OECD SME and Entrepreneurship Papers

Advancing the Entrepreneurial University: Lessons learned from 13 HEInnovate Country Reviews

Policy brief

OECD

OECD SME and Entrepreneurship Papers

Advancing the Entrepreneurial University: Lessons learned from 13 HEInnovate Country Reviews

Higher education institutions (HEIs) are more critical than ever to help societies respond to the complex challenges of our times. Recognising that these challenges require HEIs to adopt holistic innovations in teaching, research and collaboration activities, the European Commission (EC) and the OECD have developed the HEInnovate guiding framework. HEInnovate promotes innovation and entrepreneurship in higher education and provides guidance to policy makers and HEIs that want to generate additional societal and economic value.This policy brief distils the main findings and recommendations of 13 HEInnovate Country Reviews that have examined higher education system and institution, identifying factors affecting the delivery of the entrepreneurial and innovation agenda in higher education. Looked at in the round, the country reviews provide HE leaders with peer-learning and best practices, policy makers with tested policy solutions and the European Union and the OECD with a deeper understanding of the state of innovation and entrepreneurship in higher education.

JEL codes: L26, P46, O31
Keywords: higher education, innovation, entrepreneurship

ABOUT THE OECD

The OECD is a multi-disciplinary inter-governmental organisation of 38 member countries which engages in its work an increasing number of non-members from all regions of the world. The Organisation's core mission today is to help governments work together towards a stronger, cleaner, fairer global economy. Through its network of 250 specialised committees and working groups, the OECD provides a setting where governments compare policy experiences, seek answers to common problems, identify good practice, and co-ordinate domestic and international policies. More information available: www.oecd.org.

ABOUT THE SMEs AND ENTREPRENEURS PAPERS

The series provides comparative evidence and analysis on SME and entrepreneurship performance and trends and on a broad range of policy areas, including SME financing, innovation, productivity, skills, internationalisation, and others.

This paper was authorised for publication by Lamia Kamal-Chaoui, Director, Centre for Entrepreneurship, SMEs, Regions and Cities, OECD.

CONTACT

Raffaele Trapasso ǁ Head, Entrepreneurship Education and Skills Unit ǁ Raffaele.Trapasso@oecd.org

Rise of the Entrepreneurial HEI in Europe

"Higher education institutions are required to demonstrate the ways in which they respond to the social and economic needs of society, such as enhancing graduate employability, facilitating social mobility and wider access to higher education, contributing to national economic growth and local development in short and long term, stimulating new enterprises and innovation in existing firms."[1]

Higher education institutions (HEIs) are more critical than ever to help societies respond to complex challenges of our times, from aging societies, to climate change, to automation and artificial intelligence. Policy makers depend on HEIs to provide the skills and knowledge that societies and individuals will need to thrive in the future.

However, responding to these challenges requires that HEIs also adapt and innovate so that their teaching, research and collaboration are relevant and impactful. There is the need for HEIs to reflect on both **what** HEIs do as well as **how** they do it.

It is in this context that the HEInnovate Framework was developed by the European Commission (EC) in collaboration with the OECD. The framework leverages on interest in "start-up phenomena" prevalent in early 2000's and draws off the definition of the Entrepreneurial University as an institution:

> *… Designed to empower staff and students to demonstrate enterprise, innovation and creativity in research, teaching and pursuit and use of knowledge across boundaries. They contribute effectively to the enhancement of learning in a societal environment characterised by high levels of uncertainty and complexity and they are dedicated to creating public value via a process of open engagement, mutual learning, discovery and exchange with all stakeholders in society - local, national and international.*[1]

Part of the implementation of the HEInnovate framework (along with a self-assessment tool and a Policy Learning Network) the OECD/ EC HEInnovate Country Reviews examine the system and institution factors that impact the delivery of the entrepreneurial and innovation agenda in higher education. Almost ten years after the first country review process started, and with 13 country reviews complete, these review form a body of evidence regarding the progress of this agenda. Looked at in the round, the country reviews provide HE leaders with peer-learning and best practices, policy makers with tested policy solutions and the European Union and the OECD with a deeper understanding of the state of innovation and entrepreneurship in higher education.

This policy brief distils the main findings and recommendations of the 13 reports, identifying reforms that need to accompany institutional innovations, and on the identification of practices, pedagogies, and actions that generate the largest societal and economic value.

[1] https://heinnovate.eu/sites/default/files/heinnovate_concept_note.pdf

European Higher Education Institutions consistently demonstrate innovative and entrepreneurial practices

There is no shortage of examples of HEIs pushing forward the entrepreneurship and innovation agenda. In many instances, these practices are at the global forefront of what it means to be an entrepreneurial university. Entrepreneurship education has gone beyond the fences of business schools and has been adopted by all kind of universities and faculties, generating innovations in teaching, research activities, and in the way in which HEIs connect with their stakeholders. For example:

- The New University (Slovenia) has adopted innovative approaches to teaching. For instance, the European Faculty of Law teaches students using case studies and simulations in real contexts. The teachers who deliver these classes have professional experience that enable them to train their students to have a more entrepreneurial mindset.
- The University of Applied Arts in Vienna (Austria) has launched a bachelor's degree to develop students' capacity to be creative and navigate the complexity of globalised societies and economies. Based on an interdisciplinary approach, which can be also labelled as "entrepreneurship education", the new programme promotes collaboration and teamwork, and enables the planning, creation, implementation, analysis and leading of projects.
- At the DesignLab at Twente University (Netherlands) students develop their own start-up ideas as part of a course assignment or as part of a business/industry innovation-challenges, and are encouraged to collaborate with peers from different disciplines. The slogan of the DesignLab is "Science2design4society", which demonstrates its goal of serving the broader community.
- The University of Karlstad (Sweden), in partnership with the regional government of Värmland, has created the Academy for Smart Specialisation. Between 2015-19, the Academy has attracted about EUR 50 million to be used for research activities that reflect the innovation needs of the region, based on Värmland's smart specialisation strategy. In addition, the Academy helps the region identifying strategic industries for sustainable and inclusive innovation.

Across these experiences, HEIs are using an entrepreneurial approach to develop a new role vis-à-vis their internal and external stakeholders. These HEIs mobilise their resources and capabilities to generate entrepreneurial ecosystems. (Box 1.1) They collaborate with employers to understand labour market needs, help build new industrial clusters, and work with government to address pressing social issues.

ENTREPRENEURIAL ECOSYSTEMS

A key concept for understanding regional entrepreneurial ecosystems is that they are networks and places at the same time. These places host actors that influence each other by connecting and interacting. These connections, and the connectors within the network are as important as the parts that make up the network. The more connectors in a network (and the more connections they have) the more information and resources flow throughout the network. A healthy regional entrepreneurial ecosystem will find many ways to create and nurture proactive connectors supporting interactions among the different actors of the ecosystem. In addition, effective entrepreneurial ecosystems reward participants for stewardship not ownership. In general, regional entrepreneurial ecosystems display four key elements: i) they grow bottom-up, ii) they include different types of businesses and support entities; iii) there are one or more rallying points for the community; and iv) they are sustainable over the long-term.

