however, argues that competitive advantage comes about through a shared vision which helps elicit broad support, strong leadership, collaboration across institutions, and an overarching organisation which ensures coherence and coordination.[11] "Ensuring the vitality of clusters, and improving the environment for new, related clusters, is essential to regional economic development. Universities can and do play an essential role in this process."[12]

- *Mode 2 knowledge production* highlights the fact that in today's complex world, new ideas increasingly emerge as the result of research conducted via bi-lateral, inter-regional and global networks.[13] While Mode 1 research is disciplinary- determined and curiosity-oriented, Mode 2 is collaborative and interdisciplinary, focused on useful applications, with external partners including the wider community. Societal grand challenges such as global warming, tightening supplies of energy, water and food, ageing societies, public health, pandemics and security require new collaborative solutions.[14] The Human Genome Project is a good example; it brings together expertise in computing, social science and statistical skills with biological genetics to discover the roots of disease and then develop treatments; it constitutes the world's largest research project with teams from Europe, Asia and the US, to address a challenge which could not be accomplished by individual teams or countries.

- *Open and social innovation* replaces the traditional linear science-push framework. Open innovation conceives of change as involving multiple partners inside and outside the organisation, with permeable boundaries between an organisation and its environment so that new ideas and innovations easily transfer inwards and outwards.[15] Social innovation takes place in daily life, in social relationships and in the home, and may be focused on new services, and new ways of organizing society, work and ourselves.[16] Together, these two concepts have transformed the way in which change is understood, and the associated structures required to support and sustain innovation.

- *Biodiversity* is the variation of life forms within a given ecosystem. A concept used by ecologists, it refers to the totality of genes, species, and ecosystems of a region. Within the eco-system, each species plays a critical role, mutually supporting each other, without which the entire system may collapse.[17] For example, there is a mutual inter-dependency between the higher education and research systems, whereby changes to one part of the system independently of the other can produce adverse and unintended results across the whole eco-system.

- *Knowledge hubs* are a new generation of cross-border education activities which bring together "a critical mass of local and foreign actors—including students, education institutions, companies, knowledge industries, science and technology centres—who collaborate in a strategic way on cross-border education, training, knowledge and innovation initiatives".[18] The most common format is where a country strategically aims to (re)position itself as an attractive and recognised centre of education, training, knowledge-production and innovation.[19]

The current discussion about the role of public higher education revolves around the question about what public universities are for. While engaged practices are not new, "engagement" is a new way of articulating how higher education interacts and organises its relationships with the wider world. It has become an urgent issue due to several underpinning drivers: (i) accelerating global economic competitiveness and declining public budgets; (ii) greater public accountability and transparency, including global rankings; (iii) expansion of higher education and the need for greater differentiation between institutions; and (iv) the 'knowledge society'

and specifically the labour-market and lifelong learning. As a result, engagement has come to be seen as an integral and core component of higher education, not as something "confined to individual academics or projects" but embedded within and across all parts of the institution while interacting with the wider society.[20]

The key message is that higher education is a critical component of the social and economic eco-system, which con-joins higher education, industry and business, the public and private sector, and civil society. Benefits of this relationship flow in both directions—to society and the economy, and to higher education—underpinning teaching and learning, and research. "Maximising capacity beyond individual capability"[21] can help guarantee the optimum drivers, determinants and infrastructure (e.g. people, finance, services, knowledge, governance and policies[22]) required to ensure a self-sustaining and globally competitive Irish innovation system (see figure 1).

