HEInnovate Reviews
Universities, Entrepreneurship, and Local Development

BULGARIA 2014

Promoting Innovation & Entrepreneurial Mind-sets though Higher Education

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HEINNOVATE REVIEWS ON
PROMOTING INNOVATIVE AND ENTREPRENEURIAL HEIS

COUNTRY-LEVEL REVIEW BULGARIA

REVIEW REPORT

Prepared by the Organisation for Economic Co-operation and Development

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ACRONYMS

BAS	Bulgarian Academy of Sciences
BEEPS	Business Environment Enterprise Survey
EQAR	European Quality Assurance Register for Higher Education
FYRoM	Former Yugoslav Republic of Macedonia
GDP	Gross Domestic Product
HEI	Higher Education Institution
ICT	Information and Communications Technology
LEED	Local Economic and Employment Development
NEAA	National Evaluation and Accreditation Agency
OECD	Organisation for Economic Co-operation and Development
p.a.	Per annum
PPS	Purchasing Power Standards
R&D	Research and Development

EXECUTIVE SUMMARY

The context of the study

Across Europe and the wider OECD area there are growing signs of a transformation of the 'traditional' model of a university, which focuses its efforts on teaching and research, towards an innovative and entrepreneurial higher education institution(HEI),which is designed to empower students and staff to demonstrate enterprise, innovation and creativity in teaching, research and third mission, directs its activities to enhance learning, knowledge production and exchange, in the dedication of creating public value via processes of open engagement (HEInnovate, 2014).

The entrepreneurial university concept was developed in the early 1980s and was used as a method to examine the ways in which HEIs contribute to wealth creation and sustainable growth. Many attempts have been made to define the concept, but a single, generally accepted consensus has yet to arise. Whilst this renders it difficult to use the concept for research purposes, it turns it into an excellent lever for HEIs to guide and steer their organisational change processes.

The higher education system in Bulgaria is undergoing a significant change process. Access to higher education has been eased and has raised enrolment rates. At the same time, HEIs are confronted with multiple challenges: growing rates of graduate under- and unemployment, attractive study options abroad, and largely underdeveloped links with businesses. These challenges are pressing HEIs to change.

There are several promising change initiatives across the 51 HEIs in the country. Often these are, however, the result of time and efforts invested by motivated individuals without sufficient and sustainable resources to reach wider impacts. At system level research collaboration, co-construction of study programmes, the organisation of internships and practice-based learning are often limited to single projects which lack sustainable structures and resources that could spur a dynamic change process in the higher education system.

To facilitate this change process, the Ministry of Education and Science of Bulgaria approached the European Commission Directorate General for Education and Culture and the Organisation for Economic Co-operation and Development in January 2014 with a request to undertake an external review of the barriers, challenges and opportunities in the higher education system. This started a one-year collaborative review process which included an in-depth peer-review of five case study universities in March and May 2014, an online survey of leaders and students in the period May to September, and a final workshop – involving all HEIs – to discuss the findings of the case study peer-reviews and the surveys, organised in Sofia in the end of September 2014.

This report summarises the key findings and recommendations resulting from this review process. It also presents international learning models, which provide exemplary illustrations of how to implement effective strategies and actions.

Key findings

Absence of a clearly defined role for HEIs in promoting innovation and entrepreneurship

Various policy documents and operational programmes refer to the role of HEIs in Bulgaria's emerging knowledge economy from skills development and lifelong learning, research, development, start-ups, innovation and smart specialisation. However, there is no common policy framework that brings together these different strands of measures and clearly defines the role of higher education in promoting innovation and entrepreneurship. The new strategy on higher education, whose adoption is currently pending, is expected to increase coordination efforts.

Narrow understanding of the innovative and entrepreneurial HEI concept

The current understanding of the innovative and entrepreneurial university – in the HEI community – is focused on the promotion of start-up activities, primarily targeted at students. Organisational capacity, stakeholder links, internationalisation, and leadership are not yet associated with the concept.

Marginal involvement of HEIs in smart specialisation

The involvement of HEIs in the smart specialisation process so far has been only marginal. As a result, HEIs are not fully aware of the funding opportunities and requirements. Only few universities have taken on an active role in local development, for example by defining strategic objectives and starting or leading key industry clusters. Information about these examples is, however, not widely available for the wider HEI community and cannot be found on key communication channels such as the Rector's Conference website.[1]

'Separation' of teaching and research

The separation of teaching and research, established during the Communist era, left lasting footprints. Research activities, especially in basic research, are still largely taking place in the Bulgarian Academy of Sciences. Universities have difficulties in absorbing institutional research funding, although some are very successful with project-based research financing and in establishing themselves successfully in the country's emerging innovation system.

Knowledge exchange is not yet part of the core-strategy of HEIs

Many knowledge exchange activities of HEIs with business and other external partners are focused on individuals, for example collaboration between researchers in HEIs and researchers in local companies. Without clear and vocal leadership promoting collaboration, knowledge exchange risks to be a matter of personal motivation rather than being 'part of the job'. Benefits from the high number of projects (often co-financed by the European Union), which provide the opportunity of a salary increase for individual staff members, risk remaining constrained to individual benefits with little or no spill-overs to the HEI as a whole. Also, the legal framework for public private partnerships and public procurement has still some open issues, which render business collaboration difficult for HEIs.

[1] At the time of this report, the last update of the website was in March 2014.

Difficulties in the organisation of internships

Organising internships is difficult in a threefold way, in terms of: (i) finding a place, (ii) guidance and support during the internship, and (iii) the latter's relevance as learning experience. When searching on their own for internship places, many students encountered situations where firms said "we sign the internship report for you, but we are not interested in having you as an intern". Only students who found an internship through their professors had a contact person to reach out to during the internship for advice. Firms argue that students are not interested in practical learning, and students criticise that there is no learning and that they get overloaded with routine tasks. Entrepreneurial project work, co-designed by students and their tutors, is rare. Furthermore, there is no structured reflection of internship experiences in class. Students talk about this in their free time or, in the best case, extra curricular activities.

Systemic barriers in raising the attractiveness of HEIs

The number of newly enrolled students is decreasing, and reaching 'critical mass' has become a serious issue for several HEIs. The number of students opting to study abroad is increasing. The unfilled surplus of 8,000 study places (11.3% of the total offer) in the academic year 2014 risks becoming a recurring phenomenon.

Average numbers of students are between 6,200 for public HEIs and 3,500 for private HEIs. The University of Sofia "St. Kliment Ohridski" is with 21,000 students the outlier, followed by the Technical University of Sofia, which is with 9,200 students the second largest HEI. Co-operation between HEIs remains low and there are examples of spurious competition in establishing faculties, departments and study programmes. The number of PhD programmes per university is very high (on average between eight to 15 programmes). There is a risk that the offer of PhD programmes serves as an additional source of income rather than a way of broadening research activities.

There is an urgent need for re-organisation towards more collaboration between HEIs and more joint utilisation of infrastructure and resources. The aim should be to build a well-functioning system that allows and caters for diversity, so that institutional-level priorities and goals can be realistically set and achieved within the wider system-level strategic objectives.

Accreditation concerns separately institutions and study programmes. Activities to promote entrepreneurship as a key competence are not considered in the accreditation process. Currently the composition of the evaluation panels, mostly professors working at HEIs in the country, presents high potential for conflict of interest. Foreign academics and key local and national stakeholders e.g. employers and research partners, have not yet been included in the teams.

Tailoring study programmes to the needs and arising opportunities in the local economy is burdensome and costly. Adjustments during the accreditation time are difficult to organise, and there is a tendency to apply with study programmes that are similar to programmes already accredited at HEIs elsewhere in the country. There is some collaboration on co-designing curricula but this is not yet part of a systemic approach. The focus seems to be more on lifelong learning activities and less on study programmes. Interdisciplinary activities, which are open to students from different faculties, are often limited to extra curricular activities.

Bulgaria is one of the few countries in the EU where the establishment of joint programmes and joint degrees with partner HEIs from abroad is not addressed in legislation (EU, 2012). Currently less than 10% of HEIs in the country participate in joint programmes, whereas in neighbouring Romania up to 75% are participating in international study programmes.

Barriers to up-scale entrepreneurship promotion in HEIs

Many individual academics in Bulgaria promote entrepreneurship in their HEIs and participate in research conferences in the country and abroad. However overall, entrepreneurship promotion has not yet become a matter of strategic interest for HEI leadership. There are some HEIs where motivated individuals receive recognition and support for their commitment and additional work, but only very few HEIs actually have rectors who consider themselves as "entrepreneurship champions".

Missing links to the entrepreneurship ecosystem

The entrepreneurship ecosystem in Bulgaria is quickly developing. Eleven and LauncHub are seed venture capital funds, which provide support for individuals and teams to develop innovative ideas from very early stages on. They are well known amongst the student community. Start-up weekends are also regularly organised in several cities across the country. Yet links with the HE system are rare.

Key recommendations

Recommendations are presented separately for the Ministry of Education and Science and the Rectors Conference – as key actors in defining the national higher education framework – and HEIs.

The Ministry of Education and Science is recommended to:

Establish a national-level HEInnovate committee which includes senior representatives from the ministries of education and science, economics, and labour and social affairs, the Rectors Conference, and the main economic actors (Chambers, etc., entrepreneurship ecosystem). The objective of the national-level HEInnovate committee is to (i) promote the concept of the innovative and entrepreneurial higher education institution, (ii) identify key national challenges and opportunities in the higher education system with regard to the seven dimensions of HEInnovate, and (iii) to monitor and evaluate pilot projects for a potential mainstreaming. The establishment of working groups, involving HEI representatives, should be considered.

To trigger innovation in the higher education system and to sustain already existing promising initiatives, the creation of a HEInnovate Fund, co-financed with ESIF funding is proposed. The HEInnovate fund should provide co-financing for pilot projects, proposed and implemented by HEIs in Bulgaria. The allocation of co-funding shall be competitive. Key areas of fundable projects should be defined by the national-level HEInnovate committee, taking into the findings and recommendations from the HEInnovate country-level review. Further it should be considered to include HEInnovate in the key performance indicators, applied by NEEA and the University Ranking.

The HEInnovate Fund should become the main vehicle to promote and sustain organisational change in HEIs. It is understood that some of the following recommendations require higher-tier level support to be fully implemented.

The recommendations for HEIs are:

1. ***Review and reformulate the university strategy documents in light of current challenges and possible responses***. This will also imply building a common understanding of what the concept of an innovative and entrepreneurial HEI means to a particular HEI and its socio-economic situation context.

2. ***Establish a senior management post (e.g.) vice-rector in charge of the innovative and entrepreneurial agenda***. To steer and sustain the innovative and entrepreneurial agenda, HEIs should establish the position of a senior management post or Vice-Rector who will be responsible for entrepreneurship, organisational change and interaction with the local community. In addition a "Strategy Council" should be established, which includes members from local/regional governments, key business and industry partners, and civil society

3. ***Provide training possibilities for staff and reward excellent performance***. Training possibilities should be offered to enhance the quality of teaching, organisation of internships, research and knowledge exchange, and internationalisation. Training possibilities should also exist for staff members who wish to contribute to the organisational change agenda. Excellent performance should be identified and rewarded.

4. ***Further invest in the establishment of coordination mechanisms for entrepreneurship promotion, and involve students***. Existing coordination mechanisms for entrepreneurship promotion, such as entrepreneurship centres and technology transfer centres, should be continued and improved in order to reach out all across campus. The aim should be to develop dynamic structures that link the HEI with the entrepreneurship ecosystem and offer easy access to different publics inside and outside the HEI. Students are an important resource for this.

5. ***Incentivise the strategic involvement of key external stakeholders. Providing recognition and rewards for strategic partners is important.*** HEIs may need to adapt or introduce new criteria for awarding external stakeholders for their contributions to the innovative and entrepreneurial HEI agenda.

6. ***Build strategic bonds with alumni.*** A network of alumni can be very useful to understand how to increase the relevance of teaching and research. Alumni are also a key resource to promote organisational change and development. To this end, nascent initiatives across HEIs in the country should be sustained and improved.

7. ***Expand existing good practices in novel pedagogies across the HE system.*** There are several good and promising initiatives all across HEIs in Bulgaria. Information about these should be widely circulated and mainstreaming should be considered.

8. ***Promote entrepreneurship education as cross-section faculty portfolio.*** Entrepreneurship education should be expanded and tailored to all students across all faculties and levels.

9. ***Develop an easy-access system of fundamental business start-up support for academic entrepreneurs.*** Would-be-entrepreneurs need to know what to do and where to go. Entrepreneurship centres and co-working spaces can be first-stop shops. Key to this will be more institutional links to the entrepreneurship ecosystem.

10. ***Increase the institutional embedding of knowledge exchange activities.*** Clear and vocal leadership, guidance and support mechanisms are needed to promote knowledge exchange as an integral "part of their job".

11. ***Make internships an entitlement for students and provide support.*** Internships should be an entitlement for all students. Internships need to be supported by HEIs in terms of information prior to the internship, guidance and support during, and reflection after the internship.

12. ***Increase internationalisation efforts.*** HEIs in Bulgaria need to develop their international agenda more. Open issues concerning joint and double degree programmes, and the recognition of foreign degrees need to be taken up at the level of the Ministry of Education and Science.

International learning models

Inspiration for the development of innovative and entrepreneurial HEIs in terms of leadership, organisational capacity, teaching and learning, start-up support, knowledge exchange, and internationalisation can be drawn from practices that work well in other regions and countries.

Relevant initiatives outlined in the report include:

EXIST is a support programme of the German Federal Ministry of Economics and Energy which aims at (i) fostering the entrepreneurial environment at universities and research organisations and (ii) at increasing the number of technology and knowledge based business start-ups. EXIST is co-financed by the European Social Fund. Most relevant for the Bulgarian context is the EXIST project line Culture of Entrepreneurship. It is an effective approach to stimulate organisational change, and to promote the innovative and entrepreneurial HEI, because of the involvement of all HEIs into a competition and coordination process. EXIST organises regular thematic workshops and conferences, hosted by different HEIs. The institutional commitment of HEI leaders is a core pre-requisite for the absorption of public funding.

The **"Knowledge antennas"** built by the Rovira i Virgili University in Catalonia (Spain) have been key facilitators of the emergence of a viable interface between the university and the local economy stakeholders. It is a relevant example for the Bulgarian context because of the successful introduction of global links for local businesses through the university's research and teaching networks and the effects this had on the organisation of third mission activities at the university.

The **Council for Entrepreneurship** at the Universidade Nova de Lisboa is an example of how to ensure shared knowledge and outreach to all faculties, and how having a local celebrity as Chair of the Council for Entrepreneurship can attract key strategic partners.

The **Strascheg Center for Entrepreneurship** at the Munich University of Applied Sciences is another example of an all-campus approach to co-ordinate the innovative and entrepreneurial HEI agenda. What can be learned from this approach is that strong support of the leadership is crucial to gain institution-wide outreach. It remains important however, to reach out to students. Professors are important conduits for this and their commitment needs to be incentivised and rewarded.

Chalmers School of Entrepreneurship was founded in 1997 at Chalmers, one of the oldest and largest institutes of technology in Sweden. Students are the forefront of the commercialisation process because of their 'different' approach to recognising the commercial and societal value of research results. This is a relevant learning point for HEIs in Bulgaria.

The **Rovira i Virgili University** started in 1992 as a "university under construction" with young ambitious staff willing to fight for career success. To incentivise and reward excellence in teaching, research and knowledge exchange activities, the rector established the Research and Academic Staff Commitment Agreement, which facilitated the identification of training needs and the design of tailored training programmes.

The **Technical University of Valencia** (UPV) is known for its considerable level of interaction with the regional economy. It has a clear institutional structure to support different types and stages of partnerships combined with a set of incentives to academics.

The **Innovative Academic Entrepreneurship Education Network in Poland (SEPIA)** started in 2006. This network has helped to share information about entrepreneurship education activities across HEIs in Poland. A similar approach could also help to widely circulate information on the various promising initiatives that already exist in Bulgaria.

ROXI, the Rostock Start-up-Initiative at the University of Rostock in Germany is based on the constructivist learning paradigm. The emphasis is on soft skills development. The concept of entrepreneurship promoted at ROXI includes business entrepreneurship, social entrepreneurship, cultural entrepreneurship, eco-entrepreneurship, international entrepreneurship and intrapreneurship. Participants are selected and pay fees. Consultancy and post start-up support are offered.

"**Learning to Think Like an Entrepreneur**" is a two-day experiential learning process at EMLYON Business School. Initially offered only to MBA students, it is now offered to all students. Participants develop, in teams of up to five people, a method to assess business plans for start-ups from the investor's perspective. The key success factors – invite the entrepreneur who wrote the business plan, and take enough time to brief coaches about their role – are key learning points for those leading entrepreneurship education activities at Bulgarian HEIs.

The **Gründerwerkstatt** – entrepreneur workshop at the Beuth Hochschule für Technik in Berlin is an example of an effective co-working and incubation for young entrepreneurs from all over the world who are willing to move temporarily to Berlin.

The spirit and motto of the **University of Bergamo** is "learn along the way, less lectures, more experiences and opportunities for young people". Internships are mandatory for all study programmes and students co-design their own "internship projects" with the academic and the company tutors. The "internship project" is a key enabler for learning. Students have a greater say and responsibility in designing a process which is meaningful for their studies and professional development. This is a key learning point for Bulgarian HEIs, as well as the fact that the current success of the internship programme has emerged over time as the result of an active leadership, and in-depth research of potential areas of collaboration where often alumni are offered the "deep look" into the needs and ambitions of future partners.

Finally, the **Polytechnic University of Valencia** is an example of a common institutional framework to promote mobility of staff and students through the creation of functional units to provide information, assistance and mechanisms that promote the sharing of international contacts across the HEI.

REVIEW METHODOLOGY

Conceptual framework

The methodology used in this review is based on HEInnovate, a guiding framework for innovative and entrepreneurial HEIs. HEInnovate was collaboratively developed by the European Commission, Directorate-General for Education and Culture and the Organisation for Economic Co-operation and Development (OECD) through its LEED Programme (Local Economic and Employment Development.

For the last decade, the OECD LEED Programme has been providing advice and guidance to national and local governments, education institutions, and other key stakeholders of local economic and employment development on how to develop and sustain a systematic approach that is effective in mobilising young people for entrepreneurial careers, developing the necessary competences and skills, and providing targeted business start-up and growth support. Eastern Germany, Tunisia, the Czech Republic and Poland participated in a dedicated review series. With HEInnovate the focus of this review series has been broadened by including leadership, organisational change, internationalisation, and knowledge exchange, in addition to entrepreneurship promotion.

Work on HEInnovate started in March 2011 at the University-Business Forum in Brussels, an annual event organised by the European Commission for HEIs and their key strategic partners. Delegates expressed a common need for guidelines and support that helps HEIs to start, implement and sustain organisational change. HEInnovate is a response to this need (see Annex for a brief presentation of the seven dimensions and 45 statements).

HEInnovate self-assessment tool

In November 2013 HEInnovate was first launched. It offers free access to HEIs to use a self-assessment tool with instant reporting and downloadable guiding notes and case studies. HEInnovate is not about benchmarking or scoring. It is a tool to promote peer learning and organisational development. The 'group function' allows multiple users from a participating HEI to gather opinions and visualise individual assessments in a group exercise. A main advantage of the group function' is that it allows the exploration of different understandings of how entrepreneurship and innovation can be translated into a higher education institution. It also helps by identifying gaps and building new synergies. The 'group function', can encourage respondents to look beyond their own areas of responsibility and attempt a more holistic approach, taking on the perspective of a possible change agent.

The self-assessment can be repeated multiple times, for example if the aim of the participating HEI is to track organisational change over time. HEInnovate does not store any data for the purpose of analysis by HEInnovate, the EC, the OECD or any other party. At the time of writing this report more than 500 HEIs from all over the world have created an account on the website.

HEInnovate country-level review

The HEInnovate methodology can also be applied in an external peer-review or expert assessment setting, focusing on a local economy, a region or an entire country. The objective is to provide an independent assessment of areas for improvement in the policy framework and at the level of individual HEIs together with a set of recommendations for policy action by HEI and government stakeholders. The recommendations target measures that HEIs may undertake themselves and policy measures that can be promoted by national government and sub-national government structures.

For the review process, a number of HEIs are selected for an in-depth review. These case-study HEIs ideally include the 'leading' HEIs in the country, in terms of number of students, breadth of teaching and research, internationalisation, knowledge exchange activities, as well as their aspirations to become innovative and entrepreneurial HEIs. Surveys administered to HEI leaders and students across the entire higher education system facilitate the identification of trends and gaps.

Method applied in the country-level Bulgaria

The first HEInnovate country-level review was implemented in Bulgaria in 2014. The Ministry of Education and Science approached the EC and the OECD with the request to undertake a review of the current barriers, challenges and opportunities in the Bulgarian higher education system, and to propose recommendations for public policy measures and activities at HEI level.

In January 2014 a one-year collaborative review process was started. It included the in-depth peer-review of five case study universities in March and May 2014, an online survey of leaders and students administered to all 51 HEIs in the period May to September, and a final workshop involving all HEIs, to discuss the findings of the case study peer reviews and the surveys organised in Sofia in the end of September 2014.

A background report was prepared to provide an overview of the higher education system in Bulgaria, as well as regional and local economies, labour market and demographic characteristics and trends, and profiles of the case-study HEIs. Key findings from the background report were discussed with the Ministry of Education and Science and five case study HEIs in a kick-off meeting. The report was used to prepare for the study visit and sections of the background report have been incorporated in this report.

Study visits and an intermediate report on the case study HEIs

An OECD-led team of international higher education and entrepreneurship experts visited five HEIs in March and May 2014 to conduct in depth interviews with university rectors, professors, staff involved in start-up support activities, students and other stakeholders in the local entrepreneurship support system. More than 140 people were interviewed. The five HEIs covered in the two study visits were:

- University "Angel Kunchev" in Ruse
- University of Economics in Varna
- University of Forestry in Sofia
- University of Mining and Geology "St. Ivan Rilski" in Sofia
- Technical University of Sofia

An intermediate report was prepared on the findings from the study visit. The report was structured along the seven dimensions of HEInnovate and presented findings for each of the 45

statements. The intermediate report was translated into Bulgarian and circulated for comments to all interview partners. The aim of the intermediate report was to provide detailed feedback with the aim to stimulate a debate around the HEInnovate statements and to help the case study HEIs to establish a baseline for a continued utilisation of the HEInnovate self-assessment tool.

Online surveys and workshop to involve all HEIs

An online survey of HEI leaders was used to complement the information obtained in the background report and the study visit. The questionnaire, available in Bulgarian and English languages, was send to all HEIs in Bulgaria. The seven parts of the questionnaire asked about (i) the strategic directions of the HEI, also with regard to (ii) the management of human and financial resources, (iii) the teaching and learning environment, and current practices in (iv) knowledge exchange and (v) internationalisation. In a final part, respondents were asked, when applicable, about the current practices in (vi) entrepreneurship education, and (vii) start-up support. In developing the questions, the seven dimensions of HEInnovate served as a conceptual framework.

A total of 20 HEIs (14 public and six private) participated in the survey in the period June to August 2014.[2] Each HEI received an individual report, which compared their responses, in the seven HEInnovate dimensions, to the mean values. For several issues related to the promotion of entrepreneurship, the report included also comparisons with the average responses from an eastern Germany sample (41 public HEIs), and a Polish sample (23 public and private HEIs).

A separate questionnaire was sent during the same period, to students across all HEIs. Various channels were used for this: letters to rectors, emails to entrepreneurship researchers and people met during the study visit, and a snow-ball effect mechanism, which rewarded students for sharing the URL to the questionnaire with other students. 367 students from 23 HEIs participated in the survey and answered questions about work experience and future job expectations. In a second part respondents were asked about their entrepreneurial intentions ("Have you already thought of starting-up a business), and their experiences and satisfaction with entrepreneurship education and start-up support measures. 196 students completed the second part of the questionnaire.

Finally, to discuss and review the findings from the in depth review of the five case study universities and the two surveys with the entire HEI community in the country, a workshop was organised on 25-26 September in Sofia. Representatives of more than 30 HEIs and key organisations of the entrepreneurship ecosystem attended the workshop.

[2] Burgas Free University, Medical University – Plovdiv, Higher School of Civil Engineering (VSU) "Lyuben Karavelov" – Sofia, University of Library Studies and Information Technologies – Sofia, European College of Economics and Management in the town of Plovdiv, N.Y.Vaptsarov Naval Academy – Varna, Varna Free University "Chernorizets Hrabar", Prof. Assen Zlatarov Burgas University, University of National and World Economy – Sofia, Academy of the Ministry of Interior – Sofia, South-West University "Neofit Rilski" – Blagoevgrad, International College – Albena, New Bulgarian University – Sofia.

CHAPTER 1
THE CONTEXT FOR INNOVATIVE AND ENTREPRENEURIAL HEIS IN BULGARIA

Innovation, entrepreneurship and higher education

In Europe and worldwide higher education, institutions are taking up leading roles in promoting economic development and social cohesion. With an all-embracing mission they educate citizens, train researchers, enhance the skills set of professionals, and promote innovators and entrepreneurs. The most successful HEIs are investing in interdisciplinary teaching and research and are building strategic partnerships to address global and local challenges through dialogue, knowledge exchange and the promotion of new entrepreneurial businesses.

Institutional autonomy, leadership and connectivity

To act as sustainable engines for development, HEIs require high levels of institutional autonomy and accountability mechanisms that allow for flexibility. Modern and forward looking leadership, professional planning and management and adequate funding are key building blocks. Close links with strategic partners – such as HEIs, secondary schools, vocational education and professional training organisations, research organisations, industry, businesses, civil society, and governments are indispensable.

We see growing signs of transformation away from the 'traditional' HEI model with an exclusive focus on teaching and research towards an innovative and entrepreneurial organisation, which is designed to empower students and staff to demonstrate enterprise, innovation and creativity in teaching, research and third mission, directs its activities to enhance learning, knowledge production and exchange, in the dedication of creating public value via processes of open engagement (HEInnovate, 2014).