Source: Adapted from HEInnovate Review of the Netherlands and Italy

The global COVID-19 pandemic highlighted the role of HEIs in entrepreneurial ecosystems. HEIs globally moved their teaching online, ensuring that teaching and assessment was able to continue. They were vital to local and global responses, spanning activities from making laboratory equipment available to developing vaccines.

Yet these practices remain granular, dispersed and under-recognised.

While there is much progress to share, another consistent theme from the country reviews is that these entrepreneurial practices are granular, dispersed and under-recognised.

To borrow a metaphor from entrepreneurship, many HEIs are in the start-up phase of their innovation activities. The reports consistently found that HEIs did not have structures in place to reward

> *The major obstacle is that innovative activities are not adequately supported, recognised and rewarded institutionally. Excellent innovation happens because of the enthusiasm and commitment of individual staff and students (and often in their own time). As one interviewee put it, "The risk is that enthusiasm is a fuel that burns fast".*

entrepreneurial practices, or to systematically embed throughout the institutions. In Sweden, Greece, Slovenia, Italy, Romania, Ireland, Hungary and Poland, only one third of respondents to the HE Leaders survey had incentives structures for entrepreneurship or innovation activities. One powerful articulation of this issue is from the HEInnovate Review of Croatia (OECD 2018):

To go further would require scaling up these activities to a whole organisation involving all students, administrators, teachers and managers. This is the challenge of the entrepreneurial journey, and one that needs to come from within the HEI.

In addition, HEIs require nudging to invest in new ways of working. Targeted funding and policies to support the innovation and entrepreneurship agenda, in a sustainable way, remain the exception rather than the rule. Many HE systems still focus on traditional definitions of excellence in research (e.g. publications and citation figures) and in teaching (e.g. number of graduates).

Actions for HEIs and Policy Makers to embed entrepreneurship and innovation in higher education

The fragility of the entrepreneurial and innovation agenda can be attributed to factors at the system level (e.g. policies, legislation, regulation and funding offered to higher education, lack of synergies with other policy sectors) and at the institutional level (e.g. implementation of the agenda in individual HEIs). To successfully embed the HEInnovate agenda requires both the right system/policy conditions, and the right culture inside the HEI to be innovate and entrepreneurial.

These seven recommendations consistently emerged from the country reviews as important to achieving progress against the HEInnovate framework.

- **Higher education policy should be coordinated with wider economic and social policies.** As there are HEIs in most European regions, policy makers should take advantage of opportunities to link innovations in higher education policy – such as entrepreneurship – to priority areas like digitalisation, green transition and Covid-19 recovery. A number of countries leveraged Smart Specialisation Strategies as a way of agreeing on common priorities, where HEIs, policy makers and the private sector could focus efforts. There is also significant opportunity for connecting higher education policy to emerging policies in digitalisation, green transition and industrial transformation.
- **Universal access for academic community (students and staff) to entrepreneurship activities.** Mainstreaming entrepreneurship in HEIs requires a culture where entrepreneurship and innovation are celebrated and rewarded in the institutions and in the higher education system.

Entrepreneurship activities should not be limited to courses for business students and the establishment of a technology transfer office. It is a cultural change where entrepreneurship and innovation are celebrated and rewarded through the HEI.

- **Policy makers and HE Leaders should adopt a broad definition of excellence that allows HEIs to adapt their needs of their ecosystem.** Policy-makers should consider how they incentivise and reward HEIs, including developing new definitions of excellence around regional and societal impact.
- **Measurement of impact of HEI's impact on the wider community, as a way of learning, should be embedded into the ways HE leaders keep track of progress.** Policy-makers could support HEIs by developing a comprehensive measurement framework with quantitative and qualitative indicators.
- **HE teachers and leaders should have opportunities for peer-learning, in particular from international practices.** This can happen at all levels, and the reviews included examples of peer-learning at the institutional, national, European and international level.
- **Entrepreneurship and activities should include social impact, as well as economic growth.** HEIs hold a direct role in the achievement of the education goals of the 2030 Agenda and in many regions, HEIs are helping their communities to decarbonise.
- **HEIs should take up the challenge of digital transformation, undertaking new forms of collaboration, teaching and research.** . The digitalisation experienced during Covid-19 was a positive first step, but digital transformation requires new forms of organisation, management practices and processes.

INTERNATIONAL POLICY DIALOGUE

On 21 September 2017 policy makers and HE leaders from Ireland, the Netherlands, Poland, Hungary and Bulgaria gathered in Dundalk (Ireland). Participants discussed the implementation of the HEInnovate review recommendations in terms of policy measures and higher education institution initiatives. Sessions focused on common trends in the areas of:

- Leadership and Governance; Organizational Capacity
- Entrepreneurial Teaching and Learning; Preparing and Supporting Entrepreneurs
- Measuring the impacts of the entrepreneurial and innovative HEI

The critical role played by national strategies and approaches to unlock institutional potential was the focus of discussion for Leadership & Governance and Organisational Capacity. The potential for a virtuous cycle between entrepreneurship education and measuring impacts was also a theme of discussion, with measurement being a route to help improve the quality of teaching and mainstream entrepreneurship education.

One of the key conclusions of this meeting was that there would be significant value in establishing a Policy Learning Network to allow policy makers and HE leaders to share experiences and discuss collective challenges in innovation and entrepreneurship.

The first Policy Learning Network event took place in Vienna (Austria) on 29 November 2018 at the University of Applied Arts of Vienna on the theme of "Entrepreneurship Education". The meeting gathered representatives from eight HEInnovate Country Reviews (Austria, Croatia, Hungary, Ireland, Italy, Netherlands, Poland, and Romania) and selected HEIs. A specific focus was given to supporting teachers learn about best practice.

A key message from that discussion was that the value of entrepreneurship education lies in that it provides individuals with flexibility and problem solving capacities to be more resilient in changing labour markets. To achieve this skills development requires interdisciplinary learning. Participants also agreed that agreed on the fact that the three missions of HEIs (teaching, research and engagement) should be more integrated and cross fertilize each other. Engagement positively affects the quality of teaching and research activities For instance, HEIs that have linkages with other stakeholders (public sector, NGOs, can offer their students the possibility to interact with entrepreneurs and managers. These stakeholders can provide real life examples for case studies and problem based learning.

HEInnovate Dimensions

The HEInnovate country reviews provide public authorities and HEI stakeholders with policy recommendations tailored to different national, regional contexts, and fields of study. They offer a systemic assessment of the role that different HEIs play in supporting entrepreneurship and innovation for the country being reviewed. The reviews also illustrate potential of HEInnovate practices to the international community.

This section briefly discusses the methodology of the reviews and then examines each of the HEInnovate Dimensions, considering common findings at the system and institutional levels.