Figure 1: Higher education in a national and regional context
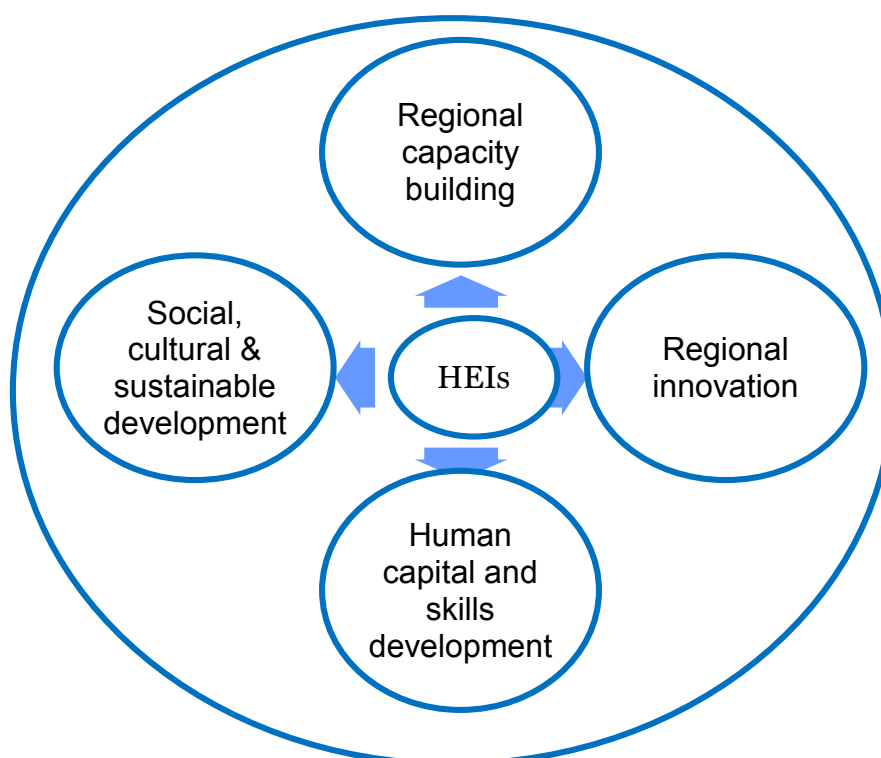
Source: *OECD (*2007) *Higher Education and Regions: Globally Competitive, Locally Engaged*, Paris.

Society benefits from enhanced human capital through graduate retention and professional updating, new products and services, knowledge-exchange and transfer, technological innovation, improvements in societal health and lifestyle through new research and educational provision. Higher education is a major employer recruiting locally, and their students and graduates live and work locally. It is a purchaser of goods and services,

contributor and provider of cultural activity and urban life, a source of advice to business and the community, and a global gateway for marketing and attracting investment and mobile talent.

In turn, higher education benefits from a close interaction with its region, which provides a significant and essential base of/for public support for higher education. By virtue of their location, HEIs are well-placed to contribute to social, cultural and economic life in the area and region. This close relationship ensures that educational and research programmes remain relevant to societal needs and demands, in addition to providing opportunities for on-going educational and training opportunities. Research shows that Irish higher education performs very well comparatively, with strong gross and net economic outputs, which are "commensurate, if not highly superior in specific instances, with their UK" and other OECD partners.[23]

Generating collective impact and benefit through engagement with enterprise and civil society

Across Europe, HEIs and local, regional and national authorities have begun to engage with each other to help shape and implement common strategies. There are a variety of ways that an HEI might engage with its community or region and mobilise the resources of the university to promote innovation and growth, from service-learning and internship programmes for students, employment-based graduate and Ph.D. programmes, and business-higher education partnerships to deep holistic engagement at the institutional level.[24] In many regions around the world, higher education institutions are working directly with the private sector to establish consortia or alliances with a common vision.

The strategic value of regional collaboration between higher education institutions and regional/local stakeholders has been a growing theme internationally.[25]

1) The OECD *Review of Higher Education in City and Regional Development* operated from 2005–2013.[26] Over the lifetime of the project, almost 30 regions in 23 countries participated in the reviews, resulting in individual reports in addition to publication of *Higher Education and Regions: Globally Competitive, Locally Engaged*.[27]