The concept of the innovative and entrepreneurial HEI was developed in the early 1980s as a method of examining the way in which HEIs can contribute to wealth creation and sustainable growth (Etzkowitz, 1983; Clark, 1998; Klofsten and Jones-Evans, 2000; Gibb and Hannon, 2006; Guerrero and Urbano, 2012). Many attempts have been made since then to define the concept, but a single, generally accepted consensus has yet to arise.

Whilst this makes it difficult to use the concept for research purposes, the concept turns out to be an excellent lever for HEIs to guide and steer their organisational change processes. Building a common and shared understanding of what being innovative and entrepreneurial means for a specific HEI within a given socio-economic context and policy framework is the starting point for a progressive and reflective process. There is no one-size-fits-all approach. Each HEI will have a unique transformation path. At the same time commonalities across countries and cultures exists, and learning from good practices will facilitate organisational change.

Organisational change: overcoming the standstill

Transformation of traditional organisations, with firmly established hierarchies, rules and routines, needs time and joint efforts to overcome potential barriers. During the last decade the HE systems of many countries underwent profound changes, both at systemic and institutional levels. Nevertheless, the 'old-fashioned' understanding of what constitutes core-mission and what not, and the 'ivory-tower approach' to knowledge show signs of perseverance – in some countries and cultures more than in others.

Overcoming these 'conceptual' barriers requires a system-wide understanding of what is expected from HEIs. Each institution will need to translate this, however, into its own vision and mission and, most importantly, into an institution-wide awareness of what needs to change and how. A key transformation lever will be the ability to "creatively use" and manoeuvre within the national framework conditions, in particular the Higher Education Act.

In Bulgaria this transformation process has only just started.

The Bulgarian context

Bulgaria has 7.3 million inhabitants and a size of 111,910 km². It is surrounded by Serbia, the Former Yugoslav Republic of Macedonia (FYRoM), Romania, Greece and Turkey. With its natural and cultural heritage sites, mountains and coastal areas along the west coast of the Black Sea, all-season tourism has been one of the country's economic potentials.

Prior to the global financial crisis, GDP growth rates were around 6%. Recovery was slow with real GDP growth averaging 1.1% p.a. in 2010-13. Forecasts for 2015-19 are at approximately 3% (EIU, 2014). The shadow economy accounts for almost one-third of the GDP, which is 1.8 times the EU-27 average (EU, 2014). The country has one of the lowest household incomes in the European Union of EUR 8,496 per capita (2012).[3]

Regional differences, outward migration and demographic change

Strong regional differences hamper development. The North-West region and the southern border districts suffer from high emigration rates and population decline. Regional GDP per capita accounts here for less than one-third of the EU-27 average (2011), whereas in the South-West– including the capital city Sofia – it reaches 72%. With an industry focus on services and medium to high-tech manufacturing, the region accounts for almost half of the national GDP.

Migration is still an issue throughout the country. According to the 2011 migration survey of the Government of Bulgaria, the lack of career options, low wages and the demand for better education were reasons for leaving the country. For lower skilled workers, current or future unemployment and the lack of jobs were key push factors (SEEMIG, 2013).[4] Demographic forecasts predict sharp decline in population of 27% by 2030. The hardest hit population group will be the age group 15-24 years with an estimated decrease of 41%. By 2050 the country is expected to have one the most rapidly shrinking working age populations in the world (Government of Bulgaria, 2013).

[3] Latest available data from Eurostat is of 2012. The average household income in the EU-27 was EUR 20,085.

[4] The representative survey sample was in the in medium- to high skilled end with 54.6% of the 15-64 years respondents had completed secondary education, 28.5% tertiary education and 17.1% left compulsory education below secondary level.

Growth potentials in ICT but overall low levels of innovation activity

One of the sectors with the highest growth history and potential is information and communications technologies (ICT). In terms of value-added the sector divides into three sub-segments: telecommunications (73%), computer programming (14%), consultancy and information services (6%). Since 2005, export products and services in ICT have seen a 14-times increase and account for almost half of the current total exports of business services. The sector also accounts for 90% of all patents registered in the period 2001-2010(Government of Bulgaria, 2013).

Overall Bulgaria's economy suffers from the low level of innovation activity, particularly in the small business sector. The 2014 Innovation Scoreboard of the EU ranks Bulgaria, together with Latvia and Romania, as "modest innovator" country, whose innovation performance[5] is less than half the EU average. Since 2011 Bulgaria has experienced a strong decline in its performance (EU, 2014).

According to the 2008 BEEPS enterprise firms invest in new products and services, but in-house R&D activity remains very low. Only a small group of firms, mostly larger companies, invested in process innovation and innovation-based diversification (World Bank, 2012b). R&D expenditures in the government and higher education sector reached together 0.24 percent of GDP in 2013; which is a decrease of 5.6% compared to the previous year. The R&D expenditure in the business sector reached 0.39% of GDP (+21.5%), with a clear spatial concentration in the South-West region and Sofia.

The commercialisation of research results has not been systematically supported by public policy (World Bank, 2012). Addressing the gaps in the regulatory framework, in particular concerning the involvement of third parties such as companies or clusters, in the management of intellectual property of scientific research results in order to enhance academic entrepreneurship, has been stated as a key priority by the Government of Bulgaria in the 2014-2020 Partnership Agreement with the European Union. To foster academic entrepreneurship, the establishment of so-called "competence centres for applied research" is planned. These centres should foster university-business links and are expected to "have a significantly stronger impact on job creation and growth, as the effect of their work will affect a large number of stakeholders, including public organisations, professional organisations, and […] foreign partners" (Government of Bulgaria, 2013).

Young people are withdrawing from science and research careers. This has been a long term trend. Reasons are low salaries, depreciated equipment and facilities and slow career growth (Government of Bulgaria, 2013).

Efforts to overcome the "separation" between teaching and research

Basic and applied research activities have only recently entered Bulgarian universities. Prior to 1989 the focus of universities and higher education institutions in general was on teaching, whereas research was in the domain of the Bulgarian Academy of Sciences (BAS). Although this has changed and research activities are also taken into consideration for institutional and programme accreditation by NEAA, establishing research activities in HEIs is difficult. Key barriers are the lack of resources (financing and human capital), technological gaps in infrastructure, and underdeveloped links with industry and business (World Bank, 2012a).

[5] One composite indicator, the summary innovation index, is used to measure and compare average innovation performance of a country. The summary innovation index includes 25 equally weighted indicators, which are grouped in enablers, firm activities, and outputs.

The "knowledge triangle" can only work properly if each of its components – education, research, and innovation & entrepreneurship, reinforces the others. The current system suffers from the conflicting co-existence of the BAS, and a number of HEIs who aim at increasing their research capacity. This bears the risk of a waste of resources, duplication of investment and diminishing diversity.

Several initiatives have been undertaken by the Ministry of Education and Science to build more bridges between BAS and HEIs. A number of BAS members are chair holders or academic staff members in universities and BAS established a network of local/regional offices across the country. The research activities of the BAS, however, seem to lack systemic co-ordination with universities. This is not helping universities to find their role in the national or local innovation systems, particularly as they continue to be perceived by the large industry organisations and businesses as "teaching" institutions which issue degrees.

The gaps in the current system also raise doubts whether research activities carried out at BAS take into consideration the new profiles of graduates, and the career ambitions of doctoral graduates and young researchers. These may lie outside academia or in the university-business interface which has yet to emerge in Bulgaria.

Efforts to promote the role of HEIs in innovation and entrepreneurship

Several of the Operational Programmes 2007-2013 had objectives related to the role of HEIs in promoting innovation, entrepreneurship and graduate employment (Government of Bulgaria, 2013). These programmes were implemented by different ministries and coordination suffered from the absence of a long-term national policy framework. This also constrained the role of higher education institutions in local and regional economic development to the provision of a skilled workforce, neglecting contributions to innovation, entrepreneurship and regional and national competitiveness. A new Strategy for Higher Education has been prepared by the Ministry of Education and Science. The strategy is expected to provide coordination for policies and measures that seek to enhance the role of higher education in sustainable development.

A greater role for HEIs in promoting innovation and entrepreneurship is also foreseen by the 2014-2020 Partnership Agreement with the European Commission. The aim is to direct policy interventions into areas with growth potential and competitive advantages. These are information and communication technologies, electronics, healthcare and biotechnology, nanotechnology, environmental protection and energy efficiency, space technology and applications, food production and processing technologies. An expected outcome is the creation of new innovative firms and jobs in the range of approximately 12,000 new SMEs and 90,000 employees in these sectors.

Trends in higher education and systemic barriers

Higher education in Bulgaria has a short history, which dates back to the opening of the Higher School of Sofia in 1888, the predecessor of Sofia University St. Kliment Ohridski. Today there are 51 HEIs in Bulgaria, of which 42 are universities and higher schools (36 public, 6 private), and nine individual colleges (of which one is state-owned). The number of graduates has increased from approximately 50,000 to 64,000 students in the decade 2002-2012. The current number of degree holders in the cohort 30-34 years is 27%; which is significantly below Bulgaria's Europe 2020 target of 40%.

In 2010 the Ministry of Education and Research introduced a university ranking system, which is freely accessible on the Internet.[6] Users – (future) students, parents, firms, etc. – can compare all HEIs across 52 professional study fields against more than 80 indicators, which measure different aspects such as teaching and learning, university environment, welfare and administrative services, science and research, prestige, career development and relevance to the labour market. Users can view pre-defined rankings or produce their own customised rankings by selecting indicators and assigning importance weights according to their own priorities and needs. Data from national evaluation and accreditation agencies is fed into the university ranking system. Issues around the impartiality of evaluation panels have been causing concerns amongst HEIs.

Almost every district has an HEI, some of which are local branches of other HEIs. A wide range of distance learning programmes is offered. The aim has been to provide access to education for students and employees across the country and in areas with less favourable household incomes (NEEA, 2013). Although this policy has had some success, a regional concentration of HEIs in richer areas emerged with 22 HEIs located in Sofia, seven in Plovdiv and five in Varna. The average numbers of students per HEI are 6,200 in the public sector and 3,500 in the private sector. The University of Sofia "St. Kliment Ohridski" is with approximately 21,000 students the largest HEI in the country, followed by the Technical University of Sofia with approximately 9,100 students.

The higher education system currently suffers from an imbalance between offer and demand and a lack of coordination. In the academic year 2014, 280,000 students were enrolled either as full-time, part-time or distance students. The majority of students (approximately 85%) were in public HEIs. The number of offered places exceeded the demand by 11.3% and 8,000 places of the 71,000 offered remained vacant.

The 51 HEIs act with little co-ordination amongst themselves, if not independently, and there are examples of spurious competition all resulting in losses of efficiency. There is a need for re-organisation towards more collaboration between HEIs and more joint utilisation of infrastructure and resources. The aim should be to build a well-functioning system that allows and caters for diversity, so that, institutional-level priorities and goals can be realistically set and achieved within the wider system-level strategic objectives (see also World Bank, 2012a).

Internationalisation of HE is underway, but there are some systemic barriers that need to be addressed. Bulgaria is one of the few countries in the EU where the establishment of joint programmes and joint degrees is not addressed in legislation (EU, 2012). Currently less than 10% of HEIs in the country participate in joint programmes, whereas in neighbouring Romania up to 75% are participating in international study programmes. The lack of joint degree programmes and difficulties in recognising higher education degrees obtained abroad, even inside the EU, render the international mobility of students very difficult.

Changes ahead for the Bulgarian higher education system

In 2013, the Open Society Sofia published the MacroWatch[7] on the current situation of the higher education system in Bulgaria. The key recommendations are:

[6] http://rsvu.mon.bg/rsvu3/?locale=en#HomePlace:

[7] MacroWatch is an initiative of the "Open Society"-Sofia, which started in 2007 with the aim to periodically analyse the socio-economic situation of the country and its associated challenges, risks and opportunities.

- *Open the Bulgarian HE system for foreign universities, who fulfil the quality requirements set by the Government of Bulgaria*. The expected outcomes are higher standards and better quality, more competition and more students studying in the country than abroad.
- *Recognise foreign university diplomas*. In this way more Bulgarian specialists, academicians, teachers, researchers graduated abroad, as well as foreigners in Bulgaria would find an easy entry into the Bulgarian labour market.
- *Introduce a mandatory external/foreign acknowledgement of Bulgarian diplomas* to raise their value on international labour markets.
- *Enhance dynamic adaptation of study programmes to the current and future needs of local and international labour markets*. To this end, the involvement of industry organisations and businesses in regular "quality" checks of teaching and research are recommended.
- *Make public university funding to a greater extent dependent upon outcomes*, in particular in terms of quantity & quality of graduate employment.
- *Promote excellence in teaching* through project financing for the development, pilot-testing and mainstreaming of innovative pedagogies and education models.
- *Encourage the best students to become teaching staff and introduce more quality checks and pedagogy training for new teachers*. To raise the attractiveness of academic positions will need comprehensive measures to raise remuneration, professional prestige, training opportunities and career chances.

These recommendations touch upon various areas where change is needed as identified in this report.

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CHAPTER 2
LEADERSHIP AND GOVERNANCE[8]

Introduction

Leadership and governance are two critical and challenging factors in developing an innovative and entrepreneurial HEI. Positive and responsive leadership is what maintains a dynamic and successful organisation, particularly in times of uncertainty, unpredictability and complexity. Leadership and governance can stimulate innovation of all kinds in an organisation that is held together by a shared vision and culture, not overloaded with managerial systems, constantly striving for its autonomy via the entrepreneurial management of its various interdependencies with stakeholders. In what follows, leadership refers to the ability of the rector, deans or heads of departments to conduct the institution and fulfil their duty. Governance is the organisational control and distribution of responsibility, power and authority for the purpose of decision making and action taking.

HEIs do not exist in isolation from their strategic networks and the local environment. The surrounding entrepreneurial ecosystem is fundamental to the capacity of HEIs for action and impact. Leadership exists and should be encouraged throughout the ecosystem both within and without the institution's organisational boundaries.[9]

Finally, and most importantly, the national framework for higher education plays an important role. It can enable or hinder organisational change in HEIs. Identifying barriers and overcoming barriers in the system is therefore crucial.

Findings

Entrepreneurship and innovation are buzzwords for the young generation …

For Bulgaria's young generation, entrepreneurship and innovation have become buzzwords. These concepts have entered HE but not at the mission and leadership level. There are some 'outliers', amongst the private and public HEIs, which place innovation and entrepreneurship at the forefront of their strategies, but for the majority of academics, trained prior to 1989, entrepreneurship raises negative connotations.

…but not yet fully backed up by institutional commitment in HEIs

The in-depth review of the five case study HEIs confirmed that much depends upon the capacity of leadership to be proactive and forward looking, to engage the entire academic community into a change process, and, at the same time, to promote within and beyond the institutional borders an

[8] Maria Helena Nazare was the main contributor to this chapter.

[9] See Hannon (2014), in HEInnovate Guidance Note on Leadership and Governance, available at www.heinnovate.eu.

understanding that HEIs are not ivory towers, but one of the most fundamental assets a country has to build and nurture a knowledge society.

Whereas entrepreneurship is mentioned in various national strategies and programmes, one has to search for it in the strategic documents of HEIs. Innovation and entrepreneurship are not yet considered as unique selling points and as something that attracts students and strategic partners. Communicating about existing activities to nurture an entrepreneurial spirit and culture seems to be not amongst the unconditionally demonstrated values and aspirations of Bulgarian HEIs. Even in the country's largest university of economics with an institute, a department and several dedicated courses, the word 'entrepreneurship' is absent from official presentations. Also those HEIs which offer entrepreneurship do not publish information about this on their main websites.

For a broad acceptance and buy-in for the innovative and entrepreneurial HEI strategy, from top management down to all key stakeholders, a common understanding of the HEI-specific meaning and relevance of innovation and entrepreneurship will need to be developed. The most difficult barriers to overcome are likely to be intellectual or ideological beliefs of academic staff, which can result from misperceptions and myths about the meanings, values and purposes of entrepreneurship. To overcome these, effective leadership will have to:

- engage different viewpoints;
- provide alternative interpretations that have resonance and meaning for teaching and research, especially across the different contexts of a university; and,
- fit all of this into a shared vision of the future, and a strategy for organisational and individual development.

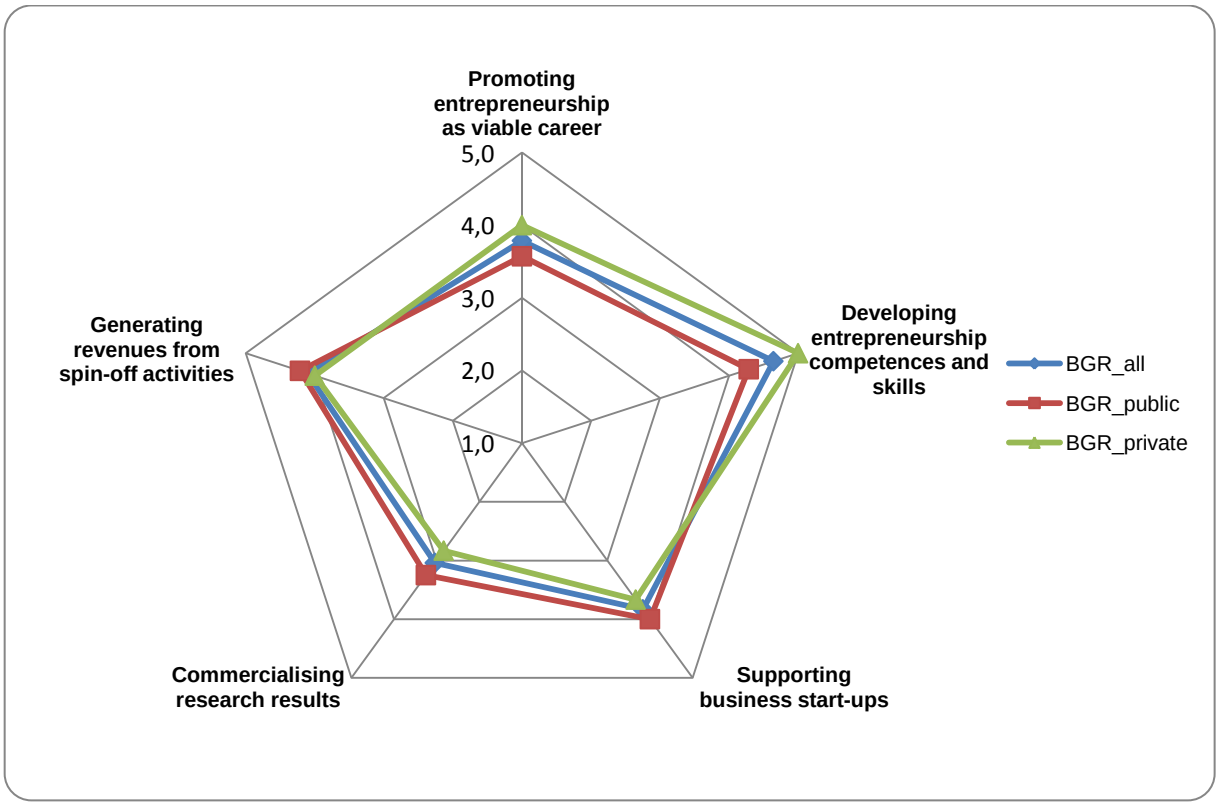
Absence of a long-term national policy framework that guides and support innovation and entrepreneurship

Key to establishing and sustaining institutional commitment within HEIs is the existence of a long-term national policy framework that guides and supports innovation and entrepreneurship, which is not yet in place. Currently there is mention of research, development and innovation in various documents, but an umbrella strategy is missing. The new Strategy for Higher Education is expected to provide coordination for policies and measures. It will be important to take into consideration the findings and recommendations from this review.

Ample potential in HEIs to foster innovation and entrepreneurship

There is already ample potential to foster innovation and entrepreneurship in HEIs. When asked about the importance of five different aspects of entrepreneurship promotion:– promoting self-employment and entrepreneurship and a viable career amongst students, developing the necessary competences and skills, supporting business start-ups, commercialising research results and generating revenues from spin-off activities, the surveyed HEIs rated all of these between moderately important and important. The highest marks received revealed entrepreneurship as a viable career for graduates. Also, the comparison between private and public HEIs reveals little/no differences between mean values (Figure 1).

Figure 1. HEI objectives related to entrepreneurship promotion

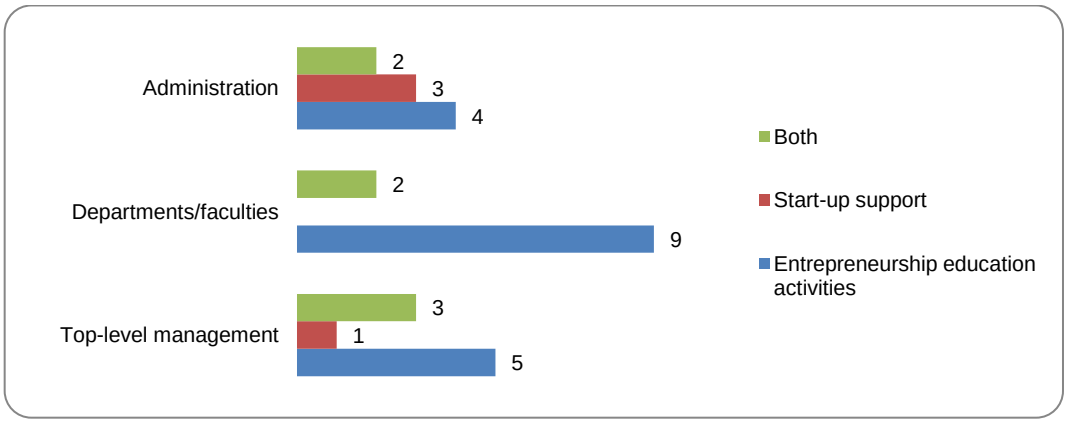


Legend: 1=unimportant, 2=of little importance, 3=moderately important, 4=important, 5=very important.
Notes: Questions ST05; (n=20, one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

Entrepreneurship promotion through education activities and start-up support is a core part of the innovative and entrepreneurial strategy of a HEI. To be effective, a high level of commitment is needed – at the university management level as well as down into the faculties and departments. Many universities across the OECD area have established specific posts to take over the responsibility for entrepreneurship promotion. These can be at senior management level, within faculties, departments and other units. Initially this may be a part-time role and over-time moving towards a small team of dedicated individuals, including also externals.

More than half of the surveyed HEIs have assigned tasks related to entrepreneurship promotion to their staff (Figure 2). Most of the positions exist for entrepreneurship education activities, eleven at the level of department and faculties, eight in top-level management and six in the administration. Three HEIs have positions for both entrepreneurship education and start-up support within top-level management.

Figure 2. Positions in entrepreneurship promotion



Notes: QuestionsES08 (n=17, one response per line); ES16 (n=12, one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

Also, the appointment of HEInnovate project co-ordinators in all case study HEIs is an indicator for commitment at the HEI management level.

Too much still depends upon the motivation of individuals

Currently, many promising initiatives are carried out by individuals. More needs to be done to build a common support framework that brings together individual initiatives and facilitates their upscaling. People who initiate activities that exemplify the innovative and entrepreneurial HEI agenda, such as interdisciplinary education activities, which allow students from different faculties/departments to learn, create, experiment, test and apply new technologies, should be publicly recognised and awarded.

The academic autonomy principle enables the rector to: define strategy, guidelines, and objectives for their institution development; make decisions, including decisions for promoting entrepreneurship in all its aspects and dimensions; include entrepreneurship as one of the criteria in its system for assessing the quality of education, etc. In practice, this autonomy is, however, sometimes used as a shield against public pressure for change.

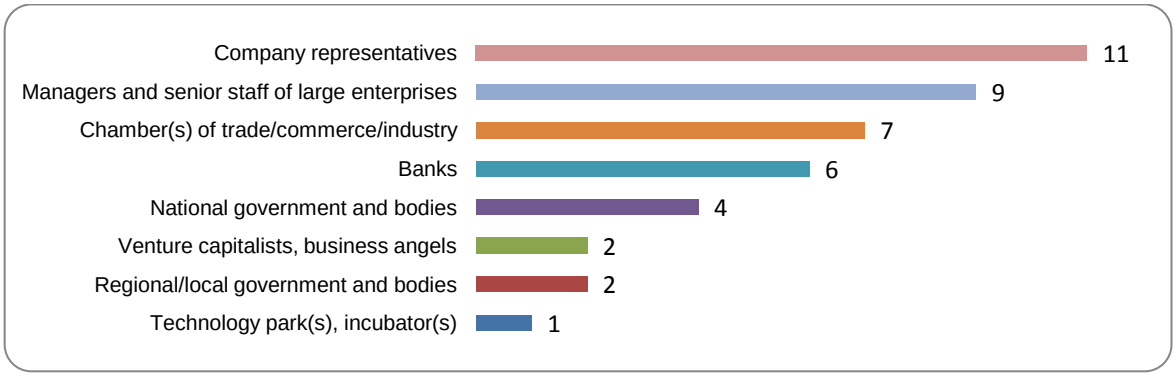
Involvement of externals in governing boards

A truly innovative and entrepreneurial HEI is perceived as such also by its external stakeholders. Achieving this is the result of a long term iterative process, potentially with many ups and downs. In many countries HEI engagement with society has been promoted through the involvement of external stakeholders in the governing boards of HEIs. Although well intended, such changes have in many cases, not fulfilled the expectations, either because the external members are not fully informed and motivated, consequently losing interest, or because their appointment results from motives (political partisanship, financial interests etc.) that are not related to the best interests of the university. Hence, it requires a clear strategy, proactive leadership, incentives for externals to contribute to HEI core matters, and control mechanisms for effective engagement.

The majority of surveyed HEIs in Bulgaria reported to have multiple external organisations represented on their governing boards. Mostly involved were company representatives and owners and senior managers of large firms, followed by the business representative organisations (e.g., Chambers)

and banks. Technology parks, venture capital providers and business angels were represented only on the board of one to two HEIs (Figure 3). Key actors in the emerging start-up ecosystem in the country, such as, for example co-working space initiatives such as betahouse, and venture capital funds, such as LUNCHub and ELEVEN, have only little or no contact HEIs.