Undertaking the reviews

Between 2014 and 2021 the European Commission and the OECD published 13 HEInnovate country reviews. The reviews were based on three types of evidence: desk-research, a survey of practices distributed to HE leaders in the country, and interviews with a selection of case study HEIs. The most recent four reports also included a survey of entrepreneurial teaching directed to students. With the exception of Bulgaria, the country reviews provided focused analysis on three to four HEInnovate dimensions. (See table 2.1 below.)

For each review there was strong collaboration between the OECD, the EC and the national and institutional representatives to identify the areas of focus for the review, and how the selected dimensions would be relevant for the national context. Inevitably, tailoring the research to the policy agenda of each country has represented a trade-off with the comparability of the results. In addition, the country reports were produced over a long and eventful period, resulting in changes in the focus of the national reviews. For instance, the impacts of the 2008 financial crisis features more heavily in the earlier reports and COVID-19 deeply influenced the experience of the 2021 set. The HEInnovate framework was expanded to include Digital Capacity and Transformation in 2018.

When looking at the HEInnovate Country Reviews in the round, it is clear that some elements of the framework are more ‘popular’ to engage with, in particular entrepreneurial teaching, knowledge exchange & collaboration and organisational capacity. This likely reflects that these dimensions receive the most policy and investment attention from government. There are consequences to this ‘cherry-picking’ of the HEInnovate framework. Firstly, it over-emphases the ‘what’ of innovation and entrepreneurship, leaving behind the ‘how’. The shift to an entrepreneurial mind-set for the HEI itself was under-explored in the reports.

Secondly, the challenges of one dimension are frequently addressed by solutions rooted in another dimension. (For instance, the importance of measurement to achieving the objectives of the other dimensions). To provide recommendations for priority areas such as entrepreneurial teaching necessarily requires an exploration of all eight dimensions.

Another area to examine in the future is the gap between current innovation and entrepreneurship best practice and the current definitions of the dimensions. The nature of HEInnovate was to be forward-looking, but as HEIs innovation themselves and learn, the definitions will also need to be reviewed. Examples of revisions to consider in the future include:

- Including the link to policy systems in Leadership and Governance and Organisational Capacity
- Strengthening the applied elements of entrepreneurship in Entrepreneurial Learning and Teaching.
- Reflecting priorities around regional development and sustainable development goals in Preparing and Supporting Entrepreneurs, as well as Knowledge Exchange and Collaboration.

TABLE 2.1. DIMENSIONS COVERED IN THE HEINNOVATE COUNTRY REVIEWS

Dimension	BUL (2014)	IRE* (2017)	POL (2017)	HUN** (2017)	NLD (2017)	ROM (2019)	AUT (2019)	HVR (2019)	ITL (2019)	SWE (2021)	LIT (2021)	GRE (2021)	SLO (2021)
Governance and Leadership													
Organisational Capacity													
Entrepreneurial Teaching and Learning													
Preparing and Supporting Entrepreneurs													
Knowledge Exchange and Collaboration													
Digital Capacity and Transformation													
International Institutional													
Measuring impact													(***)

Notes:
(*) **HEInnovate Review of Ireland** includes a chapter entitled 'Enhancing the impact of Ireland's higher education institutions" which examines how HEI can have an impact in their communities, leveraging Organisational Capacity, Entrepreneurial teaching and Knowledge Exchange.
(**) **HEInnovate Review of Hungary** includes a chapter entitled 'Strengthening entrepreneurship support in Hungarian higher education', which for the purpose of this paper has been allotted to Entrepreneurial Teaching and Learning.
(***) **HEInnovate Review of Slovenia** includes Measuring Impact as a cross-cutting dimension.

Higher Education Leader's Survey

As part of the HEInnovate country reviews, a survey was distributed to all HEIs in the country. The surveys asked all HEIs in the country, questions against each of the Framework dimensions and were adapted to national circumstances.

The response rate varied considerably between the reports.

TABLE 2.2. RESPONSE RATE TO THE HEI LEADERS SURVEY

	BUL (2014)	IRE (2017)	POL (2017)	HUN (2017)	NLD (2017)	ROM (2019)	AUT (2019)	HVR (2019)	ITL (2019)	SWE (2021)	LIT (2021)	GRE (2021)	SLO (2021)
# of responses (% of HEIs)	20 (~39%)	17 (81%)	39 (8%)	28 (53%)	25 (48%)	Response rate not included	45 (60%)	Survey results not in review	18 (20%)	20 (40%)	10 (26%)	24 (100%)	15 (30%)

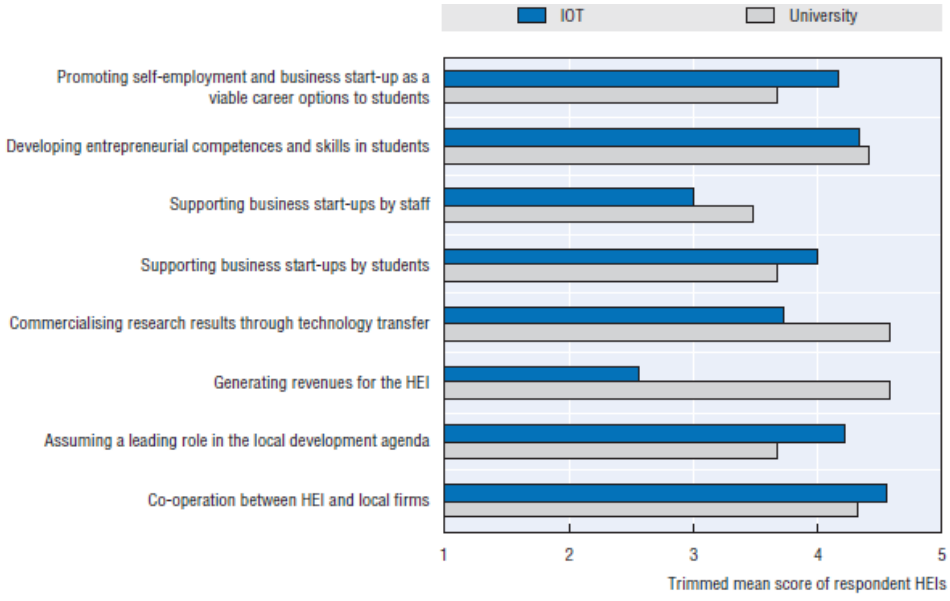
Source: HEInnovate Country Reviews

The surveys played an important role ensuring that the HEInnovate review was open to all HEIs in the country (and not just the ones targeted by specific case studies) as well as publicising and promoting the conversation around innovation and entrepreneurship in higher education. They also provided useful baseline information, for instance in relation to the delivery of entrepreneurship education or the main collaborators in knowledge exchange projects.