2) The EU promoted the concept of *Regions of Knowledge* (FP7), "to strengthen the research potential of European regions, in particular by encouraging and supporting the development, across Europe, of regional 'research-driven clusters'", associating HEIs, research centres, enterprises and regional authorities.[28] The potential contribution of higher education to building a sustainable knowledge-base in the regional, national and European economy was also the subject of *Guide to Connecting Universities to Regional Growth*.[29]

3) The EU Smart Specialisation Strategy (RIS3) involves a *process* of developing a vision, identifying competitive advantage and setting strategic priorities to maximise the knowledge-based development potential of any region, strong or weak, high-tech or low-tech. Higher education is seen as a key part of this process, helping define and develop a region's knowledge assets, capabilities and competencies—social, cultural and economic—including those embedded within its own departments as well as local businesses[30]. RIS3 is the underpinning concept governing European Structural Fund investment under *Europe 2020* with a budget of up to €351.8bn (cf. *Horizon 2020* at €80bn).

4) The European Universities Association (EUA) is promoting regional collaboration amongst its members.[31] This builds upon earlier actions under FP7, such as its EUIMA programme, *Sharing Innovative Practices in University Management/Collaborative Research* (2012[32]), and a report entitled *The Rise of Knowledge Regions: Emerging Opportunities and Challenges for Universities* (Reichert, 2006).[33] These argued that higher education lies at the heart of the knowledge eco-system, and that it plays a vital and decisive role in transforming the triple helix into the quadruple helix.

5) As part of an overall strategy for competitive advantage within the global 'knowledge economy', many countries are developing knowledge hubs or education cities.[34] Some of the most well-known knowledge hubs are in the Middle East: Qatar, Bahrain, and the United Arab Emirates (UAE); South–East Asia: Singapore, Special Administrative Zone of Hong Kong, and Malaysia. Other countries, such as Botswana, Korea, Saudi Arabia, even Bhutan, periodically refer to themselves as a hub. The unit of analysis is usually a country not an individual zone such as Incheon Economic Free Zone in Korea, or an individual city such as Boston.[35]

Success depends on HEIs and stakeholders developing trusting relationships which understand each other's needs and requirements, and can transform the way in which needs are identified, road-mapped and problem-solved.

Thus how strategic collaborations and partnerships contribute to regional development depends upon developing a shared vision, determining the level of cooperation and interaction, creating appropriate governance structures, etc. Wider collaboration with stakeholders and communities can help to define societal problems and generate new knowledge. Innovative new ideas and creative solutions often emerge at the margins, between disciplines and involving different societal actors.

> Identifying the requisite mechanisms to reconcile tensions between institutional and collaborative loyalties, which are often not in conflict when all is going well but may be challenged when difficulties arise, is important. The organisational, management and governance practices and processes are

critical in building true communication channels between the stakeholder groups.[36]

This involves creating systems and structures that open up higher education and involve employers and civil society organizations in various aspects of developing study programmes, in curriculum development and in research. Students are an important part of this relationship. In this way, the voice of future idea providers and leaders is embedded and heard.

Unlocking the potential of regional clusters: issues for consideration

Putting the spotlight on enhanced engagement between higher education, enterprise, civil society and government goes to the heart of the role of public higher education. This paper has outlined many of the strategic opportunities and benefits which can derive from closer engagement between higher education and its many stakeholders. But, there are also tensions. Four issues are mentioned here:

- As the challenges facing society become more complex, higher education and research are being asked to make a greater and more explicit contribution to society. Questions arise about the appropriate balance between meeting societal demands and pursuing intellectual/academic values and maintaining institutional autonomy. Some people argue engagement is too often associated narrowly with economic interests of industry and business[37] while others say "public support for universities is based on the effort to educate citizens in general, to share knowledge, to distribute it as widely as possible in accord with publically articulated purposes."[38] What is the role of public higher education? Is it possible to strike a pragmatic balance between "higher education's growing economic role and its traditional cultural and political independence from economic forces"?[39]
- There is increasing realisation that competitive "regions of knowledge" hold the key to sustainable social and economic development. However, whereas local, regional, national and international agendas were previously seen within a balanced, complementary and synergistic set of higher education activities, today they are often portrayed as contradictory facets as the global dimension becomes "qualitatively more important,"[40] for example via rankings. To what extent should and can interactions between local, national and global demands and interests be maximized? Can local and regional engagement be used to help build regional distinctiveness/specialisation and international attractiveness?
- To the business community, as well as other societal stakeholders, higher education institutions are often seen as a "black box". There are myriad different offices and activities which makes interaction with HEIs confusing, bureaucratic and sometimes off-putting. There are continuing concerns about a "skills gap" and "employment readiness". At the same time, researchers are often reluctant to engage fully in industrially funded