Figure 3. Involvement of externals in HEI governing boards

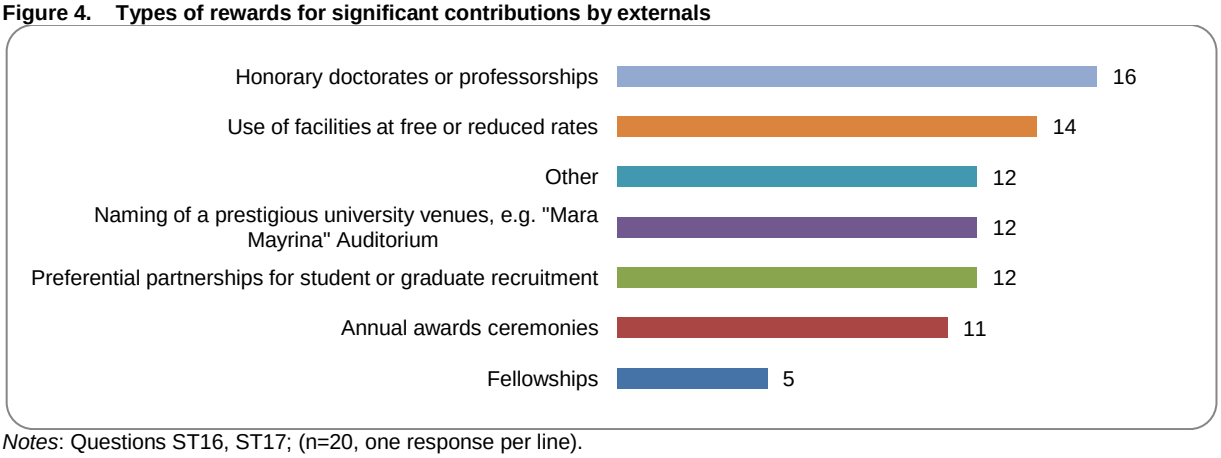


Notes: Questions: ST15; (n=13, one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

It is important to recognise and reward external stakeholders for bringing in human (skills and knowledge), financial, and social (networks) resources which are not (sufficiently) available inside the university. This could follow a three-stage process, which includes the identification of potential external stakeholders, the evaluation of their contributions against criteria established by the university, and the creation of different kinds of status and awards to recognise and sustain their contribution to the entrepreneurial university. This process is institution-specific, depending upon the overall strategic focus of the university and its financial resources.

All HEIs offer rewards and recognition for external stakeholders that provide significant contributions to university development. Honorary doctorates and professorships and use of facilities either at reduced or free rates were amongst the most offered types of recognition (Figure 4). Many have also established boards of trustees, which are involved in the design of study programmes, provide financial and material resources (laboratories and equipment), and help the HEIs to reach out to strategic partners.

Figure 4. Types of rewards for significant contributions by externals



Notes: Questions ST16, ST17; (n=20, one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

Further education, lifelong learning and collaboration with industry and business partners to design training programmes according to firm needs can be an effective way to establish strategic partnerships with key local actors. Many of HEIs in Bulgaria have established such centres. The Continuing Education Centre at the University of Ruse is an example (Box 1). It is part of the University's wider approach to steer local development. Part of this has been the establishment of a board of trustees, which includes key local players, and has a say in the definition of the strategic directions in teaching and research.

Box 1. Continuing education at the University of Ruse

The Continuing Education Centre (CEC) at the University of Ruse (RU) emerged from the Faculty of Qualification Improvement, which was established in 1977. Since 2005, CEC has offices in RU's local branches in Silistra and Razgrad. Four staff members and a varying number of ad-hoc included experts offer further education and training courses to enrolled students, PhD students, staff members, alumni of higher and secondary education. There are education activities that promote employability but also professional career development. Several preparatory courses are offered for new students.

Fundamental to CEC's work is the close collaboration with local firms. Often, alumni contacts help to establish these relationships. Tailored training programmes are co-developed and offered for firm employees. Training of vocational education teachers has been one of the key activity areas of the CEC, with international exchange activities with Germany and other countries. Also, various applied research projects have been carried out to improve the quality of courses and the attractiveness of lifelong learning activities. Courses are also offered in foreign languages. To date, the CEC has organised more than 100 long-term courses for specialists. On average 1,000 people participate per year in CEC courses.

Source : University of Ruse

Only few examples of strategic partnerships with institution-wide impacts

In general, society in Bulgaria does not have a high opinion of the societal contributions of HEIs. The review team was confronted with strong views that graduates had only few of the competences and skills needed by the current job market. Nevertheless, many of the engineering graduates find jobs abroad, or in big international IT companies in the country. The very negative opinion of Bulgarian employers about universities also affect the latter's capacity to establish knowledge exchange partnerships (see below).The idea that universities should train people only according to the current needs of the job market is, however, dangerous and should be carefully examined. In the next decades the global economic landscape will change drastically and so will global and local job markets. There is a need to equip students with the capacity to learn and adapt to change or, in some cases, to lead change.

Some of the case study HEIs work on the establishment of strategic mechanisms to steer knowledge partnerships towards more sustainable contributions to graduate employability and employment and competitiveness of the local industry. However, knowledge exchange partnerships with external stakeholders are left up to individual academic staff, with little or no institutional reference framework. Although having a highly centralised way of dealing with external relationships may be stifling, an approach of total decentralisation is not an answer as it prevents the university from developing common policies for fostering interaction. The currently practiced 'decentralised approach' seems to also point towards the absence of common indicators to measure and incentivise innovative and entrepreneurial behaviours in HEIs (see Chapter on Knowledge Exchange).

Autonomy and quality assurance in higher education

The Higher Education Act of 1995 introduced a new structure for higher education. The Act, which has seen several amendments, of which the latest one is currently pending, provides a wide-

range of autonomy to HEIs, including the postulation of procedures and activities, selection and appointment of academic staff, student admission requirements, teaching methods, curricula development, definition of research projects and signing of collaborative research contracts, collaboration with state, local, and foreign organisations, international cooperation and educational franchise agreements with foreign universities.

The national evaluation and accreditation agency (NEAA), established in 1998, monitors quality in higher education through institutional and study programme accreditation. Depending upon the assessment result, accreditation lasts between three and six years. It always includes a follow-up accreditation process. HEIs perceive the accreditation process as too bureaucratic, quasi like a permanent process which increasingly requires resources (time, personnel, and money). The composition of evaluation panels, mostly professors working at other HEIs in the country, is criticised as presenting potential conflicts of interest. There are proposals to include representatives from businesses and industry, and academics from abroad in the evaluation panels. This is also a request by the European Quality Assurance Register for Higher Education (EQAR), of which NEAA has been a full member since 2008.

Currently efforts to tailor study programmes to the needs and arising opportunities in the local economy are burdensome and costly. Adjustments during the accreditation time are difficult to organise, and there is a tendency to apply with study programmes that are similar to programmes already accredited at HEIs elsewhere in the country. There is some collaboration on co-designing curricula, and results seem to be better for private HEIs, but there is no systemic approach to it. The focus seems to be on lifelong learning activities and not on study programmes. Activities to promote entrepreneurship as a key competence are not considered in the accreditation process.

Recommendations

Establish a national-level HEInnovate committee and a HEInnovate Fund.

The **HEInnovate committee** should include senior representatives from the ministries of education and science, economics, and labour and social affairs, the Rectors Conference, and the main economic actors. It is suggested to create an advisory board with key national and international experts in higher education reform, innovation systems, and entrepreneurship promotion in HEIs. The establishment of thematic working groups, involving HEI representatives should be considered to ensure expert knowledge and know-how and a wide involvement of the HEI community. The objective of the national-level HEInnovate committee and the advisory board is to (i) promote the concept of the innovative and entrepreneurial higher education institution, (ii) identify key national challenges and opportunities in the higher education system with regard to the seven dimensions of HEInnovate, and (iii) monitor and evaluate the pilot projects and review their potential for mainstreaming.

The **HEInnovate Fund** should provide co-funding of pilot projects proposed and implemented by HEIs in Bulgaria. The allocation of co-funding will be competitive. Key areas of fundable projects should be defined by the national-level HEInnovate committee, taking into consideration the findings from the HEInnovate country-level review. The establishment of a HEInnovate network of HEIs in Bulgaria could prepare and facilitate the establishment of a HEInnovate Fund. Further, it should be considered to include HEInnovate in the key performance indicators, applied by NEEA and the University Ranking.

Learning Model: EXIST (Germany)

HEIs should review and reformulate their vision statements and missions, and adapt these in light of current challenges and possible responses.

HEIs are recommended to undertake an analysis of the strengths and weaknesses, opportunities and threats, involving the entire university community, including students, alumni, and key external partners. This will also imply, on the one hand, defining and building a common understanding of what entrepreneurship means to the university, and whether this understanding can/should be linked with the socio-economic situation of the surrounding local economy. On the other hand, such an approach will require the allocation of sustainable human and financial resources, provision of adequate support infrastructure (e.g., entrepreneurship centre, incubation facilities, etc.) and/or the establishment of effective links to external business support organisations.

Regular exchange and consultation meetings between academic and administrative staff and senior management can be a good starting point. Examples are get-togethers with informal updates by different groups, formal information meetings, and thematic retreats. The objectives are (i) to create an environment which promotes awareness of what an entrepreneurial organisation entails, (ii) to enhance exchange and collaboration, and (iii) to identify and address barriers, which will lead in the long run, to the emergence of an entrepreneurial culture in the university.

In all this, it will be important to establish ways of how to increase graduate retention in the university's surrounding economy. To this end, and in order to offer more interdisciplinary learning environments, which allow students to practice research with real-life applications, collaboration between HEIs should be sought.

Learning Model: Knowledge Antennas in southern Catalonia (Spain)

Establish a senior management post in charge of the innovative and entrepreneurial agenda.

To steer and sustain the innovative and entrepreneurial agenda, HEIs should establish the position of a senior management post or Vice-Rector who will be responsible for entrepreneurship, organisational change and interaction with the local community. It is suggested that a "Strategy Council", which includes members from local/regional governments, key business and industry partners, and civil society, is established to advise and support the HEI in building trust, achieving its mission and vision and design a roadmap to become one of the drivers of entrepreneurship and development in the local/regional economy.

The HEI should, to the best of its ability, respond positively to the suggestions of the Strategy Council. Meetings every trimester should be prepared in the fashion of the corporate world, i.e., based on concrete proposals and information including budgetary implications. It is important to ensure that the entire organisation engages into the process of building an entrepreneurial institution. Interaction with senior representatives of external stakeholders should, however, be the remit of the rector and the vice-rector for entrepreneurship, organisational change and interaction with the local community.

Learning Model: Council for Entrepreneurship at the Universidade Nova de Lisboa (Portugal)

Learning models

EXIST (Germany)

Approach

EXIST is a support programme of the German Federal Ministry of Economics and Energy which aims at (i) fostering the entrepreneurial environment at universities and research organisations, and (ii) at increasing the number of technology and knowledge based business start-ups. EXIST is co-financed by the European Social Fund.

EXIST started in the late 1990s with a selection of HEIs in Germany. It initially provided funding for research projects that carried spin-off potentials and students and graduates who wanted to start their own business with a technology-based idea. In 2005 EXIST opened up to all German universities and universities of applied sciences. The project management of EXIST is carried out by Projektträger Juelich (PtJ) at the Research Centre Jülich GmbH. All the "work on the ground", such as informing students, supporting applications, training and the provision of physical infrastructure and access to laboratories is provided by the HEIs.

Today, EXIST has three distinct project lines:

- Culture of Entrepreneurship (*Gründungskultur*)
- Business Start-Up Grant (*Gründerstipendium*)
- EXIST Transfer of Research (*Forschungstransfer*)

Culture of Entrepreneurship

The EXIST programme "Culture of Entrepreneurship" supports projects at universities to build up an infrastructure for providing skills and support for technology and knowledge-based innovative ventures. In support of these activities, universities receive an allowance from the German Federal Ministry of Economics and Energy over a three-year period. In the period 1998 to 2012, the government supported a total of 72 projects for a total amount of approximately EUR 104 million. This included co-financing of entrepreneurship centres, regional outreach initiatives, such as HEI-business interface structures, curriculum development to anchor entrepreneurship education in technical and science subjects, and coaching and mentoring initiatives for new entrepreneurs (students, graduates and alumni).

In 2010 a new phase started: the entrepreneurial HEI competition.[10]In April 2010, 83 HEIs submitted project proposals and 24 received a short-term funding to prepare a full proposal for a funding period of three years. In July 2011, ten HEIs were selected by a jury of national and international entrepreneurship experts. The three winners – the Technical University of Berlin, the Carl-von-Ossietzky-Universität Oldenburg and the Munich University of Applied Sciences – received the label "EXIST- Gründerhochschule" (entrepreneurial university). A second round of the competition was completed in 2013.

Contacts: Mrs. Marion Glowik; Email: ptj-exist-gruendungskultur@fz-juelich.de

[10] The OECD LEED Programme participated in the development of the selection criteria and was part of the jury.

EXIST Business Start-Up Grant

EXIST Business Start-Up Grant supports the preparation of innovative business start-up projects at universities and research institutions.

The grant aims to help scientists, university graduates and students developing their business ideas into business plans and to advance their ideas for products and services. To cover their living expenses, the entrepreneurs receive a grant between EUR 800 to 2,500 per month, depending on their degree, for a maximum period of 12 months. In addition, they receive materials and equipment (worth EUR 10,000 for solo start-ups and EUR 17,000 for team start-ups, funding for coaching EUR 5,000 and, if applicable, a child benefit of EUR 100 per month. The university or non-university research institution offers infrastructure during the pre-start-up phase and provides technical and start-up related assistance.

Contacts:ptj-exist-gruenderstipendium@fz-juelich.de

EXIST Transfer of Research

EXIST Transfer of Research promotes technology-based business start-up projects in the pre-start-up and the start-up stage. EXIST Transfer of Research" complements the broadly targeted EXIST Business Start-Up Grants with an excellence-oriented measure for high-tech start-ups.

The purpose of the first funding phase is to support research teams at universities or research institutes so as to enable them to provide proof for the technological feasibility of their product idea and to prepare the business start-up. The funding includes staff expenses for up to three staff members and EUR 60,000 for materials and equipment. After one year, funding is available for another person with managerial skills to become a member of the start-up team later. The maximum funding period is 18 months in the pre-start-up phase.

During the second funding phase, the newly founded technology oriented companies can be supported with up to EUR 150,000 to continue the product design, for instance up to the prototype realisation and to solicit external funding for their company.

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What can be learned from EXIST?

Most relevant for the Bulgarian context is the EXIST project line Culture of Entrepreneurship. It is a very effective approach to stimulate organisational change and to promote the innovative and entrepreneurial HEI, because of the:

- Involvement of all HEIs into a competition and coordination process – EXIST organises twice per year thematic workshops and conferences, hosted by different HEIs

- Creation of a network of "doers" and researchers – various conferences are organised every year and various informal platforms and communities of practices are offspring results

- Institutional commitment in HEIs – which is a core prerequisite to be successful in the competition, and the mid-term evaluation

Knowledge Antennas in southern Catalonia[11] (Spain)

The approach

The Rovira i Virgili University (URV) is a comprehensive, research-intensive and globally linked university, contributing to innovation and sustainable growth in Catalonia's core industries - chemical, energy, tourism and agro-food. URV was founded in 1992 as a public university for southern Catalonia, a region with 800,000 inhabitants, with the aim to unite existing higher education faculties and schools in the Tarragona area under a joint institutional umbrella. Today, URV has 13,500 students across six campuses, and around 2,000 graduates per year from 52 study programmes (2013). Annually, URV spends around 27% of its overall budget of EUR 105 million (2013), on research and development and innovation (RDI) activities. Two-third of this RDI budget comes from Spanish and Catalan competitive funding programmes.

URV is deeply embedded into the regional economy, and is considered a driving force for sustainable regional, social and community development. There is wide and active local interest in establishing close links with URV. The establishment of "knowledge antennas" (KA) in 2007 has been a strategic response to this, building on the prior establishment of five campuses spread throughout southern Catalonia. In response to the requests of the other municipalities in the region, URV started the Extended Campus initiative with a network of 13 KAs (2013).

The KAs have been established in partnership with municipalities and other local stakeholders. These partners offer buildings to host teaching, research and third mission activities. Each KA has a coordinator, appointed jointly by the local host and the URV, whose task is to guide the participatory design process of the annual programmes, in liaison with the URV's vice-rector for external relations, and to oversee their implementation. Several exchange meetings are organised per year to bring together the 13 KAs. The activities of the KAs are tailored to local contexts. The programmes offered can be very diverse in terms of their format and thematic focus.

All KA have become platforms of dialogue and exchange for academia, businesses, industry representatives and civil society. They serve as regular meeting points for members of the university community, students, alumni, researchers, teaching and staff. Two key areas of KAs activities are (i) Accelerating capabilities in businesses: Through deeper conversations with industry and business representatives, URV is increasing the alignment of their higher education courses, training and further education programs with current regional and future skills needs; (ii) Promoting local-global connections: URV has been successful in attracting international students and researchers to southern Catalonia. By making its international links available to regional businesses and community stakeholders, URV enhances the region's role in creating a leading knowledge and innovation ecosystem.

What can HEIs in Bulgaria learn from this example?

The knowledge antennas have been key facilitators of the emergence of a viable interface between URV and the local communities, especially given the socio-economic differences in the region and the variety of actors and interests. It is a relevant example for the Bulgarian context because of the:

[11]HEInnovate case studies, accessible at www.heinnovate.eu

- Effectiveness in building closer links with industry and businesses through skills development efforts (further education and training) and knowledge exchange (research, conferences)

- Introduction of global links for local businesses through the sharing and co-creation of international contacts via URVs research and teaching networks

- Encouraging of third mission activities amongst the URV community.

Council for Entrepreneurship at the Universidade Nova de Lisboa (Portugal)[12]

The approach

The Universidade Nova de Lisboa (NOVA), created in 1972, is a decentralised University, with 5 Faculties, 3 Institutes and one School located in three different municipalities: Lisboa, Oeiras and Almada; it's academic and research units enjoy a great deal of autonomy. NOVA has around 19,000 enrolled students, 1,450 academic staff, 769 non-academic staff and 237 researchers. Nowadays it is one of the best Universities in Portugal recognised for its capacity for entrepreneurship and performance in research.

NOVA aims at developing a true entrepreneurial ecosystem in partnership with region. Towards that objective it established in 2006 a Council for Entrepreneurship[13], this is chaired by Mr. Buchannan, since 2013. All the units (Faculties, Institutes and School) of the university have a seat at this Council, so participating in all decisions related with activities of entrepreneurship, ensuring the involvement of the whole university and fostering a true multidisciplinary work. Connection with the university leadership is guaranteed by Vice Rector João Crespo responsible for this area in the rector's team.

NOVA and its Council for Entrepreneurship are an example of how to ensure the existence of shared knowledge on what is going on inside the university in terms of new developments related to entrepreneurship. The fact that there is the participation of different disciplines enables an interdisciplinary approach. A relevant fact is the novelty of having this Council chaired by a personality from outside the university and having at the same time the Vice Rector in charge of the area establishing the liaison with the leadership of the university.

Mr. Charles Buchannan, former board member of the Luso-American Foundation for the Development (FLAD), is a highly respect individual with a long experience in matters of entrepreneurship development and support in Portugal. It is important to underline that Mr. Buchannan is not a staff member of the NOVA.

In support of the entrepreneurial ecosystem within the university, NOVA has an entrepreneurship office headed by Dr Joana Mendonça. A major responsibility of the office is the promotion of an entrepreneurial attitude amongst NOVA community members. Within its remit is the coordination and dissemination of information relative to all the initiatives related to entrepreneurship as well as reporting on those.

[12] This learning model was written by Maria Helena Nazare. The author can be contacted at mhnazare@ua.pt.

[13] http://www.unl.pt/en/entrepreneurship/

The role played by the Council for Entrepreneurship is extremely relevant in supplying the support and follow-up of the initiatives. An annual report is also published and submitted to the university governing board.

Having as Chair of the Council for Entrepreneurship a personality from outside the university, with an important and recognised contribution at national and international level, in support and development of entrepreneurship, has been key in attracting the interest of key players in the entrepreneurship and innovation ecosystem.

What can HEIs in Bulgaria learn from this example?

- The Council for Entrepreneurship is reaching out to all faculties at NOVA.
- Having as Chair of the Council for Entrepreneurship a prominent personality has attracted key players in the entrepreneurship and innovation ecosystem.

CHAPTER 3
ORGANISATIONAL CAPACITY, PEOPLE AND INCENTIVES[14]

Introduction

'Business as usual' will no longer suffice for the development strategies of HEIs. Disciplinary constraints, departmental structure and longstanding practices must not be allowed to stifle the development of the bold and creative thinking that will be required to build the innovative and entrepreneurial profile of the university. This needs knowledgeable people, specific offices, adequate funding and a transparent framework of rewarding the staff involved.

Having a multi-source financial base is for many universities important for future development. A first step is the identification of different funding sources, taking into account when and for how long available these sources will be available. Following on from that, universities need to identify areas which are most attractive to external funders and investors. Examples include: study programmes and further education initiatives (e.g., MBA programmes), research projects, entrepreneurship chairs, entrepreneurship centres, and, infrastructure projects, such as business incubation facilities, laboratories, science and technology parks, representative buildings and auditoriums etc.

Building organisational capacity requires HEIs to be always aware of the different training needs of their staff. A first step is to map the general competencies and skills that an innovative and entrepreneurial HEI requires against the current competencies and skills in the organisation. Faculty at all levels (doctoral students, postdocs, professors, non-academic experts) and in all faculties may need training.

On the matter of incentives for externals, there is the need to be very creative in order to find ways to gain the interest of external stakeholders. This is very important for the Bulgarian context where the enterprise world seems to have a rather pessimistic view on the role and capacities of universities as partners for development.

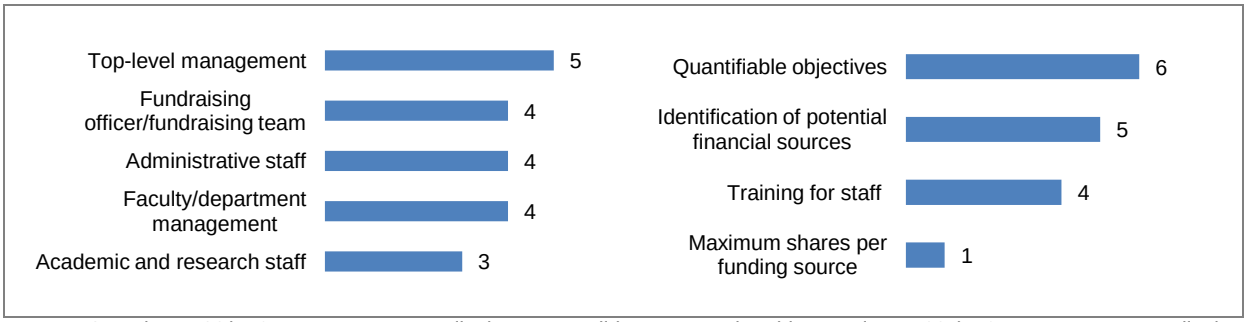
Findings

Active fundraising is practiced

Except for one, all surveyed HEIs reported to be actively raising funds in form of donations, co-financing from various sources, such as individuals, businesses, charities, governmental agencies, etc. There are differences in the organisation of fundraising, in how it is managed, and what guidelines are provided. Information was available for six HEIs (Figure 5). Only five HEIs are regularly identifying potential sources of financing and training for involved staff was provided only in four HEIs.

[14] Maria Helena Nazare was the main contributor to this chapter.

Figure 5. Organisation and support practices in fundraising



Notes: QuestionsFI02(n=6, one response per line); one HEI did not respond to this question; FI03 (n=6, one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

Need for an institutional framework

The observations made from the study visit and informal discussions in the workshop suggest that fundraising activities conducted by individual staff members are yet not fully integrated into the wider HEI strategy. Cases exist where faculties earn money from participation in outreaching projects and activities. However, it is not yet standard practice to have common policies across the institution, related to overheads, caps on additional income and possible reduction of work load. The latter can have significant impact on promoting interaction with the business world as well as preventing undue use of time and university facilities. Changing existing decentralised funding mechanisms into a coherent, institution-wide financial strategy is essential for institutional development, it is also likely to raise opposition from faculties, departments and units. Incentives and rewards can help to overcome the opposition and to generate buy-in from all staff.

For a strategic and efficient use of external sources of funding, it is important to (i) continuously engage funders and investors in strategic decisions, to (ii) monitor partnerships, and to (iii) share relevant information within the organisation to facilitate external communication and avoid duplication of fundraising efforts. Some of this information may be held by staff involved in externally (co-)funded projects and not available throughout the higher education institution. Here the establishment of an institution-wide database, which can be fed and read by all staff, can help to share and update information.

When introducing a multi-source funding approach, it is important to have effective monitoring and control mechanisms in place that avoid dependence upon external investors and their agendas. Reporting practices are important to demonstrate to investors returns on investment and the overall value added.