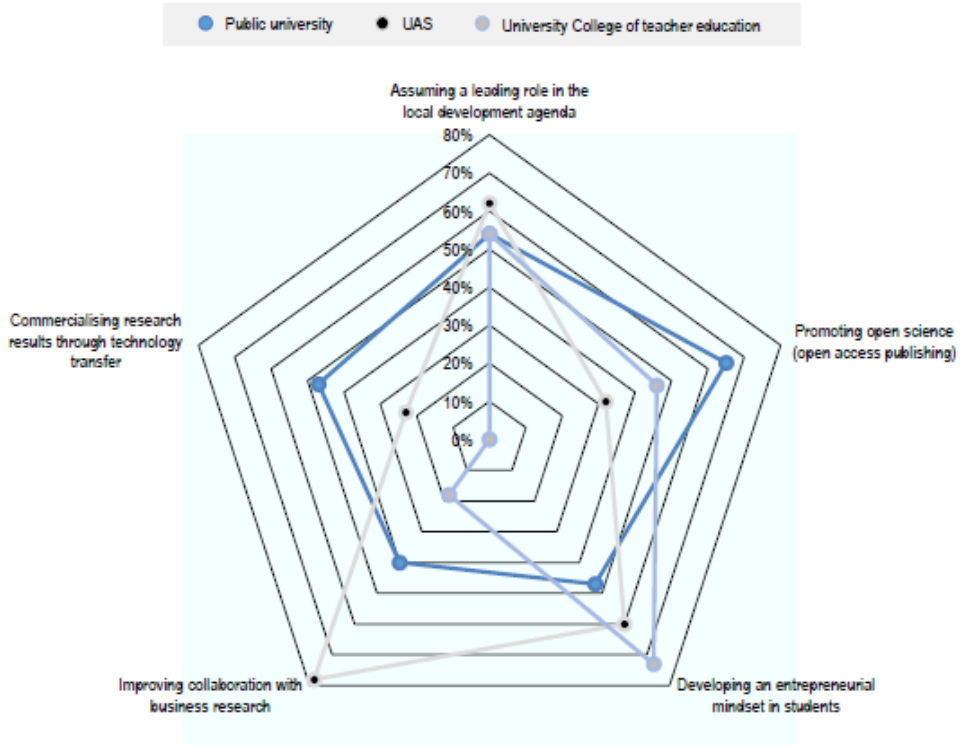
While the lack of direct comparability makes it difficult to draw overarching conclusions, the survey results show significant variation in regards to how the agenda was being implemented, both within a country and between countries. See Figure 2.1, which includes graphs of objectives the entrepreneurial and innovation agenda, where different types of institutions reported different priorities, as well as a range between countries. This significant diversity points to the variation of how the entrepreneurship and innovation agenda is being advanced in Europe.

FIGURE 2.1. ENTREPRENEURSHIP OBJECTIVES OF HIGHER EDUCATION INSTITUTIONS

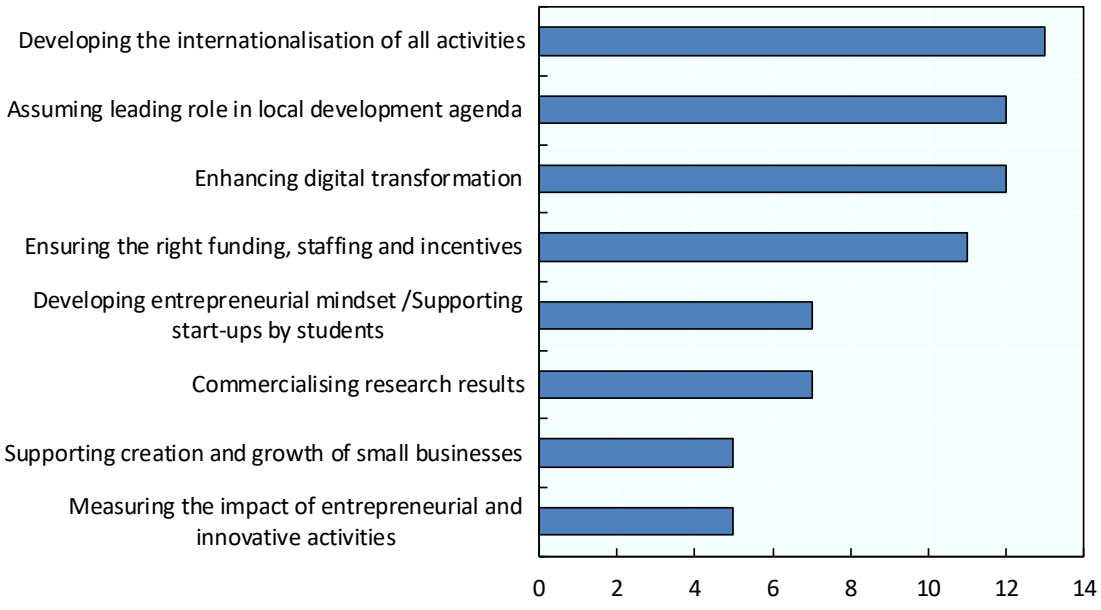
Entrepreneurship objectives of Irish higher education institutions



Most prominent dimensions in Austrian HEI's strategies for engagement



The elements included in HEI Strategies in Sweden



Source: HEInnovate Country Review of Ireland (2017), Austria (2019) and Sweden (2021)

Leadership and Governance

Page 13

The organisational capacity of an HEI drives its ability to deliver on its strategy. If an HEI is committed to carrying out entrepreneurial activities to support its strategic objectives, then key resources such as funding and investments, people, expertise and knowledge, and incentive systems need to be in place to sustain and grow its capacity for entrepreneurship.

Entrepreneurial Teaching and Learning

Page 16

HEIs can help students, graduates and staff consider starting a business as a career option. At the outset it is important to help individuals reflect on the commercial, social, environmental or lifestyle objectives related to their entrepreneurial aspirations and intentions. For those who decide to proceed to start a business, or other type of venture, targeted assistance can then be offered in generating, evaluating and acting upon the idea, building the skills necessary for successful entrepreneurship, and importantly finding relevant team members and getting access to appropriate finance and effective networks. In offering such support, an HEI should ideally act as part of a wider business support ecosystem rather than operating in isolation.

Strong leadership and good governance are crucial to developing an entrepreneurial and innovative culture within an HEI. Many HEIs include the words ‘enterprise’ and ‘entrepreneurship’ in their mission statements, but in entrepreneurial institutions this is more than a reference. This section highlights some of the important factors HEIs may consider in order to strengthen their entrepreneurial agenda.

Organisational Capacity: Funding, People and Incentives

Page 14

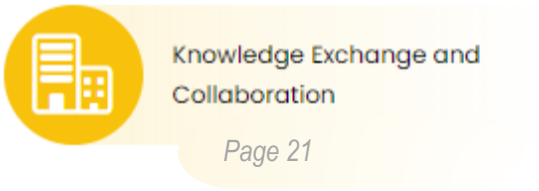
Entrepreneurial teaching and learning involves exploring innovative teaching methods and finding ways to stimulate entrepreneurial mindsets. It is not just learning about entrepreneurship, it is also about being exposed to entrepreneurial experiences and acquiring the skills and competences for developing entrepreneurial mindsets.