research because of concerns about short-termism, intellectual property and publication rights. How can this lack of trust be overcome? What needs to change in order to strengthen collaboration for mutual benefit?

- Closer co-operation between higher education, enterprise and civil society has advantages and benefits for all HEIs, students, business, and society alike. Activities span education of highly-skilled graduates, research and knowledge transfer, dual degree programmes, "science parks", entrepreneurial education, internships, continuous professional development and lifelong learning. Yet, this relationship is often only measured in terms of science and technology—and the usual metrics of patents and spin outs—which has the effect of ignoring the contribution of the arts, humanities and social sciences. Yet research by the OECD has found that innovation is not specific to STEM disciplines, and that 50% of innovative professionals have a non-STEM background.[41] How can we better measure (and fund) the breadth of higher education's contribution to society? Given that the relationship between HEIs and wider society is synergistic, should higher education performance be evaluated in the context of the overall performance of a region or community?

The issues raised throughout this paper will frame the discussion throughout the 2nd Forward-Look Forum.

Session 1 looks specifically at the role of higher education as an "anchor tenant" in its region, and how cooperation between HEIs, business, regional authorities and civil society can be reinforced and supported. It will also look at how we can broaden our understanding of innovation to include all disciplines and all stakeholders.

- What role should higher education play within its region?
- How can regional clusters become a dynamic boundary-spanning role between higher education and regional/local stakeholders?
- Who sets the agenda? Which issues and challenges should be addressed? What governance arrangements would best aid this process?
- How can regional clusters develop a shared-strategy in partnership with other stakeholders? What components might be included in such a shared vision: educational and training programmes, research and development, consultancy, cultural activity, internationalisation, etc?
- How can regional clusters help further the engagement agenda?

Session 2 will consider four examples where collaborative practices are beginning to underpin collective problem-solving. They share several interesting features: i) there is a close relationship between HEIs and external partners who have together developed a common vision, ii) HEIs play a key role in the governance and implementation of the alliance; and iii) as a group, the HEIs represent a diverse set of institutions, including older and newer ones.[42] Drawing on the case studies presented:

- What can be learned from these examples? Which aspects constitute examples of "good practice"? What are the pitfalls to be avoided?
- How can regional clusters help enhance the profile of a region for mutual benefit to make a greater collective impact? What goals should be set?
- Can resources be leveraged to generate greater impact and benefit through engagement between higher education, enterprise, regional authorities and civil society?
- How should success be measured? Which indicators should be used to better reflect higher education's full contribution to social, cultural and economic development?

Session 3 will examine some of the challenges in developing successful regional clusters, including strategic issues and matters of governance. The discussion will bring together a wide range of key participants in the Irish innovation system, and consider what works.

- To what extent can regional clusters provide a bridge between different interests of higher education, enterprise, civil society and government? How should these interests be balanced?
- What responsibilities do the different stakeholders have to ensuring regional collaboration is a success? What are the challenges in building successful collaboration? What does each stakeholder group need to give up in order to collaborate?
- Can collaboration through regional clusters help develop the appropriate competences to retain and to attract talent? What is required to make the region successful?
- How can the cooperation between universities and business be reinforced and supported?
- Given the strength of instinct and culture towards an exclusively institutional perspective by HEIs, can effective clusters emerge organically? What are the elements that would achieve an appropriate balance between steering from the centre and institutional autonomy?

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