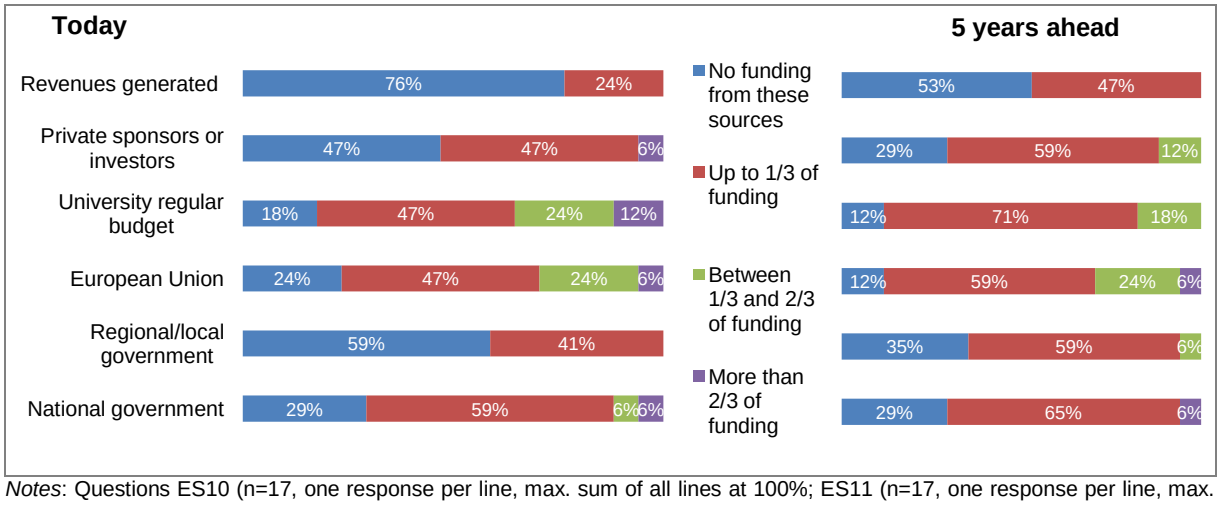
Multi-source funding for entrepreneurship promotion activities

All surveyed HEIs reported to currently utilise a variety of funding sources for their entrepreneurship promotion activities. In their five-year ahead expectations the funding from private sponsors, investors and the regular HEI budget as well as revenues generated from these activities, are expected to raise substantially (Figure 6).

Sustainability of funding is important for multi-source funding approaches. It requires from HEIs a back-up funding to guarantee continuity of activities. This is particularly an issue for entrepreneurship promotion activities. Continuity of resources, especially human resources, is a key determinant of quality and quantity of the offer and its take-up rates.

At present many universities in Europe use project-based funding mechanisms for their entrepreneurship support activities. Without a continuous funding basis from the university's regular budget these activities are likely to suffer from short-term or time-bound availability of resources, which may cause early termination, high rates of staff turnover and an increase in administrative tasks related to renewal of funding agreements.

Figure 6. Current and expected sources of financing for entrepreneurship promotion



Notes: Questions ES10 (n=17, one response per line, max. sum of all lines at 100%; ES11 (n=17, one response per line, max. sum of all lines at 100%). *Source*: OECD HEI Leader Survey Bulgaria (2014).

The legacy of traditional boundaries

All staff and students are important stakeholders of the entrepreneurial HEI and ideally work together to create dialogue and linkages across the organisation and beyond its borders. However, traditional boundaries between administration and faculties, faculty and students, and between disciplines can make this challenging.

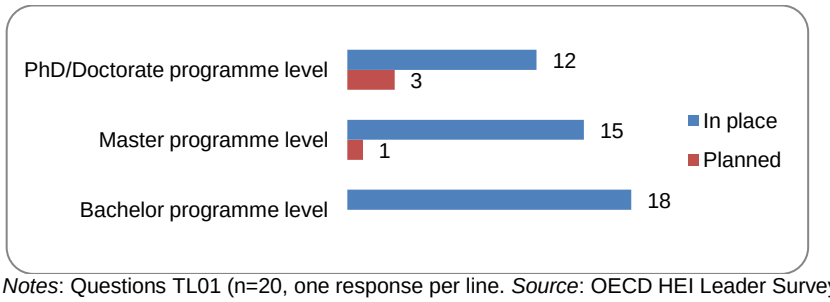
The background research revealed that key barriers in Bulgarian HEIs to the efficient utilisation of the staff's capacity are the weak contacts between the different units in the HEIs and the lack of exchange of information. There are cases where staff of one chair or study programme does not know about the activities and results of other chairs and study programmes in the same faculty.

The poor collaboration between the university units hampers integration inside as well as external collaborations. Effective leadership can make a difference. This became obvious in some of the case study HEIs, where leadership is promoting communication and organisation-wide exchange. What seems to work are cross-departmental exchanges in teaching and research.

First signs of interdisciplinary learning and research environments need further strengthening

Most of the surveyed HEIs currently offer interdisciplinary study programmes at Bachelor level (18), 15 HEIs offer them at Master level and twelve at the level of doctoral programmes (Figure 7). Creating interdisciplinary learning and research environments is a core task of the entrepreneurial university. Issues of local/global societal relevance, such as global warming, waste management, demographic change and the use of smart appliances can help to promote interdisciplinarity in teaching and research. There are examples of this at HEIs in Bulgaria.

Figure 7. Interdisciplinary study programmes

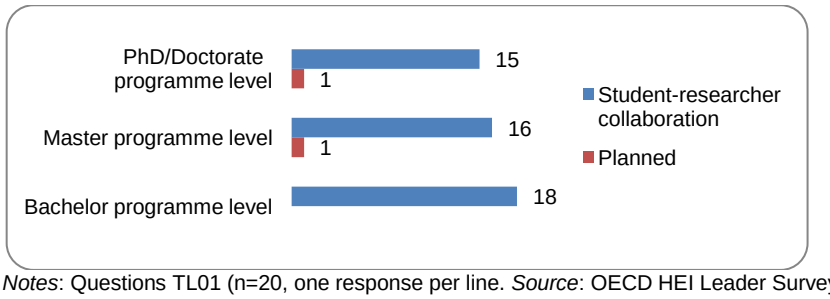


Notes: Questions TL01 (n=20, one response per line. *Source*: OECD HEI Leader Survey Bulgaria (2014).

Interdisciplinary education activities might be constrained by higher-tier curriculum requirements (accreditation), which HEIs cannot quickly address. Despite such constraints, senior management can encourage and reward initiatives that cross and remove faculty boundaries, for example by promoting cross-faculty summer schools, interdisciplinary research groups, cross-campus idea competition, etc.

Another promising approach to overcome traditional barriers is to promote student-researcher collaboration other than final graduation theses. This is offered by most of the surveyed HEIs at Bachelor level (18), however less often in Master and doctoral studies (Figure 8).

Figure 8. Student-researcher collaboration beyond final thesis



Notes: Questions TL01 (n=20, one response per line. *Source*: OECD HEI Leader Survey Bulgaria (2014).

All of the case study HEIs reported to have interdisciplinary research teams, often promoted by EU (co-) funded trans-national projects. The following provides examples of how two specialised HEIs involve their students in research activities.

Box 2. Involving students in research activities at specialised HEIs

Forest University Sofia

The Forest University Sofia provides research expertise to the Ministry of Agriculture and Food, the State Forestry Agency, the Ministry of Environment, and other state bodies, to increase the competitiveness of agriculture and forestry whilst safe guarding the sustainable use of resources. Five areas of research have been defined (i) renewable energy sources (bioenergy crops, materials, technologies), (ii) risk factors for forestry and agriculture and the urban environment (climate change, pollution, invasive organisms, diseases of economic importance, healthy food etc.), (iii) spatial layout design of public spaces, (iv) increasing the competitiveness of enterprises and farms new materials, technologies, innovations, (v) use of modern technologies for modelling of processes and objects with a view to sustainable use of biological resources.

Students and researchers are working in teams, often with international partners from the central Asia, and Russia.

University of Mining and Geology Sofia

The University of Mining and Geology Sofia has three faculties: Faculty of Mining Technology, Faculty of Mining Electromechanics, and the Faculty of Geology. Around 3,500 students study in 17 BA programmes, 34 Master programmes, and a varying number of doctoral programmes (11-17). The University organises regular events to coordinate its teaching and research activities of the leading companies such as Chelopech Mining, Geotechmin, Overgas Inc., Assarel Medet, Maritza East, Aurubis Bulgaria, Elatzite Copper Ltd., Minproject, Oil and Gas, Bulgargaz, Bulgartransgas and others. Partnership agreements have been signed with international companies such as Shell Dutch, Italian MultiEurope as well as the embassies of Austria, Russian Federation, Mongolia and Azerbaijan. The Annual Scientific Sessions are attended by researchers from core mining regions worldwide. The conference is a key event to discuss new research activities.

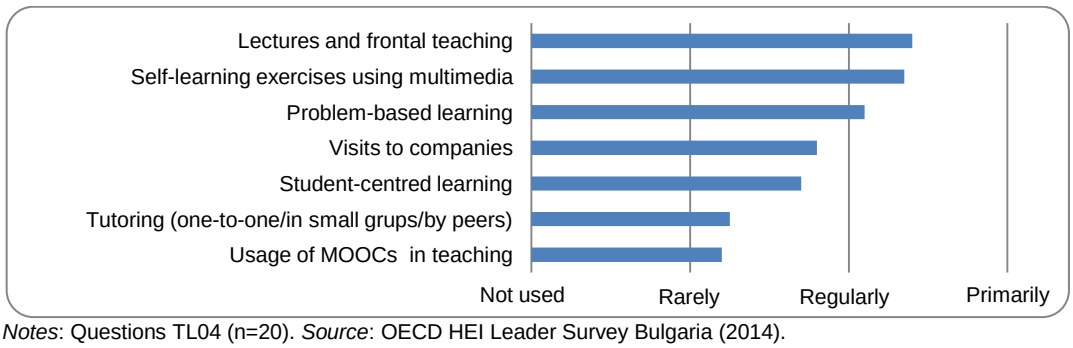
Students are a key part of this. The small-size of the university and its narrow focus are considered by HEI leadership as key enablers for the involvement of students in research activities already early on in their studies.

Source : Information provided by the universities.

Addressing the need to update curricula and teaching styles…

Lectures and frontal teaching are still the most widely used teaching style in the surveyed HEIs (Figure 9). This is followed by self-learning exercises using multimedia and problem-based learning. Less often used are student-centred learning, tutoring in small groups or by peers, and visits to companies.

Figure 9. Use of teaching styles



Notes: Questions TL04 (n=20). *Source*: OECD HEI Leader Survey Bulgaria (2014).

More should be done in Bulgarian HEIs to promote interdisciplinary learning environments, the flipped classroom concept, and a wider range of electives for students to choose from per academic year. Procedures for updating the teaching content are, however, conservative. There are fields where it is not realistic to expect teaching to be up to date with the latest trends in the corresponding industry sectors. There is anecdotal evidence that it is current practice to teach matters for which there are lecturers, who in turn continue to deliver their 20year old lectures.

The sheer volume of information, which is freely available on the Internet – TED, Coursera, Khan Academy, MIT, to name just a few, has produced new channels of learning. These new channels of learning question traditional student-teacher relationships. The 'flipped classroom' concept is a reaction to this. Students are tasked to 'discover' more of their learning and to use conventional lecturing, formerly delivered personally, from online sources, whereas the role of the teacher changes from being an instructor to a facilitator of learning.

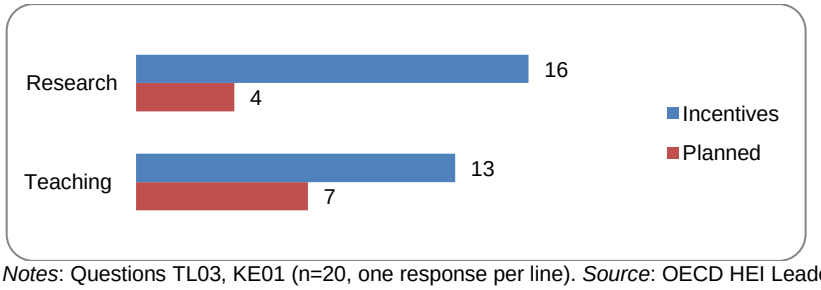
HEI in Bulgaria need to work on their attractiveness for energetic, competent, ambitious teachers and researchers. Private sector experience is also not yet widely considered as a recruitment criterion. Only nine of the surveyed HEIs stated that in the recruitment of teaching and research staff prior experience in the private sector is taken into consideration, and three were discussing this in their governing boards.

…will require incentives and training opportunities

There are some few but very promising examples of applications of the flipped classroom concept which are carried forward by motivated teachers. It is important that HEI leadership identifies these practices and promotes them across all faculties through institutional acknowledgement and resources.

In the surveyed HEIs excellent performance in research was more often rewarded than excellence in teaching (Figure 10). There is, however, movement in promoting quality teaching and efforts are underway in several HEIs to introduce formalised processes for this.

Figure 10. Incentives for excellence in teaching and research Student-researcher collaboration beyond final thesis



Notes: Questions TL03, KE01 (n=20, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

Not all educators will initially feel comfortable with pedagogies in which students have a greater say in education. Therefore it is important to provide assistance and continuous training to facilitate the blending of traditional teaching with new methods in student-centred, problem-based learning and experience orientated education. Educators need to be aware of the impact on students of non-traditional pedagogies and what the requirements are for practicing these in terms of preparation, resources, and approaches to learning outcome assessment. This requires time, the availability of training and teaching material as well as guidance on how to define and assess learning outcomes.

Many aspects of the innovative and entrepreneurial university are fast moving, such as managing and building resources, involving external stakeholders into leadership and governance, creating and nurturing synergies between teaching, research and societal engagement, entrepreneurship education and managing knowledge exchange partnerships. This requires new skills and new knowledge which staff may not sufficiently have yet. Training opportunities should thus be offered to all staff, including administrative staff, who can play a core role in promoting organisational change.

First experience with entrepreneurship centres

Many different models exist for co-ordinating the entrepreneurial activities; they can be grouped in three general types (Figure 11). It is important that the model, for which an HEI opts, takes into account existing relationships, co-ordinates across departments, faculties and other units, and avoids the duplication of work inside the university and within the surrounding entrepreneurial ecosystem.

Figure 11. Coordination models for entrepreneurship promotion in HEIs

Source: HEInnovate Guidance note on Organisational capacity, incentives and people; online available at www.heinnovate.eu

Since 2010, with the support of the Bulgarian government, several HEIs have established entrepreneurship centres and technology transfer offices. According to Pavlova and Ivancheva (2012), these are:

- Ruse University "Angel Kanchev"
- Technical University of Varna
- Technical University of Gabrovo
- Sofia University "St. Kliment Ohridski"
- South-West University of Blagoevgrad
- Veliko Tarnovo University "Cyril and Metodij"
- University of ForestrySofia
- Technical University Sofia, Plovdiv subsidiary
- Nicola Vaptsarov Naval Academy in Varna
- Burgas University "Prof. Dr. Asen Zlatarov"
- Agricultural University in Plovdiv

Also, all of the case study HEIs work towards establishing well-functioning entrepreneurship centres; the University of Forestry and the University of Ruse are part of above list, and the Technical University in Sofia has an entrepreneurship centre in its local branch in Plovdiv. At the University of Economics in Varna the Centre for Innovation and Development organises Brand-Idea, an idea competition with a range of complementary education activities (Box 3).

Box 3. Brand-Idea

Brand Ideawww.brand-idea.net is an idea competition organised at the University of Economics in Varna. It was developed by a team of young, dedicated academics and students. After an initial period of self-financing, the University budget and a successful project application for government funding under the 2007-2013 operational programme "Modifying higher education syllabi in accordance with the requirements of the labour market" have helped to broaden the scope. Brand Idea is implemented by the Centre for Innovation and Development, which offers various activities for students. The first edition of Brand Idea was launched in 2011 restricted to students of Marketing. Now, Brand Idea is open to all students. Its aims are to:

- Establish a framework of applied competences in the field of economics
- Stimulate creative and innovative (out-of-the-box) thinking
- Develop business-related skills at different levels (the basic level comprises business survival skills)
- Stimulate the entrepreneurial attitudes and activities of students by small projects implementation, incl. social innovation
- Re-engineer the process of higher education using as a background the concept of business models

Establishing Brand Idea as an all-campus initiative also meant overcoming administrative barriers, re-writing of syllabi and study programmes. That Brand Idea is now open to all students which is a great achievement. The Centre for Innovation and Development is planning to offer more distance learning courses, also in Russian and English languages and various business simulation activities related to marketing, innovation management and technology entrepreneurship.

Source : University of Economics in Varna.

An off-spring of the Technical University in Sofia is Booster, a student-led initiative at TU which works towards establishing a student-run entrepreneurship centre. Often student-led initiatives have the advantage of having a greater outreach to students.

Box 4. Business Booster Sofia

Business Booster Sofia www.booster.bg was founded in 2010 by a group of engineering and economics students from the Technical University. It recently registered as an association. The mission of Business Booster Sofia is to establish an entrepreneurial environment for the students and professionals at TU Sofia. The aims are to:

- Motivate students to be more entrepreneurial and innovative, by showing how significant they are for the national economy
- Create a sustainable entrepreneurship environment which is easily accessible by students
- Establish a meeting point of students with a different background - a co-working space / incubator for the new ventures
- Organise education courses aiming at increased motivation and knowledge for the importance and the steps of starting-up
- Provide information about potential sources of financing, potential business partners, certification of productions, IP rights
- Establish working connections with real business which will foster the implementation of the innovations
- Create a network of committed mentors and investors, or even establish a dedicated technological start-ups investment fund

Business Booster Sofia has not received any financial support; all activities are carried out with the students' own resources (knowledge, experience, time, connections) on a voluntary basis. Business Booster Sofia collaborates with LauncHUB, Eleven, the Association of Business Clusters in Bulgaria, the Economic Chambers, JA Bulgaria and various government offices.

Classes are offered in the early evening hours to allow all students to attend. Courses last on average two months and are focused on technology topics (e.g. cleantech, fintech and etc.). The first group of students already graduated and applications for the second course were so numerous that parallel classes are organised to keep the dynamics of small interdisciplinary groups. The management of the Technical University of Sofia highly values the work of Business Booster Sofia.

The next step would be to start with co-working spaces. Negotiations with the university are underway to receive a location on campus. Such a co-working space could be a very promising initiative to enhance interdisciplinarity and to promote innovation and entrepreneurship.

Source : Business Booster Sofia.

First steps to build lasting bonds with Alumni

Relationships with alumni can be a powerful mechanism for HEIs to increase their networks, to create research links, to update syllabi and to involve key industry experts in teaching. Tailored further education offers and research contracts can also be an additional revenue channel. At all case study and surveyed HEIs, efforts are underway to institutionalise alumni relations, for example through regular circulation of information about study and HEI activities.

It seems that most of the alumni links remain at the faculty and individual professor level, and thus remain un- or underutilised potential for the HEI. Career centres and alumni associations have formed only recently. A promising initiative in this direction is the alumni survey system at the University of Forestry in Sofia, which builds contacts with students during their studies and maintains these contacts after graduation.

Recommendations

Provide training possibilities for staff and reward excellent performance in teaching, research and entrepreneurship.

A formal policy for career development should be in place, which is sufficiently resourced and provides room for individual goals and objectives. Training possibilities should be offered to enhance the quality of teaching (e.g., interdisciplinary intra-curricula education activities, student-centred pedagogies, involvement of externals into teaching), organisation of internships, knowledge exchange, and internationalisation. Furthermore, training possibilities should also exist for academic staff, who would like to contribute to the organisational change agenda. In-house training is often a good option which is less resource intensive for the university (budget) and individual staff (time). It can also increase collaboration across units. Internships and temporary placements (secondments) in businesses and business support organisations are also possible training opportunities. Furthermore, it will be important for staff to have training with peers from other HEIs. HEIs could collaborate to achieve this and seek support from respective government partners.

Excellent performance in teaching, research and entrepreneurship should be incentivised and rewarded. Incentives and rewards should be available at an individual level as well as for faculties/departments for contributions to the entrepreneurial agenda. Develop a framework of indicators to measure interaction, and establish a policy of incentives together with light rules for engagement; incentives may be different from additional salary, e.g., support for participation in conferences, for acquisition of software or hardware, scholarships for students, reduction of teaching load etc.

Learning Model: Promoting excellent performance in teaching, research and external relations: lessons learned from Rovira i Virgili University (Spain)

Further invest in the establishment of coordination mechanisms for entrepreneurship promotion, and involve students in this.

Existing coordination mechanisms for entrepreneurship promotion, such as entrepreneurship centres and technology transfer centres, should be continued and improved in order to reach out all across campus. The aim should be to develop dynamic structures that link the HEI with the entrepreneurship ecosystem and offer easy access to different publics inside and outside the HEI.

The richness of student associations in Bulgarian HEIs should be involved more in the development of entrepreneurial motivation and competences. It is important to mobilise students for entrepreneurship & strategic HEI development, and give them opportunities to contribute. The current involvement of students in the nascent research activities at HEIs is a good starting point and should be increased through initiatives such as Business Booster Sofia, which bring together students from different fields of study in creative learning environments. Students can also conduct assignments in association with small and large firms, and they can also co-drive the organisational change in the university. Mobilising students for commercialisation of research results is a promising approach to address multi-disciplinary problems. Students generally do not operate in disciplinary hierarchies and have higher motivation and creative potential than academic staff.

Learning Models: (1) Strascheg Center for Entrepreneurship (Germany); (2) Chalmers University of Technology (Sweden)

Incentivise the strategic involvement of key external stakeholders.

HEIs need to choose the ways in which they want to honour their external stakeholders. Types of recognition include annual award ceremonies; honorary doctorates or industrial professorships given to those who actively support the entrepreneurial university, for example, through teaching and education or through sponsorship; fellowships; recognition of good practice examples of start-ups from universities. HEIs may need to adapt or introduce new criteria for awarding external stakeholders such as entrepreneurs, regional bodies and associations, alumni and others. Where awards and other recognition mechanisms exist, regulations need to be checked as to whether they allow the recognition of entrepreneurship achievements as one criterion.

Learning Model: Creating a club of strategic partners: CPI Business Circle, UPV Club for Innovation (Spain)

Build strategic bonds with alumni.

A network of alumni can be very useful to help the HEI to understand how their curriculum can be improved. At the same time graduates are the best ambassadors of their alma mater and would contribute useful suggestions. After all their perceived value in the job market is very much linked to the reputation of the university where they obtained the degree. Alumni can help deliver the message to potential students that studying in the institution leads to great jobs. Alumni also carry huge potential as enablers and accelerators of knowledge exchange. A strong and well-structured alumni organisation can be a very valuable financial and social asset for higher education institutions. Alumni should be actively involved in knowledge exchange activities. There are different ways for this, such as:[15]

(1) Curriculum design and programme delivery	(6) Definition of key areas for the research agenda
(2) Lifelong learning activities	(7) Design & delivery of entrepreneurship education
(3) Career services – assessment centre training	(8) Mentors of start-ups
(4) University strategy design, monitoring and evaluation	(9) Crowd-funding for start-ups
(5) Fundraising for the entrepreneurial university agenda	…

Stronger alumni connections can be facilitated in multiple ways, such as regular surveys of the alumni, inviting successful alumni as guest speakers to university events, inviting alumni members to speak to the students, and matching alumni members as mentors to students. As an incentive, to maintain contact with the University, graduates could be allowed to keep their email account.

The Technical University of Munich has an intensive alumni activity programme with a wide range of social events, research collaboration and life-long learning activities for its former graduates (http://www.alumni.tum.de/en/homepage).

[15] Read more in the HEInnovate Guidance note on HEI – Business/External Relationships for Knowledge Exchange; online available at www.heinnovate.eu

Learning models

Promoting excellent performance in teaching, research and external relations: lessons learned from Rovira i Virgili University (Spain)[16]

The approach

The Rovira i Virgili University (URV), was in founded 1992. It is a public university serving southern Catalonia, a region with 800,000 inhabitants. In 2013, URV had an annual budget of EUR 105 million, employed 1,561 staff, of which 594 were permanent academic staff. It had 13,500 students across six campuses, and around 2,000 graduates per year from 52 study programmes. In postgraduate and doctoral degree programmes 40% of the students were international, non-Spanish: - (43% America, 21% Asia, 21 % EU, 9% Africa, 6 % rest of the world).

URV started as a "university under construction" with young ambitious academic staff willing to fight for career success. This staff ambition and vision was well aligned with the university's vision to create a research intensive and highly competitive modern university with a strong academic reputation. To incentivise and reward excellence in teaching, research and external relations/knowledge exchange activities, the Rector established the Research and Academic Staff Commitment Agreement (RASCA).

RASCA is an online tool using in-house developed software. It is organised into three annually recurring phases: planning, monitoring and final evaluation. The tool is used by academic staff to establish their individual objectives and activities and to monitor their progress against these objectives. Alignment with departmental activity is achieved through the development of a departmental RASCA agreement. The departmental agreement is then sent, by the head of department, to the vice-rector.

This people-centred organisational tool has strategic, operational and cultural impact, bringing together individual motivation and talent with organisational structure, so reinforcing a developmental culture, in which success, at all levels, is actively recognised and appreciated. The rationale for RASCA can be summarised as follows:

- The need to channel the efforts of educators and researchers towards URV's strategic objectives, and create meaningful goals at individual and organisational levels, that are in alignment across all levels.

- Recognition of the synergy, and value, created by departmental collaboration in teaching, research, transfer of knowledge, service and administration. In particular, recognition that collaboration enhances both the quality and quantity of work delivered.

- Teaching and research are collective rather than individual tasks, which are best carried out by individuals with a high level of autonomy, and respect for their peers.

- The role of teaching staff has changed since the Bologna and Lisbon processes. Educators have a triple role: they are facilitators of learning processes, enablers of knowledge generation, and promoters of the university's third mission activities.

[16] Draws on a case study prepared by Lesley Hetherington and staff of the Rovira i Virgili University. To read the full case study, register on www.heinnovate.eu.

- Providing flexibility to accommodate for the diversity of professors, in terms of their professional backgrounds (academic and industry experiences), and their local and international networks. Professors need to reach their full potential and be available to benefit the university as a whole.

RASCA follows a clear plan-execute-evaluate-improve-report cycle. The system supports a high level of autonomy facilitating alignment of individual, departmental and university interests. It allows the University to maintain up-to-date records of its activities in teaching, research and third mission activities. The cycle is clear and the objectives accessible by all academic staff. The system has proved to be useful for recognising opportunities, research and teaching, and for building synergies between URV's mission pillars.