Preparing and Supporting Entrepreneurs

Page 18

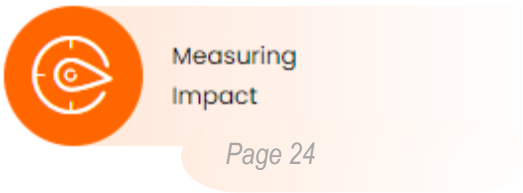
HEIs are already deploying digital technologies, however the uptake and integration varies among and within institutions. HEIs should make the most out of the opportunities presented by digital transformation and consider digital technologies as a key enabler. This section of the self-assessment provides a number of statements to reflect on HEI's digital capability, defined as the ability to integrate, optimise and transform digital technologies to support innovation and entrepreneurship.

Knowledge exchange is an important catalyst for organisational innovation, the advancement of teaching and research, and local development. It is a continuous process which includes the 'third mission' of an HEI, defined as the stimulation and direct application and exploitation of knowledge for the benefit of the social, cultural and economic development of society. The motivation for increased collaboration and knowledge exchange is to create value for the HEI and society.



Internationalisation is the process of integrating an international or global dimension into the design and delivery of education, research, and knowledge exchange. Internationalisation is not an end in itself, but a vehicle for change and improvement. It introduces alternative ways of thinking, questions traditional teaching methods, and opens up governance and management to external stakeholders. Therefore, it is linked very strongly to being entrepreneurial. It is not possible for an HEI to be entrepreneurial without being international, but the HEI can be international without being entrepreneurial or innovative.

Entrepreneurial / innovative HEIs need to understand the impact of the changes they bring about in their institution. The concept of an entrepreneurial / innovative HEI combines institutional self-perception, external reflection and an evidence-based approach. However, impact measurement in HEIs remains underdeveloped. The current measurements typically focus on the quantity of spin-offs, the volume and quality of intellectual property generation and research income generation, rather than graduate entrepreneurship, teaching and learning outcomes, retaining talent, the contribution to local economic development or the impact of the broader entrepreneurial agenda. This section identifies the areas where an institution might measure impact.



Leadership and Governance

(Austria, Bulgaria, Poland and Slovenia)

HEInnovate Dimension Definition

Strong leadership and good governance are crucial to developing an entrepreneurial and innovative culture within an HEI. Many HEIs include the words 'enterprise' and 'entrepreneurship' in their mission statements, but in an entrepreneurial institution, this is more than a reference.

System Considerations

The scope of HEIs to be innovative and entrepreneurial is shaped by national legislation and regulations. Regulatory reforms can be game changing in terms of opening up new possibilities for HEIs (Austria, Poland). For instance, changes to university appointment regulations in Poland allowed HEIs to hire rectors from outside the HEI, and become more open to new perspectives. Policy makers also need to be sensitive to policy, legislation and regulations having unintended consequences and limiting HEIs from undertaking new strategies or launching new academic courses (Austria, Bulgaria). For instance, in Austria the development of new programmes based on feedback from industry can take a long time due to existing accreditation processes. Aside from legislation, policy makers also exert their governance of HE systems through funding and incentives, which also knock-on impacts on the Organisational Capacity and Measuring Impact dimensions of the HEInnovate framework.

Institutional Considerations

Across countries, it was clear that HEIs continue to rely on individual leaders to advance the innovation and entrepreneurship agenda. Articulating a mission and vision that includes innovation and entrepreneurship can provide focus to faculty, staff and students and help them see how their activities contribute to the larger mission. This can be particularly important for larger institutions with many different faculties (Italy and Slovenia). To embed the innovation and entrepreneurship agenda requires undertaking new ways of working and leadership structures. Successful approaches include:

- *Opening the HEI to external stakeholders:* External collaborators bring new skills, perspectives and networks to the HEI, in particular as part of governance boards (Austria, Bulgaria, Poland), or the development of institutional strategies (Slovenia, Poland).
- *Connecting to the entrepreneurial ecosystem:* HEIs can gain new perspectives through collaboration with the key private sector players in their community (Austria, Slovenia, Poland).
- *Interdisciplinary activity:* Breaking down silos between academic disciplines can lead to more innovative and relevant teaching and research (Austria and Slovenia).

Overarching Recommendations

For Policy-Makers:

- Review higher education legislation and regulation for impact on the innovation and entrepreneurship agenda. HEIs should be given the scope to work in novel ways.

For HEIs:

- HEI governance should be fit to support innovation and entrepreneurship, including transparent and merit-based appointments and participation of external stakeholders and reviews of the skills of board members.
- HEIs should seek out new ways of undertaking teaching and research, in particular approaches that are interdisciplinary and include collaborations with stakeholders outside the HEI.

Organisational Capacity: Funding, People and Incentives

(Bulgaria, Croatia, Ireland, Hungary, the Netherlands, Italy, Sweden, Lithuania and Slovenia)

HEInnovate Dimension Definition

Organisation Capacity is the ability of a High Education Institution (HEI) to deliver on its strategy. If an HEI is committed to carrying out entrepreneurial activities to support its strategic objectives, key resources such as funding and investment, people, expertise and knowledge, as well as incentive systems are needed to sustain and grow its capacity for entrepreneurship.

System Considerations

One of the most significant ways that national governments impact organisational capacity is through their funding of higher education. Underfunded systems undertake less innovation and entrepreneurship activities (Ireland, Croatia, Italy). Yet increasing funding in and of itself is not sufficient to advance the innovation and entrepreneurial agenda. National authorities need to be coordinated, clear and committed in their funding programmes to have an impact on organisational capacity (Netherlands, Sweden, Slovenia). In Sweden, the government provides direct annual funding for HEIs to operate Innovation Offices to support knowledge exchange.

However, unlike other sectors that are primarily publicly funded, institutional autonomy limits government from directing how HEIs undertake its activities. As a result, governments are increasingly looking to create incentives for HEIs through evaluation and performance management activities, at times linked to funding (Ireland, Italy, Netherlands, Croatia, Sweden, Slovenia). This requires close collaboration with the HE community as assessing innovation and entrepreneurship is complex (Italy, Netherlands, Sweden). A positive example is in the Netherlands, where their Valorisation programme to measure the impact of knowledge exchange activities spurred individual HEIs to implement incentives for staff, reward staff initiatives and invest in upskilling.

Institutional Considerations

Building an entrepreneurial culture will be different for each HEI. Effective senior leadership is key (Bulgaria, Ireland), as are centralised offices for knowledge exchange activities (Ireland, Sweden, Slovenia). HEIs are also looking to be more innovative through organisational structures that are flexible, empowered and interdisciplinary (Bulgaria, Italy, Sweden and Slovenia). In Sweden virtual research centres allow for the quick establishment of research groups to collaborate with external partners. For instance, Gothenburg University has established the Six Centre project, which focuses on societal challenges and links different disciplines, such as antibiotics and cultural heritage. These centres do not qualify for funding if they cannot demonstrate that they are interdisciplinary.

Institutional autonomy, in particular over staffing decisions, provides HEIs with the freedom to be innovative and entrepreneurial (Ireland, Hungary, Italy, Sweden). However, in many HEIs staffing decisions remain rooted in traditional academic metrics regarding publications and teaching (Bulgaria, Lithuania, Croatia Sweden, Slovenia). While there is an increase of women in academia (Italy, Sweden), staff and student diversity in the broadest sense will be critical going forward to ensure innovative organisations (Lithuania).

Overarching Recommendations

For Policy-Makers:

- Funding of different policy areas should be coordinated, have clear objectives and with long-term commitment in order to foster innovation and entrepreneurial capacity in HEIs.
- Evaluate innovation and entrepreneurial activities, with a high degree of HEI involvement in the development of objectives and metrics.

For HEIs:

- Adopt flexible and interdisciplinary organisational structures that support delivery of the institution's strategy.
- Reward innovative and entrepreneurial behaviour in hiring and promotional decisions.

Entrepreneurial Teaching and Learning

(Bulgaria, Ireland, Hungary, Poland, the Netherlands, Romania, Austria, Sweden, Lithuania, Greece, Slovenia)

HEInnovate Dimension Definition

Entrepreneurial teaching and learning involves exploring innovative teaching methods and finding ways to stimulate entrepreneurial mindsets. It is not just learning about entrepreneurship, it is also about being exposed to entrepreneurial experiences and acquiring the skills and competences for developing entrepreneurial mindsets.

System Considerations

Appropriately, HEIs are responsible for the delivery of teaching and learning. Policy makers advocate and champion for the development of entrepreneurial skills through national strategies that encourage the teaching of entrepreneurship (Slovenia, Romania) or by embedding entrepreneurship into qualifications frameworks (Ireland, Poland, the Netherlands).

Institutional Considerations

Entrepreneurship education focused on business creation is becoming increasingly prevalent in HEIs (Ireland, Sweden, Greece, Bulgaria, Poland, Romania, Lithuania, Austria). Efforts to develop the competencies around an entrepreneurial mind-sets (e.g. creatively and critical thinking skills) remain nascent, although there are signs in Sweden and in the Netherlands of an increasing focus on problem-based learning and interdisciplinary education. For instance, the University of Utrecht (Netherlands) is focusing its teaching, research and value creation activities around four strategic themes. Each theme has accommodate several disciplines and has scope for creating real societal impact.

HEIs deliver entrepreneurship education through a mixture of formal and informal routes. A typical example is the Dundalk Institute of Technology (Ireland) that champions entrepreneurial mind-sets in students and staff through a variety of initiatives including: competitions to development smartphone apps, a peer to peer student entrepreneurship enterprise programme and the development of a BSc in Engineering Entrepreneurship. Extracurricular activities are often critical in the delivery of entrepreneurship education (Sweden, Poland, Lithuania, Ireland, Austria). Programmes like Drivhuset in Sweden, PROFAS in Lithuania or Junior Achievement in Ireland span a number of different institutions/areas, coordinated and delivered by external partners. However, extracurricular activities should be a complementary part of entrepreneurship teaching and learning, and should not replace more formal entrepreneurship learning and teaching (Austria).

Good practice approaches to developing effective entrepreneurship education include:

- Investment in professors of entrepreneurship, who can bring the latest academic research into the classroom and ensure that curriculum and pedagogy remain up to date (Sweden, Lithuanian, Greece, Bulgaria, Poland).
- Connections to national and international best practice, with teachers able to build skills through peer-learning (Slovenia, Lithuania and Ireland). The Kaunas University of Technology conducted a survey of best practice including looking at practices from the United States when it was developing its courses.
- Course co-design with key stakeholders. Successful examples include the collaboration with the private sector in Austria, and with students in the Netherlands. In Poland, KU Kozminski University was co-created by an academic and an entrepreneur. It is more focused on soft skills than other schools (e.g. public presentations; self-coaching; negotiation; intercultural skills, etc.) and is also responsible for outreach to the community including training.

A common limitation of entrepreneurship education is that it is targeted towards a relatively small number of eager students (Austria, Ireland, Hungary, Lithuania). Yet, it is worth to mainstream entrepreneurship education to a large number of students because entrepreneurial skills enable individuals to communicate outside of their traditional disciplinary silos and make graduates so valuable to employers. The opportunity to develop these skills should be embedded into the curriculum and available to all students in all HEIs. For instance, Lithuanian University of Health Sciences offers an elective to all third year students in entrepreneurship. A particular gap is the lack of opportunities for PhD students (Bulgaria, Greece, Austria, Lithuania, Sweden, Slovenia, Poland). Efforts should be increased to organise education activities on innovation and entrepreneurship, which involve students from different faculties and departments in the form of interdisciplinary modules throughout the duration of their studies.

There were limited examples of HEIs undertaking evaluations of their entrepreneurship teaching efforts (Bulgaria, Austria, Romania, the Netherlands). Sweden is an example of where HEIs have benefited from benchmarking and evaluation of existing practices from other universities, experimentation and development of novel approaches, testing and refinement of tools over time.

Overarching Recommendations

For Policy-Makers:

- Incentivise entrepreneurship education through endorsing in national strategies, recognition in national qualifications frameworks and dedicated funding.

For HEIs:

- Leverage tools like Entrecomp (a framework for entrepreneurial skills developed by the European Commission) to incorporate an understanding of entrepreneurship competencies that students should learn. Teaching of entrepreneurship should go beyond business creation.
- Incorporate the teaching of entrepreneurship competencies into all courses for students at all levels Particular consideration should be given to how PhD students are supported.
- Incorporate international best practice into the development of entrepreneurship courses.
- Invest in better understanding the impact of entrepreneurship education, to assess which pedagogy is effective in teaching entrepreneurship skills (positively affecting individual mindsets).

Preparing and Supporting Entrepreneurs

(Bulgaria, Poland, the Netherlands, Romania, Austria, Croatia)

HEInnovate Dimension Definition

HEIs can help students, graduates and staff consider starting a business as a career option. At the outset it is important to help individuals reflect on the commercial, social, environmental, or lifestyle objectives related to their entrepreneurial aspirations and intentions. For those who decide to proceed to start a business, or other type of venture, targeted assistance can then be offered in generating, evaluating and acting upon the idea, building the skills necessary for successful entrepreneurship, and importantly finding relevant team members and getting access to appropriate finance and effective networks. In offering such support, an HEI should ideally act as part of a wider business support ecosystem rather than operating in isolation.

System Considerations

HEIs benefit from, and contribute to, entrepreneurship ecosystems. For instance in Vienna (Austria), the students and faculty of the WU Vienna can draw upon the local entrepreneurial infrastructure including business angel and venture capital financing, legal support for the establishment of new firms and human capital availability from local science-based firms.

Wider policy initiatives to support entrepreneurship will shape how HEIs support entrepreneurs (Romania, the Netherlands). This can be both positive and negative. In the Netherlands overlapping entrepreneurship initiatives, a high density of actors and complex funding resulted in a system that is difficult for HEIs. Effort are more effective if focussed on comparative advantages of the place where the HEI operates. For this reason, smart specialisation strategies are useful tools to help HEIs understand national priorities and align their activities to support those objectives (Romania, Croatia), as are dedicated public-private partnerships to collectively agree strategies (Poland, the Netherlands).