The RASCA activities are classified in five groups, which cover:

1. Teaching: credits, tutorships, merits, extra activities, examining boards.

2. Research: merits, active projects, doctoral theses, scientific output, other research-related activities.

3. Outreach and knowledge exchange: including technology transfer, cultural activities, involvement in society and other 'extramural' activities.

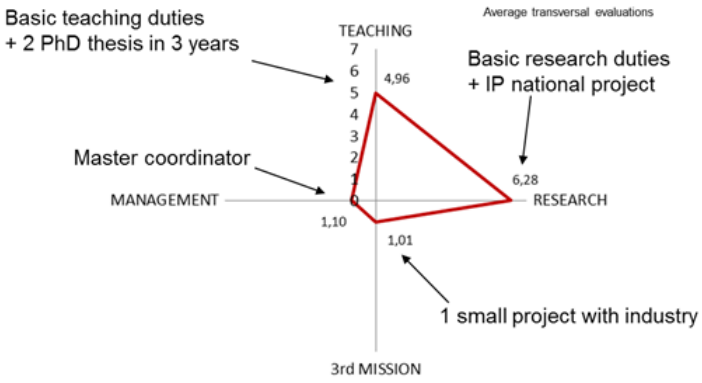
4. Management: management of study programmes, merits, positions of responsibility, management and coordination assignments.

5. Personal development: training, mobility.

To these activity groups staff can add new information, including adding sub-headings for activities, which are not yet recognised by the system. This makes the system interactive and dynamic, and enables the system to provide suggestions for activities for staff, inspired by the activities of their colleagues.

Valuation of annual achievements works on customised standard units of measurement called academic activity units (AAU). AAUs are assigned to the five activity areas according to an agreed weighting system. There are two types of AAU:- 1) Cross-sectional AAUs, which measure the academic work load relative to administrative and management tasks, including general university tasks applicable to all staff and all areas studies and 2) individual AAUs, which measure time spent on academic tasks e.g. teaching, research activities.

Department-specific tasks are measured by the departments themselves. In the diagram below the management dimension includes personal development and mobility, and 3rd mission includes enterprise and entrepreneurship support.



RASCA valuation can have significant implications for individual staff members. The minimum number of AAUs is set at 10 points. For results below this, the department and individual staff member jointly design an improvement plan. For example, a RASCA valuation of 8, showing poor dedication to research activities, might lead to a re-planned incrementing teaching load or developing a research action plan. Results above 10 points are rewarded by additional funds for the activities of those staff that have delivered additional resources. These extra resources are normally allocated for each department within the annual action plan. There is also a collective incentive for the department or the research group. If the average AAUs of staff in the department is higher than the average results of departments in the university, additional funds are made available from the central university budget. Throughout the system, there is provision for rewarding excellence in performance at the level at which it is delivered.

Most importantly, the RASCA process stimulates dialogue between departments and individual members of staff, and departments and the university. This forms the basis for a continuous dynamic process of clarifying and re-defining objectives at the individual, departmental and university level within a common strategic framework.

What can HEIs in Bulgaria learn from this example?

RASCA was included in the university statute as a key tool to increase organisational capacity. This has been crucial to URV's development. It positioned RASCA as central to university performance. It set the standard for responsibilities, procedures and transparency rules, and provided a strong operational and cultural declaration of intent on behalf of the university.

RASCA is a good way of managing and enhancing diversity, by stimulating synergies between different interest & talents at the individual, departmental and institutional levels. RASCA has been crucial for to the identification of training needs and the design of tailored training programmes. The implementation of a system similar to RASCA, across all HEIs in Bulgaria, could also facilitate the inclusion of HEInnovate statements in evaluation work of NEEA.

Digitalisation of administrative processes is well advanced in Bulgaria. This can facilitate the introduction of a system similar to RASCA, which allows the integration of the information, over a variety of software platforms, including human resources, teaching, research, and external relationships.

Coordinating entrepreneurship promotion: lessons learned from Strascheg Center for Entrepreneurship (Germany)[17]

The approach

The Munich University of Applied Sciences (MUAS), founded in 1971, has almost 17,000 students, around 500 professors, 750 lecturers and 660 staff. 14 faculties offer 60 bachelor, master and diploma programmes in the areas of technology, economy, social studies and design.

Entrepreneurship support at MUAS is centred in the Strascheg Center for Entrepreneurship. It started in 2002 as a small centre with two professors and two researchers. Today it has the status of an An-Institut, that is, a non-for-profit company affiliated with the university. Two-thirds of the 26 staff are employed by the university as researchers or administrative staff. The choice of organising the entrepreneurship support at MUAS in this form has been the preferred option over the establishment of a single entrepreneurship chair. Whereas this approach has facilitated interdisciplinarity in entrepreneurship support, the An-Institut choice brought with it the problem of distance to central university management. Overcoming this has required constant strategic action to building and nurturing close links with the university management. The President, Professor Kortstock, a strong supporter of the innovative and entrepreneurial HEI philosophy was crucial for this as was the appointment of a vice-president to oversee the entrepreneurship agenda.

Both public and private sources of financing played a role in establishing entrepreneurship promotion at MUAS. The initial financing from the Strascheg Foundation in 2002 helped to establish the SCE and prepared the ground for the institutional establishment of entrepreneurship support at the university. Yet, anchoring and embedding have been the result of one decade of cohabitation and collaboration, both facilitated by the competitive awarding of public financing. Of particular importance was the success of the SCE-MUAS partnership in acquiring German federal government funding in 2007 and in 2011 (See learning model on EXIST above). The awarding of public funding had an important trigger function in broadening the university-internal acceptance and support for entrepreneurship support and the above mentioned strategic anchoring. It allowed mainly for the expansion of human resources involved in the actual education and start-up support activities and investment in incubation space, which increased presence and visibility inside the university.

The introduction of a reduction of teaching hours as a reward for professors who share their research for entrepreneurial purposes with students and/or act as their start-up mentors is on its way. This has been the result of long negotiations and a closer investigation of the role of professors and teaching staff in mobilising students for entrepreneurship. MUAS and SCE leaderships interpreted the student take-up of extra curricular activities as a key indicator for the success of activities to date and that there is demand for entrepreneurship courses where support goes beyond the curricular offer. Providing incentives are needed for professors to play a more active role in idea scouting and realisation. Also systematic training opportunities for people involved in entrepreneurship promotion are offered.

Reaching out into the faculties has been a key target for SCE. Fakultätspaten', a body of staff and volunteers, proactively network on behalf of SCE, making and maintaining connections between SCE and the 14 faculties at MUAS. The 'Fakultätspaten' act as talent scouts, resource scouts and generally create a wider SCE community and network. This commitment to active networking and idea sharing stimulates the generation of new ideas and businesses.

[17] Draws on a case study prepared by staff of the Strascheg Center for Entrepreneurship.

SCE actively invested in new forms of communication. SCE employed a professional communication team to create and maintain a number of communication channels and continuously spread news internally between SCE, MUAS, founders and connected institutions and partners as well as to external media: [http://www.sce.de/presseportal] [http://www.sce.de/news] and [http://www.sce.de/newsletter]. Students are involved in the communication activities as interns.

What can HEIs in Bulgaria learn from this example?

The example of the Strascheg Center for Entrepreneurship at the Munich University of Applied Sciences offers the following lessons learned for Bulgarian HEIs and their government partners:

- To gain an institution-wide outreach, an entrepreneurship centre needs the strong support of the HEI leadership. The creation of a vice-rector which oversees the innovative and entrepreneurial HEI agenda can be crucial for success.

- Public financing can be a trigger to attract other sources of financing. This has to be strategically promoted through qualified and motivated people.

- Reaching out to students is crucial. The entrepreneurship centre needs to become well-known within the HEI. For this, professors are important – their involvement needs to be incentivised and rewarded.

- Communication to external partners is important and requires professional staff. Involving students as interns can be a good support.

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Students boosting the commercialisation of research results at Chalmers School of Entrepreneurship (Sweden)[18]

The approach

There are two universities in the city of Gothenburg: Gothenburg University[19], and Chalmers University of Technology (Chalmers). Chalmers, one of the oldest and largest institutes of technology in Sweden, offers Master of Science degrees, including Bachelor degrees in engineering and doctoral degrees. Research is carried out in the main engineering sciences as well as in technology-related mathematical and natural sciences. Some 2,500 employees work at Chalmers' 16 departments. It is estimated that over a thousand research projects are conducted on an ongoing basis and more than 2,700 scientific articles and research reports are published every year. Some Chalmers departments are co-organised with the University of Gothenburg.

Chalmers School of Entrepreneurship (CSE), founded in 1997 at Chalmers, is one of the leading institutions in science commercialisation in the Swedish and Nordic context. CSE www.entrepreneur.chalmers.se is an educational platform where entrepreneurship skills can be acquired, and a pre-incubator to develop early-stage innovative ideas and to start-up a company (most

[18] This learning model was prepared by Tomas Karlsson from Chalmers University of Technology.

[19]The structure of theUniversity of Gothenburg is that of a traditional European university, with nine faculties: Arts (subdivided into five schools), Social Sciences, Medicine, Odontology, and Science.

students register a company during the project-year). Core to this is a network that brings together innovative students, academics, entrepreneurs and managers of local SMEs and large firms. CSE has four permanent staff and collaborates with up to 20 professors from Chalmers.

Core to CSE success is that students are the forefront of the commercialisation process. Students have a different approach to recognising the commercial and societal value of research results. Student-researcher teams have been very successful in spotting those ideas that have market potentials. The work of students in these teams is credit-bearing and integrated into a master's level education on technology commercialisation or entrepreneurship, and can therefore be funded by the educational budget. This arrangement brings clear benefits for both students and the society: students learn new industry relevant skills, while the society benefits from new innovations and an accelerated rate of the process of commercialisation.

What can HEIs in Bulgaria learn from this example?

Interviews during the study visit indicated a lack of ability to convert scientific advances developed at the university into innovations and commercial success. In general, it is expensive, risky and complicated to facilitate commercialisation of science. At the same time, students are highly motivated to get involved in the nascent research activities at HEIs.

Bringing these two aspects together in an approach like CSE seem to be very promising. It also offers a unique and attractive educational content.

*Contacts:*Viktor Brunnegård, Mats Lundqvist at CSE

CPI Business Circle at the Polytechnic University of Valencia (Spain)[20]

The approach

The Technical University of Valencia (UPV) was established in 1972. Like all public universities in Spain it has financial and academic autonomy under the complex regulations and restrictions of Spanish university law. The UPV, as is the case with all Spanish universities, is governed by four bodies: the Social Council, which is partly made up of external members, approves university budgets but otherwise plays a very weak role; the Governing Council ,which approves all the important decisions; the Rector's team, presided over by the Rector, which has the executive power; and the University Senate, which has very general functions and acts as a legislative assembly.

The Rector represents the University and is its maximum academic and governing authority. The Rector is elected by general election by all the university departments and areas. He/she is in charge of the University's government and management and develops and carries out actions approved by the different areas. The Rector has all the competences that are not explicitly attributed to other areas. Formally and in real terms, the rector is the most powerful person in the university. Nevertheless, the election mechanism used to elect the rector considerably reduces his/her real managerial power.

At UPV, a considerable level of interaction between the university and the regional economy exists. This is reflected in the university engagement with local enterprises and their associations, in the vast offer of further training to the local community, in the open cultural activities organised by the university and in the research collaborations with regional partners. The evolution of the university's regional role is mostly observed in its increasing interaction with regional SMEs in training and

[20] This learning model was prepared by Maria Helena Nazare. The author can be contacted at mhnazare@ua.pt

research- oriented joint activities. In the last decade, this collaboration has increased considerably, manifesting in a variety of ways.

The university counterparts are not only individual enterprises but also associations. There are a number of local enterprises' associations with whom the university collaborates: Association of Valencian Innovative Enterprises (Avant), Institute of Valencian Small and Medium Industry (IMPIVA) and the Valencian Enterprises Confederation (CEV). Collaboration with these associations is generally long-term and sometimes large in scope. For example, the UPV science park is managed jointly with CEV.

The UPV has a clear institutional structure to support different types and stages of partnerships with society, combined with a set of incentives to academics for developing activities with the environment. There are five main bodies supporting specific activities related to university- enterprises linkages:

- Life- Long Learning Centre
- Centre for the Support to Innovation, Research and Technology Transfer
- Institute for the Creation and Development of Enterprises (IDEAS)
- Integrated Employment Service (service for graduates' recruitment)
- City of Innovation (science park)

Until the beginning of this decade, these services (except the science park) were coordinated and developed their functions under the same direction and reported to the same VR. However, given their activities, funding and staff growth, it was decided to separate them into different entities. Although currently they have separate functions, they develop joint initiatives and cooperation in specific aspects.

The "CPI Business Circle" is an initiative of the City of Innovation, the science park, in Valencia and UPV. It is a customers' loyalty plan with the aim to maintain and increase the interaction mainly with enterprises which are already customers and partners of the university. The main scope of action is regional enterprises which may collaborate with the university not only in research but also in teaching related activities. The university selects the best enterprise partners in terms of agreements and collaboration (over EUR 24,000 during the two previous years) and invites them to form part of the Business Circle. Enterprises which have strategic potential for collaboration, UPV graduates' usual employers, UPV related start-ups, CPI members and members of the Association of Valencian Innovative Enterprises (AVANT I+E) are invited as well. UPV academics and researchers involved in contract or collaborative research during the two previous years and patent inventors are invited to participate. The Club is formed by the institutional entities dealing with external activities, and by the selected companies, their associations and UPV members.

The CPI Business Circle offers a range of activities and a variety of services exclusively for its partners. These include sectorial enterprise meetings, an e-bulletin and a one-stop-shop for enterprises partners seeking services at the UPV. Also, enterprise members of the Business Circle are entitled to receive an 18 hours free consultancy from the university. The operational costs of the Business Circle are funded through a grant of the Ministry for Education and Science and with institutional budget.

The CPI Business Circle has developed in parallel with an incentive-package developed for UPV staff to enhance knowledge exchange. The Spanish Education Act is very restrictive in terms of staff

autonomy, UPV has found ways around it and is now one of the leading examples of an entrepreneurial university.

The following incentives are offered to staff:

1. *Overheads policy*. The university retains from external funding only 10% of the additional payments to individuals that have a contractual relation with the university.

2. *Contractual conditions allowing income from external sources*. Academic staff is entitled to develop research activities through the university receiving additional income from these. The only restriction is that the income cannot exceed 150% of the salary of university rector.

3. *Academic autonomy*. Although academics have to teach, they do have a substantial degree of autonomy in relation to their contracts and expenses of RDI activities. Apart from the income limit mentioned above, there is a lot of flexibility.

4. *Intellectual property (IP) policy*. The university owns all IP rights, from results of research developed by its members funded with own or external funds. The basic distribution of income obtained from exploitation of protected research results is 60% to researchers and 40% to university. However, in special occasions if the researchers support the protection costs with their projects' funding, they are allowed to receive up to a 75% of the income.

5. *Evaluation of academic staff*. Activities of entrepreneurial nature are considered in the mechanisms used to allocate institutional funds to centres and departments. This funding is allocated considering indicators of activity and of results. Although this is a minor consideration, it is at least a first step in including these activities in the internal evaluations of academic staff.

6. *Institutional support* for developing the different types of university- enterprise partnerships. The university offers facilities and support to academics to develop RDI as well as teaching related entrepreneurship activities. The support offered through these entities is free of charge.

What can HEIs in Bulgaria learn from this example?

The CPI Business Circle example shows that building strategic partnerships with key external actors can only work if there is (a) the interest for collaboration, and (b) a broad support inside the HEI. The approach is to:

- Make the external stakeholders aware of the role for university development, for example showcase an example, a "business case" to raise interest. Make them feel their importance and welcome their views. Reward membership!

- Motivate university staff through a number of incentives of diverse nature.

Contacts: José Gines-Mora, Science and Innovation Park in Valencia.

CHAPTER 4
TEACHING AND LEARNING[21]

Introduction

Entrepreneurship development through teaching and learning is one of the cornerstones of the innovative and entrepreneurial HEI. A key objective is the development of entrepreneurial mind-sets and competencies – risk taking, achievement motivation, innovativeness and taking initiative – amongst students, graduates and academic staff. Some of these enterprising individuals will create new firms, which are expected to contribute to regional development, employment and the creation of an entrepreneurial region. Taatila (2010, c.f. OECD, 2013) points to growing evidence that academically educated entrepreneurs are more important in developing regional economies (than entrepreneurs with a lower level of education) as they provide the greater potential for high-growth firms and therefore more jobs.

The comprehensive integration of entrepreneurship education into all syllabi of all study courses, and the development of entrepreneurial 'soft-skills' via modern modes of teaching are of specific importance. These learning strategies need strong support by the HEI leadership, qualified facilitators with entrepreneurial background and external networks of the regional business community.

Findings

Entrepreneurship education develops despite its weak academic status and legitimacy…

The first entrepreneurship education activities in Bulgarian HEIs date back to the early 1990s. Since then bottom-up initiatives have been taken forward by academic staff members, often young researchers with academic experiences abroad.

Entrepreneurship education in Bulgaria – similar to some other European countries – has a relatively weak academic status and legitimacy. Activities have been dependent upon the individual motivation and commitment of few academics and have not been adequately reflected in curriculum development, university budgets or incentives structures. Reluctance, particularly amongst parts of the 'traditionally' oriented academic leadership, kept entrepreneurship education activities isolated in certain subjects and constrained to extra curricular activities. It seems that entrepreneurship education activities are sometimes looked upon by the HEI leadership, staff and students as the third-best option after theoretical academic knowledge building and research in established scientific disciplines.

…through a variety of promising initiatives

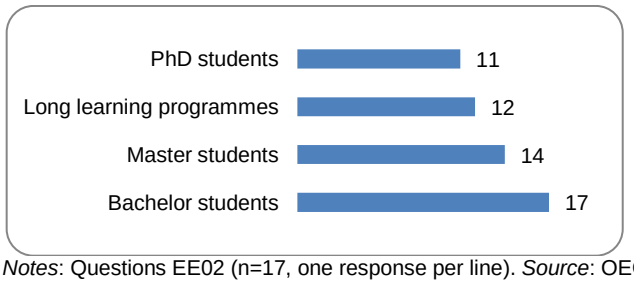
Almost all of the surveyed HEIs (17 of 20) reported that they were currently offering entrepreneurship education activities, that aim at fostering opportunity recognition, idea generation, and/or increase the motivation and knowledge about self-employment and starting-up and running a business. Half of them offered entrepreneurship education activities outside the faculty of economics.

All of the HEIs offer entrepreneurship education activities at Bachelor level, but only little more than half of them offer these activities for doctoral students (Figure X). Some universities also offer full study programmes on entrepreneurships, such as for example the University of Ruse, which offer

[21] Gerald Braun was the main contributor to this chapter.

a master programme in entrepreneurship and innovation, which was developed together with the University of Delft in the Netherlands.

Figure 12. Entrepreneurship education activities at different levels of studies



Notes: Questions EE02 (n=17, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

Entrepreneurship education activities have also been part of the European Territorial Cooperation activities "Greece-Bulgaria 2007 - 2013" (Box 5).

Box 5. Promoting entrepreneurship in the border area between Bulgaria and Greece

Since 2007, as part of the European Territorial Cooperation "Greece-Bulgaria 2007 - 2013", 400 young graduates from Bulgaria and Greece have been involved the TRIGGER project "Trans-national initiative to support graduates and entrepreneurship". The project will end in August 2015. Project partners are the Bulgarian Ministry of Economy and Energy, the Ministry of Macedonia and Thrace (leader), the Bulgarian Industrial Association, Bulgarian Management Association in Blagoevgrad, the Institute of Developing Technology and Human Resources (Bulgaria), the Association of companies in the field of information technology in Northern Greece, the Greek International Business Association, and the Centre of Developing Business and Culture in Thessaloniki. Key objectives were to identify the needs of SMEs in the border region and to meet these through tailored research and training initiatives.

In Bulgaria, 200 graduates from three HEIs in Blagoevgrad and the four HEI-affiliates in the districts Smolyan and Kurdzhali participated in training courses on technologies, telematics and logistics for direct connection between producers and consumers, electric propulsion systems, and manufacturing of innovative agricultural products (special dietary needs, pharmaceutical and cosmetics industries). It is expected that 20% of the participants will have found employment (stable, project/internship-based) in spring 2015.

Source : http://www.mi.government.bg/en/themes/project-trigger-1385-442.html

Organising interdisciplinary education activities is sometimes challenging because of conflicting learning outcome requirements, incompatible time schedules, and lack of institutional support (See: Chapter on Organisational Capacity). Overcoming these barriers will take time. A short-term solution can be to organise interdisciplinary education activities outside curricula. A number of HEIs in Bulgaria collaborate for this with Junior Achievement Bulgaria (Box 6).

Box 6. Junior Achievement Bulgaria

Junior Achievement Bulgaria, part of Junior Achievement Global, is working with many of the HEIs in Bulgaria to promote entrepreneurial attitudes, competences and skills and business knowledge. It offers a wide-range of educational and hands-on activities in economics, financial literacy, business skills, leadership and strategies for success.

The education programmes are implemented through a partnership between local businesses and HEIs. With the support of volunteer business advisors JA students gain practical insight into the world of business.

Junior Achievement Bulgaria organizes annual idea and business plan competitions and organises a broad support programme to prepare students for this major event.

Source : http://www.jabulgaria.org

Education activities on entrepreneurship have a focus on business management

From the in-depth review of the five case study HEIs the impression was gained that objectives of the entrepreneurship education offered are often not explicitly formulated and differ between educators. They range from knowing about competing theories of entrepreneurship to practical writing of a business plan (the latter often being taught outside the compulsory syllabi). The in-depth review of the case study universities suggest that the understanding of entrepreneurship is focused to private business management, and less on the different forms of social, cultural, eco- and female entrepreneurship, and of intrapreneurship.

The tendency to focus the content of entrepreneurship education activities on business management and business economics around fundamentals in marketing, organisational management, financing and controlling, as well as definitions, concepts, and theories of entrepreneurship was observed. Entrepreneurship seems to be reduced to private business entrepreneurship and common business models, neglecting other important concepts, such as corporate entrepreneurship, intrapreneurship, social entrepreneurship, cultural entrepreneurship, eco-entrepreneurship, female entrepreneurship, etc.

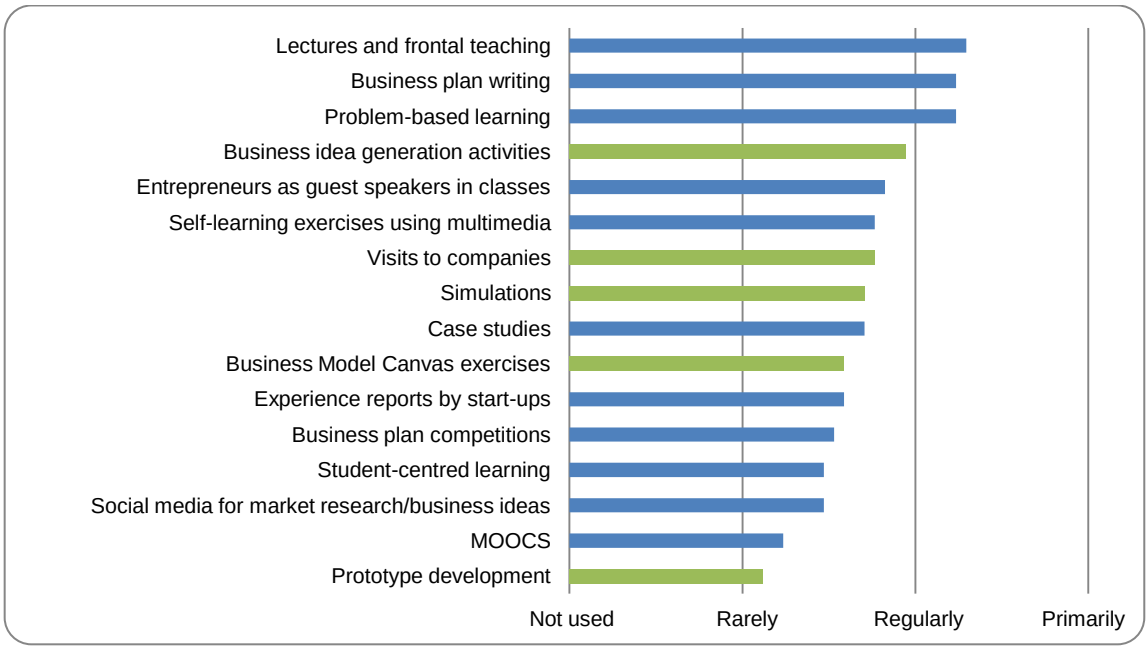
Only half of the HEIs currently offering entrepreneurship education activities had a formal evaluation practice in place. Where it was the case, a specific questionnaire was used; only one HEI reported to use a focus group approach.

A mix of teaching styles but a focus on frontal teaching

The surveyed HEIs reported a mix of teaching methods to be used in the entrepreneurship education activities. Top ranking are lectures and frontal teaching, business plan writing and problem-based learning. Role models, and methods of constructive learning, which aims at motivating potential entrepreneurs via action learning/achievement motivation are being applied to a lesser extent.

From the surveyed students who already participated in an entrepreneurship education activity offered at an HEI in Bulgaria, more than two-thirds stated that they would like to have more business idea generation activities, visits to companies, exercises using the business model canvas approach, and prototype development activities; all of which are currently used only rarely at HEIs (Figure 13).

Figure 13. Offer and demand for teaching methods in entrepreneurship education



Notes: Questions EE07 (n=17, one response per line), OECD HEI Leader Survey Bulgaria (2014); C003 (n=196), OECD Student Survey Bulgaria 2014.

Promoting entrepreneurial spirit and competencies is a self-organised bottom-up learning process, accompanied by facilitators, who are acting as fellow learners. The development of entrepreneurial competencies is an open trial and error process which is controlled by the participants through action learning methodology, focusing on soft skill development via games, role plays etc. Contrary to this, traditional academic education is based on the teaching of knowledge *ex cathedra*. The learner is like an "empty container", which is 'filled up' with academic knowledge. Entrepreneurship education, on the contrary, aims at the development of a competence portfolio with 'soft' personal entrepreneurial traits and achievement motivation as the centrepiece. The strengthening of entrepreneurial competencies is considered as a crucial input which enhances confidence, positive thinking and self-awareness.

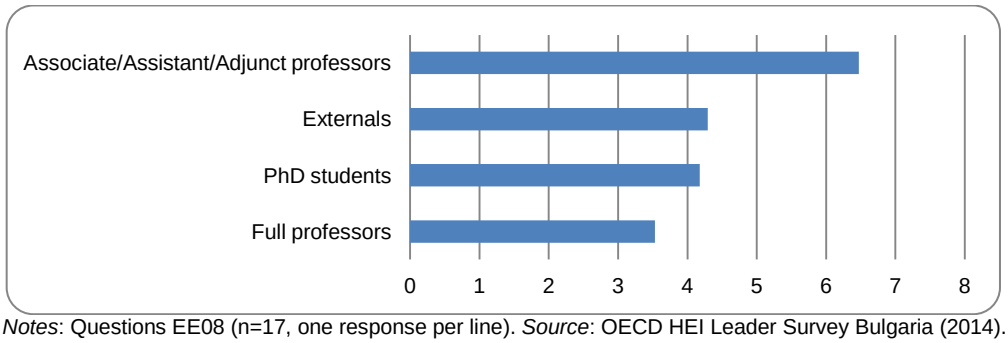
Entrepreneurship educators with different profiles

Currently the academic staff members who teach entrepreneurship are often economists, not always with a specific basic background or training in the entrepreneurship education pedagogies. Some participate on their own initiative in international workshops on entrepreneurship.

At the case study HEIs, many entrepreneurship educators are entrepreneurs themselves, which gives them practical insights into what being an entrepreneur means in terms of managing scarce resources, dealing with different partners, handling competition, etc. From the focus groups with students, the impression was gained that students get very little access to this tacit knowledge and that lecturers do not share their experiences with students.

Externals are the second largest group of teaching staff in entrepreneurship education activities at the surveyed HEIs followed by PhD students (Figure 14). Externals are either contracted lecturers or collaborate on a voluntary basis with the HEIs. The latter is often motivated by opportunity to spot and recruit talented students.

Figure 14. Teaching staff in entrepreneurship education



Notes: Questions EE08 (n=17, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

At all case study HEIs entrepreneurs are involved as guest speakers in entrepreneurship education activities and as jury members in business plan competitions. This is highly appreciated by students, because it helps them to get a better understanding of what being an entrepreneur can mean in reality and it gives them access to tacit knowledge and networks. Start-ups are involved, however, less often. This should be increased, since start-ups in addition to being a valuable source of information, have a role-model function (see also Figure 13).

Also, entire courses can be co-delivered or team-taught by academics and practitioners offering valuable learning experiences for the teachers who gain practical insights into entrepreneurial practice and for practitioners as they can benefit from academic reflection about their practices, insights into up-to-date research methodologies and results, and the networking with students. Having teachers and practitioners in the classroom together also facilitates quality control, as not all practitioners are equally gifted in inspiring and interacting with students in a productive way. The establishment of teaching and research tandems, which enhance collaboration of academic staff, students and entrepreneurs, already in the course design stage, could be piloted by the case study universities – it would also not imply breaching current accreditation requirements.

Training opportunities on entrepreneurship

Staff and externals involved in entrepreneurship promotion may have particular training needs, depending on their professional experience in education, business or research. Monitoring and meeting their training needs will be very important since they may lack teaching experience. Often young staff members choose entrepreneurship education as entry point for an academic career. Training opportunities should therefore be offered to external experts involved in entrepreneurship education and internship supervision.

Sharing information and building a network of educators is crucial for this. The University of Sofia is supporting this at a European-wide level with CONEEECT, a network and training initiative for entrepreneurship educators (Box 7).

Box 7. CONEEECT – Educating Entrepreneurship Educators

The University of Sofia is part of CONEEECT - a European-wide consortium of European universities. The aim of CONEEECT is to professionalise entrepreneurship education at HEIs across Europe, nurture a teaching and learning network community for cross-European peer-learning through an exchange of good practices in entrepreneurship education and the creation of opportunities for new cross-campus initiatives.

A core element of the Coneeect approach is an intensive, one week, experiential workshop programme. The workshops are being delivered in five different European cities, Aberdeen, Lisbon, Munich, Sofia & Tel Aviv. Each training workshop is based on the same core curriculum which has been adapted to capitalize on the local entrepreneurial context. Each one-week training is organised around:

- Keynotes from leading experts in the field of entrepreneurship education
- A range of teaching techniques and pedagogies
- Design and Development sessions (D&D) to elaborate new teaching formats, methods and assessment tools allowing you to explore different approaches of teaching entrepreneurship, and
- Learning in Practice (LiP) sessions with challenging activities working with innovation managers at leading enterprises and entrepreneurship support organisations.

In March 2014 a CONEEECT training week was organised at the University of Sofia. Junior Achievement Bulgaria, Telerik, Eleven, Amgen, LAUNChub, Imagga, and others were key LiP partners.

Source : CONEEECT website; info@coneeect.eu

Examples of integrating education research into entrepreneurship education

Several promising initiatives are underway at the case study HEIs to promote research in entrepreneurship and to integrate findings of this research into education activities. Examples include the application of a reference framework for applied competences (REFRAC) in marketing courses at the University of Economics in Varna and the RESITA network at the University of Ruse.

These are good examples of how faculty members can be encouraged to follow up and reflect on their experimentation and innovation in the classroom and to publish on their teaching activities. Information about these initiatives has already been presented in international conferences. This information should also be widely circulated within the Bulgarian HEI community in order to contribute to the developing and spreading of innovative pedagogies, and to develop adequate teaching tools and methods.

Students and young academics as a core resources

All HEIs offer a wide range of activities for students, such as associations and clubs. Their contributions to the development of an entrepreneurial spirit and culture should be expanded, as mentioned above. Students can create a dynamic ‘buzz’ for entrepreneurship, as the Aaltoes example shows, where students from three different higher education institutions in Helsinki– Helsinki University of Technology, Helsinki School of Economics and University of Art and Design Helsinki – joined efforts to create an entrepreneurship ecosystem. There are many similar examples. Also at the case study HEIs there are vibrant student initiatives that university management should count on in advancing the entrepreneurial university agenda – Booster, Start-it smart, Brand-Idea are just a few of them.

Students, if given the opportunity and support to act, can also add immense value to teaching, research and a university's societal engagement activities. For example, involvement of students in

designing the formats and contents of entrepreneurship education activities, and in peer-assessing of learning outcomes, can increase student interest and take-up rates. Other examples of how students can be involved in entrepreneurship promotion are a student run 'Start-Up'Café, student run coffee and canteen facilities, interns in the entrepreneurship centre who act as student ambassadors and work across campus to promote take up of entrepreneurship promotion activities as well as student run organisation committees of job fairs and knowledge exchange activities.

Recommendations

Build on existing good practices in novel pedagogies and mainstream them in the wider HE system.

There are several good and promising initiatives. Information about these should be widely circulated and their mainstreaming should be considered. This will require the following steps (i) awareness creation for non-traditional pedagogies & requirements (preparation, resources, learning outcome assessment) and incentive systems to promote experimentation with innovative teaching methods, (ii) provision of training and teaching materials, and guidance on how to assess learning outcomes, (iii) establishment of all-HEI network.

Learning Models: SEIPA: Academic Network of Entrepreneurship Educators (Poland)

Promote entrepreneurship education as cross-section faculty portfolio.

Entrepreneurship education, aiming at the development of an entrepreneurial competence portfolio (attitudes, soft skills/social/methodological competences), should be expanded and tailored to all students of the university at all faculties and levels.

Entrepreneurship education should rely on specific comparative advantages of approaches and institutions, a combination of (i) introduction into entrepreneurship competence development as compulsory faculty cross-section basic modules of undergraduate syllabi with (ii) voluntary business-start up courses for potential entrepreneurs outside the university curriculum by external business consultants have a relatively good record and should be tested by Bulgarian HEIs.

On the academic entrepreneurship education market there is a multitude of software programmes (i) for business plan writing and (ii) business simulations on a competitive team base available. A large number of them are freeware. Pedagogical research demonstrates that especially blended learning approaches (combination of classroom teaching, consultancy with software) motivates entrepreneurship students and generates good results. This innovative methodology should be tested and – if possible – implemented in the respective courses.

Successful entrepreneurship education is based on a pedagogical approach that is the opposite to conventional academic teaching. New goals (soft skill development/achievement motivation/ change of mind-set and attitudes) new methodology (action learning/student-centred) and a new role of teaching staff (not the ‘all knowing’ – professor but the moderator/facilitator of learning processes.). To develop the necessary competences for entrepreneurship education, training of trainer courses (by external facilitators) should be carried out, preferably not at the level of one HEI but for a network of those universities engaged in regional collaboration of academic entrepreneurship education and research.

Promote the development of entrepreneurial soft skills in diversity learning teams

The stimulation of achievement motivation to become an entrepreneur needs a kind of a "Copernican" turn in theoretical academic knowledge teaching. Innovative methods that change mind-sets enhance entrepreneurial traits – like risk taking, creative thinking, generation of ideas, taking initiative, internal control, persistence, networking – have to be developed, tested and implemented in entrepreneurship education according to students' local needs (keywords: Action learning, needs and student-centred learning approaches, participatory team-work, facilitators from the business community as trainer etc.). Development and implementation of entrepreneurial soft skill development should be supported by orientation at (inter-)national best practices and pedagogical research.

Creative thinking, the development of an entrepreneurial mind-set and sustainable business concepts are often stimulated by diverse teams of students coming from different faculties, at different levels. The same holds true with team teaching of trainer/facilitators with diverse backgrounds. Especially the combination of students from arts and culture faculties with economists and from technical and IT study courses proves to be very productive. This diversity approach should be applied as far as possible.

Learning Models: (1) The ROXI-Model at the University of Rostock (Germany); (2) Learning to think like an entrepreneur, EMLYON (France)

Learning models

SEIPA: Academic Network of Entrepreneurship Educators[22]

The approach:

Since 2006 Poland has been conducting "grassroots" activities in order to support academic initiatives to implement educational programmes in the field of entrepreneurship. This has led to the formation of an informal Innovative Academic Entrepreneurship Education Networkwww.seipa.edu.pl.

This informal initiative was supported by two training projects that the Polish Ministry of Science and Higher Education ran on innovative entrepreneurship between 2007 and 2011 – "Support for innovative academic entrepreneurship" and "Innovation creator -- support for innovative academic entrepreneurship". 45 lecturers and 6 business advisors were provided with counselling and with the materials and tools necessary to conduct a didactic programme: a textbook "Entrepreneurship for the ambitious: How to start up your own business", and a website that contains additional materials and tools. This training helped build a network of entrepreneurship educators.

In the later years of the programme, 2009 to 2013, the programme was delivered in workshops conducted in group workshops and training on business plans delivered by business advisors. In the years following the training for trainer, many participants encountered challenges implementing the material that they learned because university authorities did not always support entrepreneurship training. However, there are examples of success such as the Warsaw University of Technology where the two entrepreneurship courses – "Innovative entrepreneurship" and "Technological entrepreneurship" – were taught between 2009 and 2013.

[22] OECD (2013), *Supporting Graduate Entrepreneurship in Wielkopolska and Kujawsko-Pomorskie, Poland*, OECD LEED Programme.

What can be learned from this example?

This network helped to share information about entrepreneurship education activities amongst HEIs in Poland. A similar approach could also help to circulate information on the various initiatives that exist in Bulgaria widely within the Bulgarian HEI community.

Contacts: www.seipa.edu.pl

The ROXI-Model: Promoting Academic Entrepreneurship via Action Learning[23]

The approach

ROXI, the Rostock Start-up-Initiative, was developed in 1998 at the Hanseatic Institute for Entrepreneurship and Regional Development at the University of Rostock,Germany. ROXI is an academic entrepreneurship education approach is based on a constructivist learning paradigm. Emphasis is on soft-skills-development – soft skills like achievement motivation, risk taking, internal locus of control, networking, performance orientation as entrepreneurial hard skills. The rationale was to build an entrepreneurial class, which had been supressed and destroyed during Communism. The wider aim was to promote the entrepreneurial university concept as an incubator for knowledge-based start-ups and spin-offs.

Key success factors of ROXI are: internal marketing and motivation initiatives, foundation of Hanseatic Institute for Entrepreneurship and Regional Development; creation of a regional and international entrepreneurship education network with prominent partners and stakeholders, training of trainer courses for facilitators, integration of entrepreneurs into start-up courses, contribution to international entrepreneurship research.

Courses last three weeks (120 hours) and are offered for students, graduates, and academic staff, including participants from abroad. The concept of entrepreneurship which is promoted includes business entrepreneurship, social entrepreneurship, cultural entrepreneurship, eco-entrepreneurship, international entrepreneurship and intrapreneurship. Team-teaching of facilitators/moderators with entrepreneurial background and entrepreneurs are the rule. Participants are being selected and have to pay fees. Consultancy and follow-up after starting a business are being offered.

Key objectives are:

- Promotion of an entrepreneurial spirit, mindset and performance- oriented behaviour;
- Increase of sustainable start-ups and spin-offs out of the university;
- Creation of innovations, knowledge-based jobs, and value-added by academics;
- Development of an entrepreneurial competencies portfolio.

Key achievements:

- Creation or increase of entrepreneurial attitudes such as creativity, risk-taking, initiative and self-confidence (self-assessment) of 4.498 students, 659 qualified, 448 advised, 351 viable business plans and start-up projects.

[23] This learning model was prepared by Gerald Braun. The author can be contacted at gerald.braun@uni-rostock.de

- Start-up rates per training between 31% and 66%, mainly in the service sector (e.g., health services, further education) depending on study course, gender, actual economic situation.
- Creation of 119 sustainable High-Tech Firms, 292 knowledge jobs, EUR 5, 3 mio. additional investments. (1998-2008).
- Selected by EU as reference project in INTERREG-III b – programme BEPART – HEIs from Finland, Denmark, Sweden, Poland, Lithuania, Estonia and the Netherlands.
- Extension to HEIs in Yemen, Libya and Zimbabwe.
- Development of a HEI- entrepreneurship education network in the Baltic Sea Region.
- Selected as HEI benchmark-project by German ranking authorities.

Key obstacles and how these were overcome:

- Low interest of HEI leadership and parts of academic staff.
- Low propensity of majority of students to start a business; outward-migration.
- Problems of integrating ROXI-start-up courses/modules in Bologna BA and MA curricula.
- Lack of qualified entrepreneurship facilitators and entrepreneurship research.

What can HEIs in Bulgaria learn from this example?

The ROXI example shows how:

- Strategic efforts and persistency can help to overcome initial low interest from HEI leadership
- Experiential learning can motivate students and achieve great learning outcomes

*Contacts:*Pawel Warszycki, Managing Director, Hanseatic Institute for Entrepreneurship and Regional Development at the University of Rostock, www.hie-ro.de

Learning to think like an entrepreneur, EMLYON

The approach

"Learning to Think Like an Entrepreneur" is a two-day experiential learning process, designed and proposed for the first time at EMLYON Business School to MBA students in 1993. Since that date, it has been regularly adapted and offered to all the EMLYON Business School students / participants (Bachelors, Masters, EMBAs, IMBAs, Executives) as a first awareness course in entrepreneurship.

The main objective is to develop amongst participants a good awareness about entrepreneurship and the key success factors to start-up a new firm. The participants have to develop in teams of 4 to 5 people a method to assess business plans for start-ups accordingly to a specific point of view (e.g. bankers, venture capitalists) and to apply the method to a sample of three real-life business plans before making an investment decision.

At EMLYON Business School the programme has been delivered to 400 students. Several types of entrepreneurship stakeholders have been involved in the programme.

Course programme:

- First half-day: Introduction that outlines the objectives, case study to be used, the learning process and organisation of the course. The teams and coaches are defined in the first half-day.

- Second half-day: Team begin to work, preparing their presentations, covering their method, decisions and analysis of strengths and weaknesses for each different business plan. Coaches interact and work with the teams.

- Third half-day: Teams make their presentations and discuss them. A jury, including the professor, evaluates the presentations. It is also possible to involve the entrepreneurs from the case studies or a venture capitalist or a banker on the jury.

- Fourth half-day: The professor provides feedback from the jury, including: a) the decisions made by all the working teams and the story of the entrepreneurial projects; b) right and wrong analysis in evaluating business plans and working as a team; c) what should be done to effectively assess entrepreneurial projects. A final lecture is given to get the point of view of an entrepreneur. Ideally one of those concerned by the business plans at the heart of the case study delivers a lecture on their experience and thought processes.

Key success factors were (i) having the possibility to invite one of the entrepreneurs concerned by the business plans, (ii) taking the time to brief the coaches about their role (they don't bring solutions or technical advice, but they feed the process of reflection and elaboration of a business plan evaluation method depending on the objectives chosen by the team and the context).

What can HEIs in Bulgaria learn from this example?

"Learning to Think Like an Entrepreneur" is an experiential learning experience which involves successful entrepreneurs and real business plans. Team of students have to 'think' like an entrepreneur and 'act' like an investor. The participants are coached by a professor, who can coach up to 5 teams. In terms of resources, the programme requires one pedagogical leader, usually an entrepreneurship professor having a good knowledge of the field. It also requires one coach (professor or stakeholder) for 25 students/participants (five groups of five). At the material level, it requires a small room or space for each team and Internet access. The minimum size of the class is 25, the maximum size depends on the level of human and material resources.

Contact: Professor Alain Fayolle, Director of the Entrepreneurship Research Centre, EMLYON Business School (fayolle@em-lyon.com)

CHAPTER 5
PATHWAYS FOR ENTREPRENEURS[24]

Introduction

Entrepreneurial HEIs offer pathways and support for potential entrepreneurs, staff and students, to take innovative ideas to society and the market economy. Under the assumption that students and staff participating in entrepreneurship education activities are often considering undertaking the additional step of starting-up a business, if support structures and services are available the attention of HEIs and public policy has moved on from entrepreneurship education to targeted efforts in infrastructure development and the provision of start-up support services. This can include: coaching and mentoring, access to facilities belonging to the higher education institution, temporary business premises, support in developing networks, and facilitation of access to start-up financing.

A success factor is the close interaction and co-operation with private and public support providers that exists outside the HEI. Establishing a well-functioning interface requires a partnership framework that defines the roles of the different stakeholders and eventually also a tailoring external support services to the particular needs of academic entrepreneurs.

Supporting entrepreneurial behaviour of students and staff can be challenging as it might not be fully compliant with the existing rules and regulations of an HEI. Students who start-up a business during their studies may wish to postpone exams or suspend studies for a certain period of time. Staff members, who run a business, might be suspected of utilising university resources.

The starting point is therefore to develop an HEI-wide understanding of what pathways for entrepreneurs mean to the organisation and how this can be reflected in resources and activities. This should also take into account the local entrepreneurship ecosystem, i.e. all services which are offered outside the university.

Findings

Scarce information about start-up support measures in HEIs

Information about the start-up support offered in HEIs is not published in easily accessible places, such as the Internet. None of the case study HEIs provides on their main website information about their entrepreneurship promotion activities. A first step to increase awareness of pathways for entrepreneurs is to effectively use the university's homepage and social media. Placing information on, or in a "1-3 click" proximity to, the organisation's homepage sends a signal that entrepreneurship is important to the university. Good practice examples in Europe, such as the Munich University of Applied Sciences, one of Germany's entrepreneurial universities (See EXIST example above), tells on their main website about the entrepreneurial university strategy and its achievements (http://www.hm.edu/).

[24] Gerald Braun was the main contributor in this chapter.

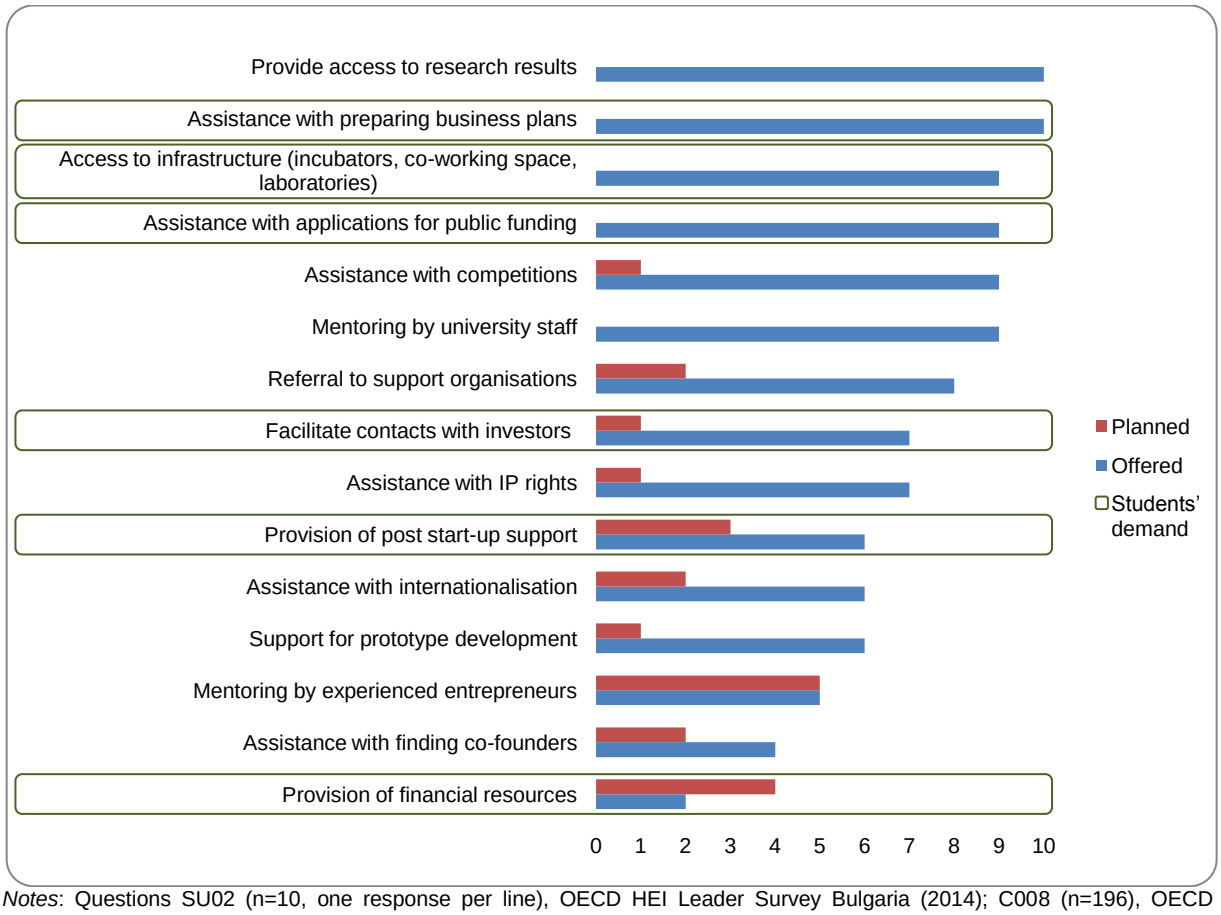
Poster campaigns and campus media can be used to stimulate active student participation as well as events such as Start-up weekends and events that are part of the Global Entrepreneurship week. These activities exist in Bulgaria – an example is the 2nd edition of the Start-up Weekend Varna in March 2014 – but they seem to be organised without an active role of the universities. Start-it smart is a student run initiative that operates all across Bulgaria with local chapters. Several HEIs already host local chapters. However, little information about these activities is available directly on campus. To increase outreach and impact of such initiatives more institutional support should be provided.

A variety of start-up support measures

Half of the surveyed HEIs stated that they currently provide special support measures for individuals or teams which are interested in venture creation. Although this is a good starting point, more needs to be done to bring these into a systematic business start-up offer, which is easily accessible. In all case study HEIs, the observation from focus groups with students is that there is the need for more systematic start-up support in HEIs across all stages – starting from idea generation, to starting up a business. There is also a need for role models, e.g., start-ups by former students. These should be more utilised in the entrepreneurship education activities.

The surveyed HEIs reported a variety of start-up support measures (Figure 15). All provide access to research results and assistance with preparing business plans. Nearly all offered access to infrastructure (e.g., laboratories), and assistance with applications for public funding. In terms of planned services: mentoring by experienced entrepreneurs ranks first, followed by the provision of financial resources. When asked about the services they would like to see introduced or improved, the surveyed students were most (more than two-third) interested in access to infrastructure – co-working spaces and incubation facilities – assistance with the applications, with the preparation of business plans, facilitated contacts with investors and provision of financial resources, provision of post start-up support, and assistance with the application for public funding. Most of these match with what HEIs plan to introduce.

Figure 15. Offer and demand in HEI start-up support measures



Notes: Questions SU02 (n=10, one response per line), OECD HEI Leader Survey Bulgaria (2014); C008 (n=196), OECD Student Survey Bulgaria 2014.

An important measure for motivating staff for entrepreneurship is to give them easy access to information about how the university deals with intellectual property rights. This information is not easily available in the case study HEIs and it was not clear whether there is a systematic approach to commercialisation, technology transfer and spin-offs. Also, discussions at the project workshop confirmed that this is an issue for the wider HE system in the country.

Access to financing and co-working spaces

The Ministry of Economy and Energy is implementing, as part of the 2014 -2020 national strategy for support of SMEs, a small-grant programme to foster technology entrepreneurship (Box 8). Systematic links to this programme should be established in HEIs in order to provide interested students, graduates and young researchers easy and quick access to this information.

Box 8. Small grants for technology entrepreneurship

The project "Technostart - Encouragement of innovation activity of young people in Bulgaria" was started in 2014 by the Ministry of Economy and Energy as part of the 2014 -2020 national strategy for support of SMEs.