Institutional Considerations

A critical element of being an entrepreneurial university is to offer pathways for staff and students to take entrepreneurial ideas to market, and to support them in this process. HEI led technology transfer offices, incubators or co-working spaces are examples of structures that focus resources and support for prospective entrepreneurs (Austria, the Netherlands, Poland, Croatia, Romania, Bulgaria). However, to be successful, these structures need to have activities outside the licensing of technology (Croatia), have dedicated trained staff (Poland and Romania) and support scale-up as well as start-up (Poland).

In addition, HEIs should strive to reach a “tipping point” were incubation exists throughout the institutions and where people look with admiration at entrepreneurs (Netherlands). In many HEIs, entrepreneurship is still not seen as a viable career option (Romania, Austria, Croatia). For instance, the PAZ student entrepreneurship programme in University of Split (Croatia) is both thoughtfully designed and well supported, but struggles to have enough applicants with business ideas. There are also issues related to definitions and labelling of entrepreneurship. In Sweden, HEIs are much more comfortable with the term innovation than entrepreneurship.

HEIs should provide opportunities to the entire academic community – staff, students and alumni. Many initiatives are focused on either students (Romania) or staff (Poland, Netherlands). Alumni have significant entrepreneurship potential that is often ignored (Netherlands, Bulgaria) and can contribute useful experience to current students (see entrepreneurial teaching and learning chapters for Sweden and Ireland.)

Overarching Recommendations

For Policy-Makers:

- Leverage cross-cutting policies such as smart specialisation strategies as a route to integrate HEIs into entrepreneurial ecosystems. Smart Specialisation Strategies enable HEIs to proactively engage with local needs.

For HEIs:

- Invest in structures to support all of the academic community (students, staff and alumni) to access to entrepreneurship pathways. Specifically consider development of the entrepreneurship pathways for recent graduates, provide opportunities for alumni to remain connecting to the HEI.
- Build a culture where entrepreneurship is celebrated and considered a viable career path, including through the promotion of role models.

Digital Transformation and Capabilities

(Italy, Sweden, Greece, Lithuania)

HEInnovate Dimension Definition

HEIs are already deploying digital technologies, however the uptake and integration varies among and within institutions. HEIs should make the most out of the opportunities presented by digital transformation and consider digital technologies as a key enabler. This section provides a number of statements to reflect on HEI's digital capability, defined as the ability to integrate, optimise and transform digital technologies to support innovation and entrepreneurship.

System Findings

Concerning digital transformation and capability,broadband speeds and coverage play a key role in digital capacity of HEIs. Sweden is an example where globally-leading broadband coverage meant HEIs could be confident that students and teachers would be able to use the latest technologies with ease. Beyond infrastructure, national digital strategies also support the role of the digital transformation of HEIs. The Greek Ministry of Digital Governance implemented the Digital Transformation Bible which includes support to HEIs going digital, including upgrading all information systems for student registry, student care and a system for internship positions.

Institutional Findings

HEIs are making positive progress towards the digitalisation of their services. The COVID-19 pandemic accelerated this process with almost all higher education provision being taught online for at least some months in 2020 (Greece, Sweden, Lithuania). To give a sense of scale, pre-pandemic the Royal Institute of Technology in Sweden averaged 50 Zoom calls a day, which jumped to 2,500 after they moved to online learning. Despite the general success of online teaching, there are still gaps in regards to providing teachers with the training to make best use of the technologies (Sweden, Lithuania, Greece).

There are also promising examples of digital transformation, where there is a cultural, organisational and operational change through the integration of digital technologies, processes and competencies. In Italy, digital markers were introduced to support the recognition of qualifications is a powerful new way of supporting students, HEIs and employers. In Lithuania, Klaipėda University is taking on the role of as a digital leader by developing a pilot, which allowed the university to provide IT administrative support to all 36 schools in the region. On the subject of open access, there have been positive steps, but there remains a cultural resistance and a lack of direct support (Lithuanian, Italy, Greece).

Overarching Recommendations

For Policy-Makers:

- Provide support for teachers to acquire and maintain the skills to undertake digital teaching.
- Align digital transformation efforts, potentially through coordinating through a central IT administration office.

For HEIs:

- HEI should ensure their governance structures have sufficient digital expertise to create a vision around digital transformation, such as how to use digital technology to address the data challenges of research collaboration or tailoring education.

Knowledge Exchange and Collaboration

(Bulgaria, Ireland, the Netherlands, Romania, Croatia, Italy, Sweden, Greece, Lithuania)

HEInnovate Dimension Definition

Knowledge exchange is an important catalyst for organisational innovation, the advancement of teaching and research, and local development. It is a two-way and continuous process, which includes the 'third mission' of an HEI, defined as the stimulation and direct application and exploitation of knowledge for the benefit of the social, cultural and economic development of society. The motivation for increased collaboration and knowledge exchange is to create value for the HEI and society.

System-Level Findings

Government, private sector and civil society see HEIs as institutions that support local economic growth, in addition to traditional core functions of teaching and research. The role of HEIs to create value for society is embedded in national legislation (Netherlands, Sweden, Greece) and is being directly funded (Sweden, Italy, Ireland, Croatia), both for specific projects and overall capacity-building.

However, the knowledge exchange capacity of HEIs is shaped by their surrounding ecosystems (Sweden, Romania, Lithuania, Croatia). For instance, the predominance of SMEs in Italy shapes the knowledge exchange capacity of HEIs in that country, just as multinational enterprises in Sweden influence the activities of its HEIs. In Romania and Lithuania, international firms have different expectations for knowledge exchange activities than local firms. Within a country the role of HEIs can also vary. Geographical conditions can be a defining element for an HEI. For instance, an HEI in a metropolitan area will have different roles and opportunities that those in non-metropolitan areas (Ireland, Sweden). In Greece, while innovation previously stemmed from the capital of Athens, pockets of excellence are also developing on peripheral islands that feature prominent HEIs and Research Centres (RCs).

Policy-makers cannot take for granted that investment in internationally prestigious research will naturally trickle down to surrounding communities. Sweden has one of the most developed systems for knowledge exchange between HEIs and stakeholders, and quantitative analysis showed a very limited impact on the surrounding community form the HEI. This is not to say that high-quality research is not important, but rather that it is not sufficient for knowledge exchange to take place. For instance, the successful bio-robotics cluster in Sant'Anna School (Italy) is rooted in globally leading research, as well as academic entrepreneurship (spin-off companies) and supported by local public authorities and government agencies.

In order to develop more tailored and granular policies to support knowledge exchange, policy makers are investing in data collection and measuring impact of collaboration activities (Netherlands, Ireland, Italy). Coordination efforts are also often necessary considering the wider range of policy and stakeholders impacted by knowledge exchange (Croatia, Netherlands, Ireland, Sweden, Italy, Greece). Examples of mechanisms to agree common objectives include City Deals (Netherlands) and Smart Specialisation Strategies (Greece, Romania).

Institutional Findings

HEIs are becoming increasingly more sophisticated and granular in their knowledge exchange activities. There are growing examples of projects that are interdisciplinary (Netherlands), outside of the science sector (Romania, Italy), engaged in societal issues (Italy, Lithuania, Sweden) and support public policy (Greece, Lithuania). The ambition for the concept of knowledge collaboration is growing and expanding.

However, for many HEIs, the majority of knowledge exchange activities are focused on traditional forms of technology transfer, in inward large-scale investments from engineering, manufacturing and ICT (Romania, Greece). Many partners still see HEIs as a way of out-sourcing research and training (Sweden, Greece, Lithuania).

HEIs need to deepen their capacity for knowledge exchange and address a number of specific challenges in order to move to a model of knowledge co-creation. They need to overcome a lack of incentives for individual academics to undertake knowledge exchange (Greece, Croatia, Netherlands). Technology Transfer Offices are often linchpins to undertake collaboration activities (Lithuanian, Romania, Ireland, Croatia, Italy) and require a dedicated funding and staff. For instance, in Romania, the West University of Timisoara has a strong team of knowledgeable senior officers in the TTO who are able to leverage their understanding of European funding mechanisms to help wider colleagues securing funding for projects. Current efforts by HEIs to measure the impact of their collaboration activities also has the potential to be very positive (Netherlands, Lithuania and Italy).

Overarching Recommendations

For Policy-Makers:

- Deepen understanding of 'what works' through measurement approaches that are able to assess and compare impact.
- Policy coordination is critical to leveraging HEIs research and teaching, for instance through Smart Specialisation Strategies.

For HEIs:

- Invest in dedicated operational professionals who can take on the role of knowledge brokers or linkage agents. These brokers must have the skills and the time to facilitate a shared understanding of successful knowledge exchange, and to provide advice and practical support for HEI practitioners and their collaborators.
- Knowledge exchange should be considered an integral part of effective teaching and research, and embedded in all faculties.

The Internationalised Institution

(Bulgaria, Italy, Greece)

HEInnovate Dimension Definition

Internationalisation is the process of integrating an international or global dimension into the design and delivery of education, research, and knowledge exchange. Internationalisation is not an end in itself, but a vehicle for change and improvement. It introduces alternative ways of thinking, questions traditional teaching methods, and opens up governance and management to external stakeholders. Therefore, it is linked very strongly to being entrepreneurial. It is not possible for an HEI to be entrepreneurial without being international, but the HEI can be international without being entrepreneurial or innovative.

System Findings

Policy makers create the conditions for internationalisation through setting legislation and funding (Italy, Greece). Of particular importance is national qualification frameworks and recognition of the qualifications of prospective students and faculty (Italy, Greece, Bulgaria). Accepting international qualifications removes a significant barrier to the internationalisation of higher education. European programmes (e.g. Erasmus or Horizon2020) which require multiple European partners and the funding of student and staff mobility are powerful drivers for internationalisation (Italy, Greece).

Institutional Findings

While the benefits of internationalisation in higher education are multidimensional, many HEIs see the primary benefit to be additional income for the institution (Italy, Greece). As a result, the efforts to focus on income generating forms of internationalisation, namely student exchanges and joint-research projects. There are fewer examples of where international efforts penetrate deeply into the work of the HEIs.

HEIs are boosting their capacity to be internationally competitive through English-language teaching and joint degrees (Italy, Greece, Bulgaria) but internationalisation requires HEIs to develop more comprehensive strategies that leverage their strengths. Increasingly, HEIs are offering masters and PhD programmes in English to attract students from abroad (Italy, Greece). This can increase student mobility.

Overarching Recommendations

For Policy-Makers:

- Invest in the promotion of the country's HE system abroad (e.g. UK's British Council).
- Develop recognition and incentives for the various stakeholders to engage in international activities.

For HEIs:

- Develop an international strategy that spans all of the HEI's main activities.
- Build ambitious international relationships with international HEI partners. These agreements should include opportunities not only for student exchanges and research collaboration, but also for joint learning and sharing of best practice.

Measuring Impact

(Discussed transversally in Slovenia, and more generally other reports)

HEInnovate Dimension Definition

Entrepreneurial higher education institutions need to understand the impact of the changes they bring about in their institution. The concept of an entrepreneurial HEI combines institutional self-perception, external reflection and an evidence-based approach. However, impact measurement in HEIs remains underdeveloped. The current measurements typically focus on the quantity of spin-offs, the volume and quality of intellectual property generation and research income generation, rather than graduate entrepreneurship, teaching and learning outcomes, retaining talent, the contribution to local economic development or the impact of the broader entrepreneurial agenda.

System Findings

In Italy, Croatia and Ireland, national statistics agencies set homogenous indicators for all national HEIs and collect data on these indicators through surveys or performance agreements. In these countries, HEIs do not have to decide which indicators to use to evaluate their entrepreneurial and innovative agenda, but rather comply with indicators set by the government.

There is also a trend to link measurement to funding. In Austria public funding is given to HEIs based on HEIs' performance in key areas (including engagement activities for 2019-2021). Every public research university has to sign with the government a performance agreement. The agreement is a three-year contract detailing specific goals that universities need to comply with regarding personnel, research and teaching. Based on these goals the universities and the government agree on a budget.

Institutional Findings

The push by national governments to introduce measurement of innovation, entrepreneurship and collaboration activities is driving behaviour in individual HEIs (Austria, Netherlands). In the Netherlands, the government introduced the valorisation programme in 2010, which resulted in the establishment of regional consortia across the country, each grouped around one or more HEIs and led by a research university. This emphasis on valorisation has brought new attention and specific support to applied research activities within HEIs and triggered an important dialogue between the different parts of the Dutch higher education sector. Similarly, in Austria, HEIs have proposed to the federal ministry of Higher Education indicators for engagement activities. Most frequently used indicators include: number of interactions with businesses, evaluation of entrepreneurship teaching and number of start-ups.

However, in many countries, innovation and entrepreneurship activities undertaken by HEIs and their related impact on society are not systematically monitored or evaluated (Slovenia, Sweden, Lithuania, Romania, Greece, Bulgaria, Poland). Some local efforts are, under way, and new developments in this direction are evident in the HEIs surveyed (Slovenia). Stakeholders reported that their HEIs are introducing performance indicators for the entrepreneurship objectives.

Overarching Recommendations

For Policy-Makers

- Create a monitoring framework so HEIs can measure their own impact in knowledge-transfer activities. (Potentially drawing off the experience of Italy, Austria and the Netherlands.)
- Offer guidance to HEIs to help them improve their capacity to monitor and evaluate impact.

For HEIs:

- Measure all activities systematically, with agreed metrics and narratives that take into account the diversity of HEIs.

- Invest resources to establish monitoring and evaluation capacity. The initial investment in time and resources may generate a virtuous cycle, positively affecting research and innovation capabilities at the institutional level

For more information and copies of the HEInnovate reviews:

https://heinnovate.eu/en

Follow us:

@OECD_local Blog: oecdcogito.blog/

OECD