Technostart awards submitters of business ideas up to LEV 20,000 (EUR 10,000) to develop the idea through a newly registered business. Students enrolled in Bachelor, Master and PhD programmes in the academic year 2013-2014, and graduates of Bulgarian origin from universities abroad (graduation year 2013-2014). 169 applications were submitted, of which 41 were invited for an interview panel organised in the Ministry of Economy and Energy which selected 20 project ideas for funding.

Business ideas were limited to the following sectors: manufacturing, publishing, telecommunication and information technology, and professional, scientific and technical research.

Source : Ministry of Economy and Energy; http://www.mi.government.bg/en/themes/the-project-tehnostart-encouragement-of-innovation-activity-of-young-people-in-bulgaria-1390-442.html

Co-working spaces can be a very effective way to promote academic entrepreneurship. There are initiatives under way, such as Business Booster Sofia. It is important that HEIs are supporting this kind of initiative and provide co-working spaces, which initially can also be basic premises and broadband Internet connections.

A co-working space is also likely to become a magnet for students to learn more entrepreneurship. Students in all focus groups raised their interest for this kind of services, which is currently only provided by private providers in Sofia and Varna. An example is Beehive (Box 9).

Box 9. Beehive: co-working spaces for young entrepreneurs and freelancers

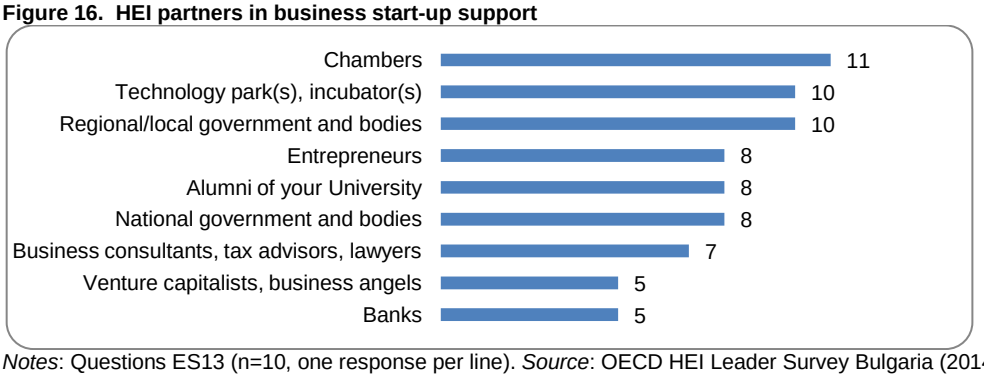
Beehive is a co-working space in Varna, that offers 24/7 access to rented office space for individuals and small teams. Rental agreements can vary between one day and more than one year for desk space, the use of broadband Internet, telephone, printing and copying facilities, and conference rooms. Co-working spaces are often used by people who only need a computer to work on their projects, for example graphic designers, journalists, writers, translators, programmers and software developers, but do not want to work in social isolation. Beehive does not only offer comfortable and quiet office space, the aim is to build a "community of enterprising people who develop innovative projects in Bulgaria". A recent example is the Europe Code Week Varna, 11-17 October 2014, which is the second edition of the European week of programming. It gathered around 40 high school students, university students and graduates, and people interested in programming, regardless of their current employment status.

Source : www.beehive.bg

Underdeveloped links with the vibrant entrepreneurship ecosystem in the country

The surveyed HEIs collaborate for their entrepreneurship promotion with various external actors. All HEIs that currently provide start-up support (10) collaborate with the Chambers, technology parks (if applicable), and regional governments. Venture capital providers, business angels and banks were only the partners of half of them, and also business consultants were not key partners (Figure 16).

Figure 16. HEI partners in business start-up support



Notes: Questions ES13 (n=10, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

Matching new entrepreneurs with experienced entrepreneurs increases the success chances of a venture through experience based tips and tricks and access to networks. Effective mentoring could be provided by academic staff with entrepreneurial experience and experienced entrepreneurs. Alumni are a good resource, too, because they are typically happy to "give back" to their alma mater and volunteer their time to help new entrepreneurs.

Some HEIs are already matching their would-be entrepreneurs with experienced entrepreneurs. This is a good starting point, which should be built upon by offering incentives and rewards for more staff with entrepreneur experience to act as mentors. Involving experienced entrepreneurs from outside will require more collaboration with the existing entrepreneurship ecosystem, which already successfully involves experienced businessmen and business angels as mentors.

At present, none of the case study universities has strong links with incubators, science parks and other external initiatives, such as ELEVEN, betahouse, LUNCHub and others. For HEIs in Sofia the establishment of Sofiatec may change this. In the long-term it will be important to establish knowledge intensive infrastructure in proximity to HEIs throughout the country. This will also require HEIs to come up with their own knowledge exchange strategies and to actively practice HEI-HEI collaboration.

Recommendations

Develop an easily accessible system of fundamental business start-up support for academic entrepreneurs.

Easy access to start-up support is crucial for the initial exploitation and development of ideas. Key to this is linking HEI-internal efforts with the entrepreneurship ecosystem. Would-be entrepreneurs need to know where they can get information and support. This keeps motivation high. HEIs need to establish more easy access points with the currently emerging, vibrant ecosystem in the country. The already existing entrepreneurship centres can play a key role in this. Offering academic would-be entrepreneurs an 'address' – for example in form of a co-working space with access to laboratories – is not only helping to commercialise research, but also to build lasting bonds with entrepreneurial alumni.

Learning model

Gründerwerkstatt – the entrepreneur workshop at the Beuth University of Applied Sciences in Berlin

The approach

The Gründerwerkstatt, entrepreneur workshop, started as a project in 2004 at the Beuth Hochschule für Technik in Berlin. The aim was to offer a co-working and incubation space for Beuth students and alumni as well as for young entrepreneurs from all over the world who are willing to move temporarily to Berlin.

The first round of tenants in 2005 included 10 Teams from all Beuth and other HEIs in Berlin and Germany. Currently the sixth batch of tenants in located in the Gründerwerkstatt http://www.beuth-hochschule.de/gruenderwerkstatt/, with 23 teams. During the past nine years more than 100 teams and ideas were supported by the Gründerwerkstatt, many of which are still successfully in the market. 30 teams have won national and international competitions. One full-time project leader, and student support staff are managing the Gründerwerkstatt.

New tenants are selected through a 2 stage process on the basis of a business plan proposal submitted by teams or individuals. Soft skills, such as entrepreneurial drive and creativity, are key selection criteria. Successful candidates are offered a place in the Gründerwerkstatt for a maximum duration of 18 months and a living allowance of up to EUR 4,000 (per team). Free access to all laboratories is offered in addition to a working place in an open office space. Mentoring and coaching are offered through the Coach-Programme of the Investitionsbank Berlin and Beuth.

A key success factor has been the interdiscipinarity of the Gründerwerkstatt with team members being engineers, natural scientists, lawyers, economists, historians, artists, designers, architects, etc. The co-working space approach has helped many teams to address difficulties in how teams work together. Working in a team needs to be learned, especially as there are frequent stress situations. Contacts to "older" teams can help.

The Berlin Senate for the Economy, Technology and Research is co-financing Beuth for the Gründerwerkstatt. The Senate is utilising European Social Fund resources for this. The Business Angels Club Berlin, the business associations of Berlin and Brandenburg, and other HEIs in Berlin are key partners.

What can HEIs in Bulgaria learn from this example?

- Co-working spaces can be an effective approach to build links with the local entrepreneurship ecosystem
- Interdisciplinarity is a key success factor
- Peer learning can be very effective – see example on overcoming conflicts in teams.

Contacts: Tobias Evel; project manager, gruenderwerkstatt@beuth-hochschule.de

CHAPTER 6
KNOWLEDGE EXCHANGE PARTNERSHIPS[25]

Introduction

Not smallness, but 'loneliness' can become a key comparative disadvantage for HEIs. Being part of an advanced academic network-society is a precondition for survival, development and progress. Sharing and exchange of knowledge, common learning and research projects, can create important synergy effects for the innovative and entrepreneurial university and its environment. This can be more difficult in transition economies where terms such as 'entrepreneur' and the 'entrepreneurial society' have negative connotations. Transparency, open access, and an outward looking approach of all players, and last but not least, tangible results can help to overcome such conceptual barriers and lead to 'win-win' perceptions amongst all network players.

From the HEI perspective, knowledge exchange includes the outflow of knowledge, for example, through research collaboration, graduation, and staff changing employment, and the inflow of knowledge. Examples of the latter include the temporary hiring of new staff, lecturers, incoming exchange students and researchers, and various forms of research collaboration. Also the sharing of knowledge within the HEI is a key component of knowledge exchange. Knowledge exchange can take a wide range of different forms, varying in terms of intensity and formality. The focus can be on teaching, research, or any form of strategic collaboration. Examples of knowledge exchange activities are:

- Systematic or ad-hoc involvement of external stakeholders in teaching;
- Collaboration on internships and secondments;
- Continuous learning and further education programmes;
- Joint research initiatives, contract research; and
- Various forms of technology transfer, e.g., licensing, selling of prototypes, spin-offs.

Findings

HEIs have difficulties in establishing themselves in the emerging innovation system

In the last years HEIs in Bulgaria 'opened up' towards the needs of the economy and society. Some mental reservations and prejudices seem to persist on all sides: some HEI leaders tend to argue that it is not the HEI obligation to calibrate their graduates according to labour market trends. According to regular surveys, business representatives do not believe that the Bulgarian HEIs nurture entrepreneurial mind-sets and competencies. HEIs are considered as conservative and not receptive and responsive enough towards current and future labour market needs. Overall, it seems that employers apply other criteria than university titles, when looking for high skilled workers, such as for example training certificates from renowned (inter-)national companies.

Requirements of the economy are far more than the needs of the private business sector. One has to take into consideration also the demands for knowledge, innovation and enterprising individuals in the public sector and non-governmental organisations, for example in the health and education sectors,

[25] Gerald Braun was the main contributor to this chapter.

in public administration, chambers of industry, labour offices, social services. Therefore, communication and relationship building to ensure that all sides of the network have a clear understanding of respective expectations, limitations and requirements, is a major building block of knowledge exchange.

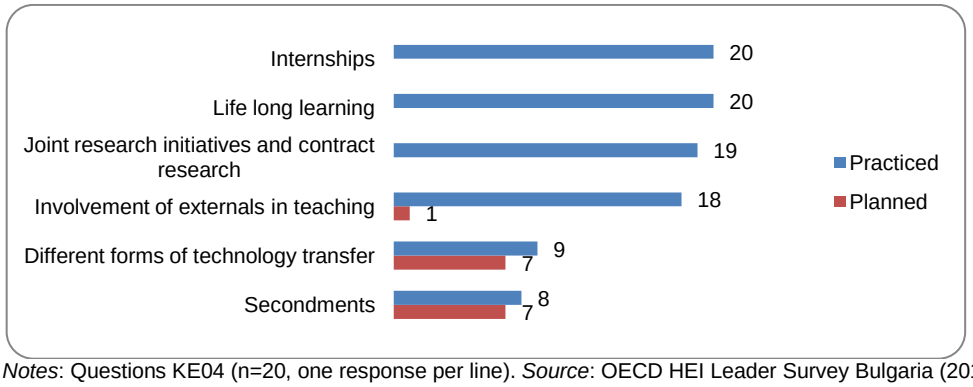
Information gathered during the study visit about barriers to knowledge exchange was contradictory pointing towards different understandings of the higher education legal framework in the country. For example, different responses were offered to the question of university autonomy to sign contracts with industry and business partners, public procurement law and the law for public private partnerships, as well as with regard to the freedom to adapt curriculum and course content without risking non-accreditation or withdrawal of accreditation.

Portfolio of knowledge exchange activities

Different types of knowledge exchange activities are currently underway (Fig. 17). All surveyed HEIs collaborate with external partners on internships and lifelong learning and most also on joint research and teaching activities. Practiced by only half are different forms of knowledge transfer, such as for example licensing, co-patenting and spin-offs, and the selling of prototypes as well as secondments, i.e. the temporary transfer of staff to a partner organisation.

Many HEIs also regularly organise research conferences. This is a good starting point to ensure that these activities contribute inflow, sharing, and co-creation of knowledge.

Figure 17. Current and planned forms of knowledge exchange



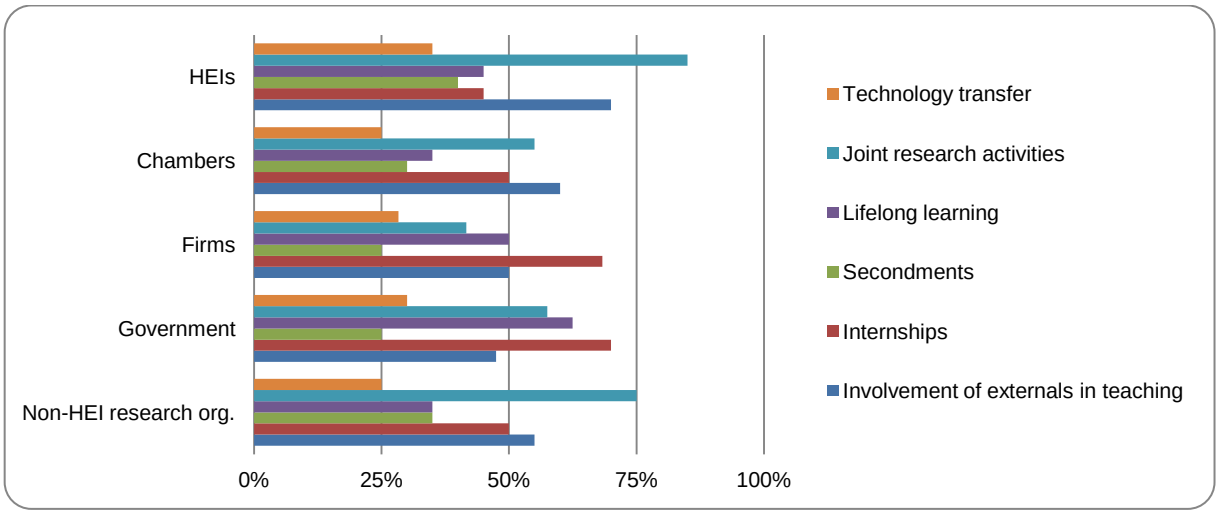
Notes: Questions KE04 (n=20, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

Knowledge outflow seems to be higher than co-creation of knowledge

Observations from the in depth review of the five case study HEIs suggest a focus on knowledge outflow, in form of internships of students and the recruitment of graduates, and research consultancy for local governments and public organisations. Industry and business partners seem to consider HEIs more as partners for skilled labour than for their R&D activities.

Survey data confirms this (Figure 18). Key partners of HEIs for joint research activities and technology transfer are other HEIs, non-HEI research organisations, government bodies and the Chambers; less than half of the HEIs collaborate with firms on research activities. Firms are key partners for internships. Even for the involvement of externals in teaching, these are more often coming from HEIs and Chambers than from the businesses.

Figure 18. Knowledge exchange partners of HEIs



Notes: Questions KE21-KE28 (n=20, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

Need for greater institutional embedding of knowledge exchange

From the background research and the in depth review of the five case study HEIs it seems that many project-based knowledge exchange activities are underway. The high number of projects (often co-financed by the European Union) which provide individual staff members the opportunity of a salary increase, however, makes it difficult to establish institution-wide mechanisms for knowledge sharing. Benefits of this type of knowledge partnerships risk remaining at an individual level with little or no spill over to the university as a whole.

Currently only one of the surveyed HEIs has a dedicated strategy for knowledge exchange, only four have dedicated sections and chapters on knowledge exchange in their official university strategy document, whereas the majority mentions knowledge exchange throughout the documents without clear guidance on how different types of relationships with industry, private and public sector organisations can be formed, and what kind of support is available.

There is a clear need for greater institutional embedding of knowledge exchange activities. Without clear and vocal leadership promoting collaboration, knowledge exchange might be a matter of personal motivation rather than being "part of their job". To ensure organisation wide commitment, knowledge exchange should be a core objective of the organisation's strategy and incorporated into the institutional policy.

Difficulties in the organisation of internships

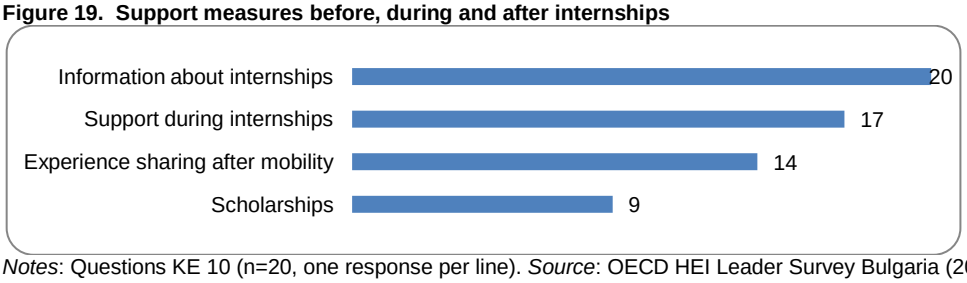
Different government programmes have been introduced to increase practice-based learning through internships. The latest initiative has been to offer a financial reward for company tutors.

Experiences with internships on both sides, firms and students, seem to be as a whole 'mixed' and partially disappointing. Firms argue that students are not really interested in training on the job, and students criticise that there is no training at all and that their tutors overload them with routine tasks and they are not interested in students doing entrepreneurial project work.

Several larger firms and multi-national corporations have started their own internship programmes. These usually last longer, such as up to 24 months in the case of Coca Cola.

The background research and focus groups with students suggest that HEIs have currently not played a key role in providing guidance and support to students during internships and reflection opportunities afterwards. Survey results confirm these (Fig. 19). All HEIs provide information about internship opportunities whereas fewer provided support during internships and facilitated experience sharing after mobility periods.

Figure 19. Support measures before, during and after internships



Notes: Questions KE 10 (n=20, one response per line). *Source*: OECD HEI Leader Survey Bulgaria (2014).

All case study HEIs have internship programmes. For some study programmes, internships are mandatory for passing into the next semester. Students reported the following difficulties:

- Difficulties in finding internships. The places offered by the career centre do not match demand. When searching on their own for internship places, many students encountered situations where firms said we sign an internship report for you, but we are not interested in having you as an intern.

- Lack of support during internships. Only students who found an internship through their professors had a contact person to reach out during the internship for advice.

- Little relevance of internship experience. Internships are not an integral part of education as there is no reflection of relevance of the internship experience in class. Students talk about their experiences in extra curricular activities or in their free time, but not in class. This leaves little room for embedding practical learning experiences in the curriculum.

These difficulties need to be addressed.

Recommendations

Increase the institutional embedding of knowledge exchange activities.

Without clear and vocal leadership promoting collaboration, knowledge exchange might be a matter of personal motivation rather than being "part of their job". There is a need for a greater institutional embedding of knowledge exchange knowledge exchange activities, taking into consideration the importance of individual incentives, whilst channeling the project objectives towards an institution-wide strategy. To ensure organisation-wide commitment, knowledge exchange should be a core objective of the organisation's strategy and incorporated into the institutional policy in order to:

- Give guidance on how different types of relationships with industry, private and public sector organisations can be formed;

- Provide support for successfully implementing knowledge exchange; and

- Remain adaptive to changing needs and simple and flexible enough to keep requirements for administrative work low.

Not all potential knowledge exchange partners have, from the outset, a clear understanding of the HEI work culture, regulations and timelines and their possible impacts on collaboration. This limits opportunities for knowledge exchange. The establishment of meeting fora, where external and internal stakeholders can meet, discuss and exchange, can help foster knowledge exchange. Ideally, brainstorming and idea creation activities are expert facilitated in order to alleviate communication difficulties and barriers related to the use of jargon, different working styles and organisational cultures.

Different knowledge exchange activities have different impacts that can be measured. Some have more tangible outcomes than others. The number of patents and licenses, and their associated revenues as well as the numbers of spin-offs and start-ups (although less easily) can be monitored, but it is more difficult to gather information about the impact of the involvement of externals in teaching, of collaboration on internships and of secondments, especially if these are not centrally organised and managed. In case incentives and rewards are offered for students and staff to engage in knowledge exchange activities, these should be closely monitored in terms of their impact, for example, on the number of new activities and the sharing of information across the organisation and with external partners.

Monitoring and evaluation of knowledge exchange activities starts with a mapping of people and organisational units exposed to and involved in knowledge exchange activities, distinguishing different types of activities in order to establish an understanding of how many staff and students are aware of the university's knowledge exchange strategy and the opportunities to contribute to it.

As a starting point, information about (i) awareness, (ii) participation, and (ii) support could be gathered:

- **Awareness**: Is information about current and past activities available across the higher education institution? What is the ratio of staff and students exposed to knowledge exchange activities over those involved in activities? How widely and well-known is the intellectual property policy within the organisation?

- **Participation** To what extent are staff and students engaged with local businesses and society, for example, are ‘real world’ problems taken up in research, study assignments and degree theses? If staff members are allowed or encouraged to take ownership in new ventures, businesses or social enterprise organisations, to which extent is this practiced?

- **Support**: If support mechanisms are in place to guide and assist staff and students to engage in knowledge exchange, what is the take up?

Having a database about current and past knowledge exchange activities and collaboration requests can help to increase and diversify knowledge exchange activities between higher education institutions and external partners. Many HEIs in Bulgaria are building such databases. Access to this database should be open for all key internal stakeholders throughout the HEI. Also students should have access to this information.

Make internships and other work-based learning opportunities an entitlement for students.

Internships should be an entitlement for all students. Internships need to be supported by HEIs in terms of (i) spreading information, since hosting organisations prefer to have single interlocutors which provide them access to several candidates and routine procedures, (ii) facilitating the supervision of interns, especially if related to academic requirements and co-tutorship arrangements, (iii) providing assistance to the intern during the internship, (iv) making sure that experience reports are prepared for the double purpose of reflecting about the learning experience off campus, and informing other students and teachers. Host organisations, in particular small and medium-sized firms, will welcome greater accompanying support as this reduces costs and resource allocation on their side.

Learning model

University of Bergamo (Italy): Internship projects as a key success factor[26]

The approach

The University of Bergamo (UniBg) is a fast growing university with currently about 16,000 students and 300 PhD students. It is located at north-western heart of the Italian economy, in the Lombardy region. The spirit of UniBg is a living laboratory, the mission is to prepare young people for their future life. The teaching philosophy is: "learn along the way, less lectures, more experiences and opportunities for young people."

UniBg is located in close proximity to Milan and the wider Lombardy region which hosts 12 HEIs, most of which are high on international rankings. UniBg is performing very well in this context. The period 2001-2011 saw a 7% increase in the number of students. Currently 331 professors and researchers and 230 administrative staff work at UniBg. The number of international students also increased rapidly as did the number of MA study programmes taught entirely in English, also several PhD programmes are fully taught in English. The number of international faculty members is growing quickly with currently about 60 foreign professors and more than 20 visiting professors/research fellows coming from 15 different countries. UniBg has three campuses - humanities, economics and law, and engineering, which is co-located in parts in the technology and science park "Kilometro Rosso", www.kilometrorosso.com.

UniBg has a dynamic leadership and strongly invests in its human resources. The average age of professors in engineering is in the mid-40s, which is about 15 years lower than the overall average of the academe in Italy.

UniBg's strategy has a five key points:

1. Teaching quality: started with the Teaching Quality Programme, allocating more resources to the best courses
2. Strengthening job orientation and placements
3. Network University
4. University and Territory: territorial presence & sharing strategic perspectives
5. International opening: each of our graduates should be provided with more experiences, at least one abroad

[26] The information for this learning model was provided by Fabio Previdi from the University of Bergamo.

Internships are core to UniBg's teaching and learning philosophy. Internships are mandatory in the student programme. The internship process is centralised and web-based ("before" and "during"). All actors are well informed about their duties and roles, which have been jointly defined.

UniBg in fully committed to a continuous dialogue with labour market, including companies and organisation, in order to:

- Promote high quality internships
- Design specific personal projects for each candidate
- Matching companies needs with each student skills and abilities in a win-win framework

A central part of the internship process is the "internship project" (see below). A formal agreement between UniBg and the company is signed. Companies are aware of their role in the teaching experience (and of the benefit they can get from it). Companies also propose internship projects or react to proposals they receive from the internship office. The internship office started small with a few members of staff and has now 10 staff members, who are taking care of internships and placements. Internships are, in general, not remunerated.

The "internship project" is owned by the student and is the result of a close collaboration with the academic and company tutors. It is based on a well-defined job reference role, with clearly detailed job and tasks and learning objectives. The supervision process is clearly planned and agreed by all partners in terms of milestones, periodic meetings, reports, etc. Internships last between 2-12 months. Interns prepare detailed timesheets and a final report, which are approved by the tutors. The assessment is done through anonymous questionnaires completed by the student and the company tutor.

The "internship personal project" is a key enabler for learning as students have a greater say and responsibility in designing a process which is meaningful for their studies and professional development. Also for the companies the "internship project" increases the relevance of internships to business development. Often these projects touch key areas in research, organisational development, internationalisation, etc.

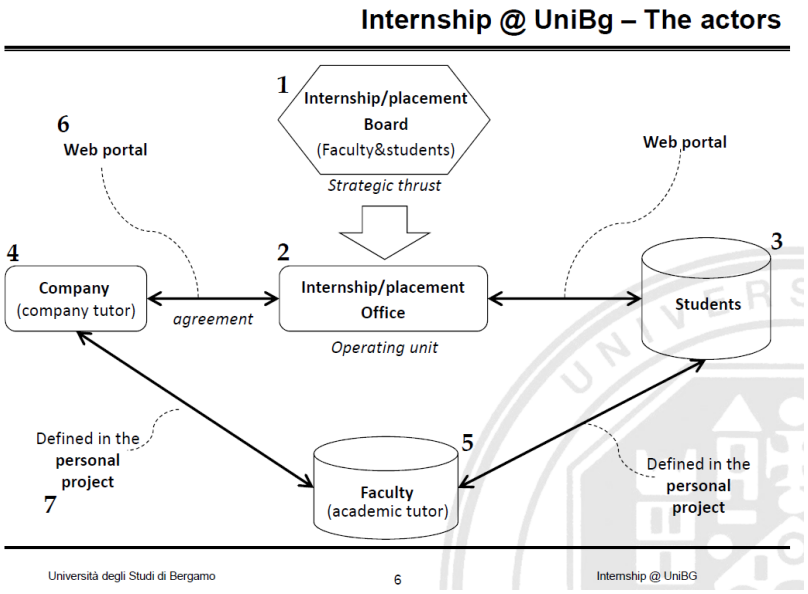
Recently, driven by the labour market requirements for graduates of legal studies, so-called excellence internships were introduced in the law faculty. These internships last 12 months, as interns need more preparation to be meaningfully included in daily tasks.

Several multinational corporations are located in the Bergamo area, such as Brembo, Gewiss, Italcementi, SIAD and Tenaris. The area has one of the highest business start-up and growth rates in Italy, and most operate in the export oriented medium-high technology manufacturing sector. The current success of internships has emerged over time as the result of an active leadership, and in-depth research of potential areas of collaboration ("looking deep" into company needs and aims, often with the help of alumni).

UniBg currently has:

- 1,340 active framework agreements with companies and institutions
- ~ 1,500 internships per year (steadily increasing)
- ~ 250 active academic tutors
- ~ 100 international internships per year (non doctoral)

- 15 excellence internships in 2013
- ~ 350 non-curricular internships per year (these are research-based, i.e., interns are part of research projects)
- Results of the companies assessment (91% highly satisfied)



Source: University of Bergamo.

What can HEIs in Bulgaria learn from this example?

Importance of the "internship project" as key enabler for learning. It gives students a greater say and responsibility in designing the process and makes the internship meaningful for their studies and professional development.

The "internship project" and the co-tutoring increase the relevance of internships for business development. Often these projects touch key areas in research, organisational development, internationalisation, etc.

The current success of internships has emerged over time as the result of an active leadership, an in-depth research of potential areas of collaboration ("looking deep" into company needs and aims, often with the help of alumni).

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CHAPTER 7
INTERNATIONALISATION[27]

Introduction

HEIs need to attract and retain the best human capital, from home and also from abroad. To make that objective easier to attain it is crucial for HEIs to exploit their unique selling points, such as their capacity to attract the academic diaspora of the country, their touristic and cultural offer, and the opportunities they have to invite and host visiting academics from abroad.

The attractiveness of a HEI for international staff does not only come from the quality of the employment on offer, but also depends upon the existence and attractiveness of cultural amenities, international childcare facilities, schools, and the presence of an international connected and open-minded local community. Smaller HEIs, with only few international connections, are likely to face difficulties when competing internationally for students and staff. HEIs which are located in less developed and attractive localities are likely to suffer from contextual barriers. Strong local partnerships, involving local government and key local players, such as internationally active companies and international corporations – as well as other higher education institutions located in the same city/region – can make a difference in raising the attractiveness of universities by providing an attractive offer besides the actual employment contract. In Bulgaria, the beautiful Danube, mountain resorts, the Black Sea as well as lower cost of living can be used as powerful sources of attractions.

Promoting the mobility of staff and students brings success. Staff and students are natural ambassadors of their alma mater: they bring back and export experiences and contacts. It is important to install at HEI level the capacity to deal with the many questions and issues that staff and students may face concerning international mobility. In particular with regard to students it is important to deal properly with equivalence of studies and exams. This applies both to incoming as well as outgoing students. Accommodation and language courses are of different nature, but function as promoters or detractors of mobility.

Eventually existing barriers need to be addressed at the institutional level. It is very harmful to have procedures, and consequently, results that are dependent upon individual faculties or departments. Promoting internationalisation as an integral part of the overall HEI strategy requires top-level leadership, bottom-up and cross-institutional support, and incentives and reward structures to promote internationalisation in teaching, research and knowledge exchange. Constant internal and external communication, monitoring, evaluation and an on-going refinement of strategy and practices are needed to assure continued advancement in internationalisation.

The use of ICT to promote internationalisation efforts can increase access and choices in internationalisation, prepare students and staff for international mobility, enhance sharing of experiences, and organise virtual exchange activities between the home university and international partner organisations.

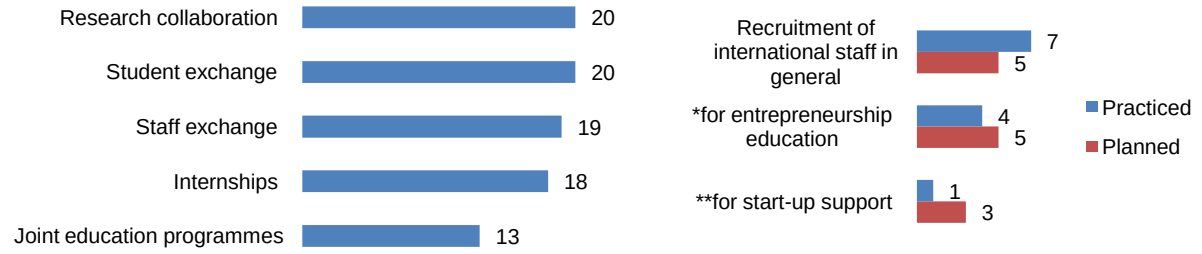
[27] Maria Helena Nazare was the main contributor to this chapter.

Findings

Internationalisation efforts are underway at all HEIs

Internationalisation efforts are underway at all HEIs. All of the surveyed HEIs have international research collaboration, student and staff mobility and recruit international staff (Fig. 20).

Figure 20. Internationalisation practices



Notes: Questions IN01 and IN04 (n=20), *EE09 (n=17), **SU06(n=10); all one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

Key projects for future actions are joint education programmes, e.g. joint and double degree programmes. There are some barriers in the higher education system that need to be addressed. Bulgaria is one of the few countries in the EU where the establishment of joint programmes and joint degrees is not addressed in legislation. Currently, less than 10% of HEIs in the country participate in joint programmes, whereas in neighbouring Romania up to 75% are participating in international study programmes. The lack of joint degree programmes and difficulties in recognising higher education degrees obtained abroad, even inside the EU, render the international mobility of students very difficult.

A rule of thumb used to "measure" the degree of internationalisation of a university is the number of students and staff from other nationalities. Universities in Bulgaria do not score high on either. The number of foreign students is low and very low for staff. Reasons given for the case study universities are language barriers and low wages. None of the case study universities has significantly invested efforts in building up their attractiveness for international staff. Efforts are focused on attracting students.

All of the case study HEIs perceive internationalisation as strategically important for organisational development and continuously develop partnerships with universities abroad for the exchange of students, academic and administrative staff, as well as joint research initiatives. Some of them have been particularly successful in utilising its geographic location for strategic international collaboration efforts as well as local development initiatives, for example in the Danube region. Uniqueness of the study offer is also employed to establish international partnerships, particularly revitalising traditional partnerships with universities in the geographic area of the former Soviet Union. This uniqueness is used to develop joint research projects and promote exchange of students and staff developing an entrepreneurial approach to their positioning in the national/international scene by working on applied research fields which are strategic for the future.

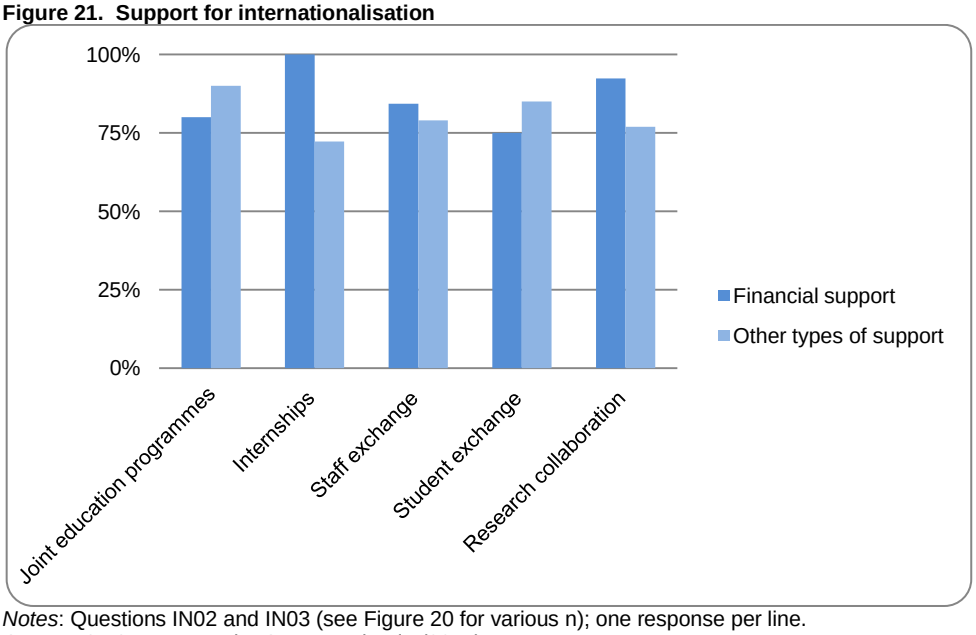
More institutional structures and support are needed

International mobility requires a specific support infrastructure and long-term dedicated resources to offer scholarships, mobility loans and daily support for staff and students during their stay abroad.

A centralised support service can reduce time efforts and make sure that the information about mobility schemes and partners is widely disseminated. At the same time, it will be important to have contact persons for international mobility also at the faculty/department level. These can act as first contacts during mobility periods. As for mobility initiatives in general (see above), international mobility requires incorporation into broader teaching and research activities in order to have an organisation wide impact.

Financial support and other types of support are offered at the surveyed HEIs (Figure 21). All HEIs stated that they provide financial support for international internships, but not all provided other types of support. These are, however, very important to ensure wider knowledge impacts across the HEI.

Figure 21. Support for internationalisation



Notes: Questions IN02 and IN03 (see Figure 20 for various n); one response per line.
Source: OECD HEI Leader Survey Bulgaria (2014).

Currently only two of the surveyed HEIs have an internationalisation strategy, only one has dedicated sections and chapters on internationalisation in the official HEI strategy document, whereas the majority mentions internationalisation throughout their strategies without clear guidance on how to establish international relationships and what kind of support is available.

Recommendations

Increase internationalisation efforts.

HEIs in Bulgaria need to invest more efforts in internationalisation. One simple way of attracting more exchange students and promoting the university is to use the Diaspora. There are excellent Bulgarian scientists working abroad who could maybe agree to spending a sabbatical or a few months in their homeland to contribute to the supervision of students and promote exchanges.

A common policy needs to be in place at the institutional level to deal with all matters related with mobility in order to ensure consistency of information and approach. The question of double degrees and open issues concerning the recognition of foreign degrees need to be taken up at the level of the Ministry of Education and Science.

Language can be and is a powerful barrier, hence the offer of post-working hours courses on Bulgarian and in English can be very useful and have an effect not only on the mobility numbers but on performance of mobile staff and students.

Learning model

Internationalisation strategy at the Polytechnic University of Valencia (Spain)[28]

The approach

Internationalization at the Polytechnic University of Valencia (UPV) depends mainly upon the Rectors's Office and partly on the Vice-Rectorate for Social Responsibility and Cooperation. The Rector's Office not only coordinates and promotes UPV's internationalization policy and international relations but also cooperation, learning, teaching and research with an international dimension. In addition to the accreditation in local and foreign languages the Rector's Office also promotes faculty and student participation in national and international exchange programmes. A key aim is to step up international cooperation through exchange visits and collaboration agreements.

Several functional units provide guidance and support regarding foreign academics, researchers and students willing to share the international experience with UPV through short and long study periods, summer schools, teaching or research stays, international projects, and the like.

These four functional Units include:

- International Exchange Programmes Office (OPII): coordinates the participation of UPV in different Academic Exchange Programmes world-wide, facilitating students and UPV staff mobility.
- International Affairs Office (OAI): promotes international academic cooperation projects (PCI, Erasmus Mundus, etc.) as well as training programmes and other joint academic initiatives in agreement with universities around the world.
- Language Centre (CDL): offers different services in the field of foreign languages to the whole university community.
- Centre for Development Cooperation (CCD): promotes collaboration and participation of UPV in development projects with NGOs, Universities and International Organisations.

What can HEIs in Bulgaria learn from this example?

The initiative is aimed at promoting mobility of staff and students and at creating a common framework at university level. Setting up of functional units to deal with different aspects, and advertising their existence, facilitates mobility.

[28] This learning model was prepared by Maria Helena Nazare. The author can be contacted at mhnazare@ua.pt

CHAPTER 8
CONCLUSIONS AND THE WAY FORWARD

To act as sustainable engines for development, HEIs need high levels of institutional autonomy and accountability mechanisms that allow for flexibility and agility. Modern and forward looking leadership, professional planning and management and adequate funding are key building blocks. Close links with strategic partners are indispensable. Transforming traditional HEIs into innovative and entrepreneurial organisations is neither an easy nor straightforward endeavour. Major obstacles may lie in the higher education system.

In Bulgaria it seems that HEIs are overloaded by permanent educational reforms, the need to defend the academic status quo, and slowed down by frustration and a lack of incentives to push reform processes forward. Nevertheless, the reform process has started, and the aim of this review was to contribute to it.

To this end, the following recommendations are proposed:

A national-level HEInnovate committee should be established, which includes senior representatives from the ministries of education and science, economics, and labour and social affairs, the Rectors Conference, and the main economic actors (Chambers, etc., entrepreneurship ecosystem). The objective of the national-level HEInnovate committee is to (i) promote the concept of the innovative and entrepreneurial higher education institution, (ii) identify key national challenges and opportunities in the higher education system with regard to the seven dimensions of HEInnovate, and (iii) to monitor and evaluate pilot projects for a potential mainstreaming. The establishment of working groups, involving HEI representatives, should be considered.

To trigger innovation in the higher education system and to sustain already existing promising initiatives, the creation of a HEInnovate Fund, co-financed with ESIF funding is proposed. The HEInnovate fund should provide co-financing for pilot projects, proposed and implemented by HEIs in Bulgaria. The allocation of co-funding shall be competitive. Key areas of fundable projects should be defined by the national-level HEInnovate committee, taking in the findings and recommendations from the HEInnovate country-level review. Furthermore HEInnovate key performance indicators, applied by NEEA and the University Ranking, should be used.

The following recommendations should be taken into consideration when establishing the national-level HEInnovate committee and the HEInnovate Fund. A discussion of below recommendations in the Rectors Conference is suggested. It is understood that some of the following recommendations require higher-tier level support to be fully implemented.

HEIs should review and reformulate their vision statements and missions, and adapt these in light of current challenges and possible responses. To this end, undertake an analysis of the strengths and weaknesses, opportunities and threats, involving the entire university community – including students, alumni – and key external partners. This will also imply defining and building a common understanding of what being innovative and entrepreneurial means to the university, and how this understanding can/should be linked with the socio-economic situation of the surrounding local

economy. In all this, it will be important to build effective ways to increase graduate retention in the university's surrounding economy.

Establish a senior management post in charge of the innovative and entrepreneurial agenda. To steer and sustain the innovative and entrepreneurial agenda, HEIs should establish the position of a senior management post or Vice-Rector who will be responsible for entrepreneurship, organisational change and interaction with the local community. It is suggested that a "Strategy Council", which includes members from local/regional governments, key business and industry partners, and civil society, is established to advise and support the HEI in building trust, achieving its mission and vision and design a roadmap to become one of the drivers of entrepreneurship and development in the local/regional economy.

Provide training possibilities for staff and reward excellent performance in teaching, research and entrepreneurship. A formal policy for career development should be in place, which is sufficiently resourced and provides room for individual goals and objectives. Training possibilities should be offered to enhance the quality of teaching e.g. interdisciplinary intra-curricula education activities, student-centred pedagogies, involvement of externals into teaching, organisation of internships, knowledge exchange, and internationalisation. In addition training possibilities should also exist for academic staff, who would like to contribute to the organisational change agenda.

Further invest in the establishment of coordination mechanisms for entrepreneurship promotion, and involve students in this. Existing co-ordination mechanisms for entrepreneurship promotion, such as entrepreneurship centres and technology transfer centres, should be continued and improved in order to reach out all across campus. The aim should be to develop dynamic structures that link the HEI with the entrepreneurship ecosystem and offer easy access to different publics inside and outside the HEI. The richness of student associations in Bulgarian HEIs is a good starting point. It is important to mobilise students for entrepreneurship & strategic HEI development, and give them opportunities to contribute.

Incentivise the strategic involvement of key external stakeholders. Providing recognition and rewards for strategic partners is important. HEIs may need to adapt or introduce new criteria for awarding external stakeholders such as entrepreneurs, regional organisations and associations, alumni and others for their contributions to organisational change.

Build strategic bonds with alumni. A network of alumni can be very useful to help the university to understand how their curriculum can be improved. After all their perceived value in the job market is very much linked to the reputation of the university where they obtained the degree. Stronger alumni connections can be facilitated in multiple ways, such as regular surveys of the alumni, inviting successful alumni as guest speakers to university events, inviting alumni members to speak to the students, and matching alumni members as mentors to students. As an incentive, to maintain contact with the university, graduates could be allowed to keep their email account. Nascent initiatives across HEIs in the country should be reviewed and sustained.

Build on existing good practices in novel pedagogies and mainstream them in the wider HE system. There are several good and promising initiatives all across HEIs in Bulgaria. Information about these should be widely circulated and mainstreaming should be considered. This will require the following steps (i) awareness creation for non-traditional pedagogies & requirements (preparation, resources, learning outcome assessment) and incentive systems to promote experimentation with innovative teaching methods, (ii) provision of training and teaching materials, and guidance on how to assess learning outcomes, (iii) establishment of all-HEI network.

Promote entrepreneurship education as cross-section faculty portfolio. Entrepreneurship education, aiming at the development of an entrepreneurial competence portfolio (attitudes, soft skills/social/methodological competences), should be expanded and tailored to all students of the HEI at all faculties and levels.

Develop an easily accessible system of fundamental business start-up support for academic entrepreneurs. Easy access to start-up support is crucial for the initial exploitation and development of ideas. Key to this is linking HEI-internal efforts with the entrepreneurship ecosystem. Would-be-entrepreneurs need not know where they can get information and support. This keeps motivation high. Offering academic would-be entrepreneurs an "address" , for example in form of a co-working space with access to laboratories, is not only helping to commercialise research, but also to build lasting bonds with entrepreneurial alumni.

Increase the institutional embedding of knowledge exchange activities. Without clear and vocal leadership promoting collaboration, knowledge exchange might be a matter of personal motivation rather than being "part of their job". Taking into consideration the importance of individual incentives will be important but as part of an institution-wide strategy. Communication efforts are needed to ensure that all current and future partners have a clear understanding of the HEI's work culture, routines and regulations, also in light of possible impacts on performance and timelines. Different knowledge exchange activities have different impacts: some are more tangible than others. Monitoring and evaluation starts with a mapping of people and organisational units exposed to and involved in knowledge exchange activities, distinguishing different types of activities in order to establish an understanding of how many staff and students are aware of the university's knowledge exchange strategy and the opportunities to contribute to it.

***Make internships entitlement for students*.** Internships should be an entitlement for all students. Internships need to be supported by HEIs in terms of (i) spreading information, since hosting organisations prefer to have single interlocutors which provide them access to several candidates and routine procedures, (ii) facilitating the supervision of interns, especially if related to academic requirements and co-tutorship arrangements, (iii) providing assistance to the intern during the internship, (iv) making sure that experience reports are prepared for the double purpose of reflecting about the learning experience off campus, and informing other students and teachers. Host organisations, in particular small and medium-sized firms, will welcome greater accompanying support as this reduces costs and resource allocation on their side.

Increase internationalisation efforts. HEIs in Bulgaria need to develop their international agenda more. One simple way of attracting more exchange students and promoting the university is to use the Diaspora. A common policy needs to be in place at the institutional level to deal with all matters related with mobility in order to ensure consistency of information and approach. HEIs should offer language courses after work to increase performance and mobility rates of staff and students. The question of double degrees and open issues concerning the recognition of foreign degrees need to be taken up at the level of the Ministry of Education and Science.

ANNEX

HEInnovate – dimensions and statements

Leadership and Governance

Leadership and governance are two critical and challenging factors in developing entrepreneurial higher education institutions. Positive and responsive leadership is what maintains a dynamic and successful organisation, particularly in times of uncertainty, unpredictability and complexity. Leadership and governance can stimulate innovation of all kinds in an organisation, which is held together by a shared vision and culture, not overloaded with managerial systems, constantly striving for its autonomy via the entrepreneurial management of its various interdependencies with stakeholders.

1. Entrepreneurship is a major part of the HEI strategy.
2. There is commitment at a high level to implementing the entrepreneurial strategy.
3. The university has a model for coordinating and integrating entrepreneurial activities at all levels across the HEI.
4. The faculties and units have autonomy to act.
5. The HEI is a driving force for entrepreneurship development in the wider regional, social and community environment.

Organisational capacity, people, incentives

Entrepreneurial higher education institutions continuously aim at developing their organisational capacity. To this end, incentives and rewards are in place for entrepreneurship champions, staff, students and stakeholders who are promoting the entrepreneurial agenda, and removing barriers and constraints within the organisation. The aim is to empower individuals throughout the organisation to own their own initiatives, engage in innovation and build personal trust-based stakeholder relationships across external and internal boundaries in search of synergy.

1. The HEI's entrepreneurial objectives are supported by a wide variety of funding sources/investment, including investment by external stakeholders.
2. The HEI has a sustainable financial strategy in place to support entrepreneurial development.
3. There are mechanisms in place for breaking down traditional boundaries and fostering new relationships - bringing internal stakeholders together (staff and students) and building synergies between them.
4. The HEI is open to recruiting and engaging with qualified individuals with entrepreneurial attitudes, behaviours and experience.
5. The HEI invests in staff development to support its entrepreneurial agenda.
6. There are clear incentives and rewards for staff, who actively support the university's entrepreneurial agenda.

7. The university gives status and recognition to other stakeholders who contribute to the university's entrepreneurial agenda.

Entrepreneurship development through teaching and learning

Entrepreneurship development through teaching and learning requires something else than standard textbooks and ordinary classroom settings. An 'entrepreneurial' pedagogy seeks to enhance entrepreneurial capacities and capabilities amongst students by giving them more autonomy and responsibilities in the learning process through experimental, collaborative and reflexive learning.

1. The university is structured in such a way that it stimulates and supports the development of entrepreneurial mindsets and skills.
2. Staff take an entrepreneurial approach to teaching in all departments, promoting diversity and innovation in teaching and learning.
3. Entrepreneurial behaviour is supported throughout the university experience; from creating awareness and stimulating ideas through to development and implementation (pre-business and business start-up).
4. The university validates entrepreneurship learning outcomes.
5. Collaborating and engaging with external stakeholders is a key component of teaching and learning development in an Entrepreneurial University
6. Research results are integrated into entrepreneurship education and training.

Pathways for entrepreneurs

Pathways for entrepreneurs entails teaching strategies and learning environments which offer targeted support for students and staff that aim at setting up a business. Higher education institutions can provide this support directly themselves or refer potential entrepreneurs to specialised start-up support services within the (local) entrepreneurship ecosystem.

1. The HEI raises awareness of the value/importance of developing entrepreneurial abilities amongst staff and students.
2. The HEI actively encourages individuals to become entrepreneurial.
3. Business start-up education is offered across the curricula and faculties.
4. The business start-up education offer is widely communicated, and measures are undertaken to increase the rate and capacity of take-up.
5. A suite of business start-up courses exists, which uses creative teaching methods and is tailored to the needs of undergraduate, graduate and post-graduate students.
6. The suite of business start-up courses has a differentiated offer that covers the pre-start-up phase, the start-up phase and the growth phase. For certain courses active recruitment is practiced.
7. The HEI provides opportunities to experience entrepreneurship.
8. The HEI provides support for individuals and groups to move from entrepreneurial ideas to action.
9. Mentoring by academic and industry personnel is available.
10. The HEI facilitates access to private financing for its potential entrepreneurs.

11. The HEI provides access to business incubation facilities.

HEI-Business/external links for knowledge exchange

Knowledge exchange is determined by the perceptions of the respective "other". A negative attitude towards entrepreneurship, entrepreneurs and businesses within a higher education institution can limit and hinder network formation and collaboration with business partners. Communication that ensures that both sides of a knowledge exchange network have a clear understanding of respective expectations, limitations and requirements, is a major building block of the entrepreneurial higher education institution.

1. The HEI is committed to knowledge exchange with industry, society and the public sector.

2. The HEI demonstrates active involvement in partnerships and relationships with a wide range of stakeholders.

3. The HEI has strong links with incubators, science parks and other external initiatives, creating opportunities for dynamic knowledge exchange.

4. The HEI provides opportunities for staff and students to take part in entrepreneurial activities with business/the external environment.

5. The HEI specifically supports staff and student mobility between academia and the external environment.

6. The HEI links research, education and industry (wider community) activities together to affect the whole knowledge ecosystem.

Internationalisation, an important indicator for quality in higher education, is not an end in itself, but a vehicle for continuous change and advancement. Higher education institutions can internationalise through their activities in teaching, research and knowledge exchange, and through their staff and students. Becoming a truly internationalised institution will build on both.

1. Internationalisation is a key part of the HEI's entrepreneurial strategy.

2. The HEI explicitly supports the international mobility of its staff and students (including PhD students).

3. The HEI seeks and attracts international and entrepreneurial staff (including teaching, research and PhDs)

4. The HEI demonstrates internationalisation in its approach to teaching.

5. The HEI, its departments and faculties actively participate in international networks.

Measuring the impact of the Entrepreneurial HEI

Measuring the impact of certain practices on the entrepreneurial higher education institution is neither easy nor straight forward. To measure the impact of the entrepreneurial agenda, it is important to start by monitoring and reviewing entrepreneurship within the leadership of the higher education institution. This will help establish an understanding of how important entrepreneurship is to the

governing and executive boards – compared to other strategic objectives, such as, for example, sustainability, excellence in research, attraction of international students. Excellence is judged through the eyes of all of its stakeholders in pursuit of the creation of public value.

1. The HEI assesses the impact of its strategy on entrepreneurship across the institution.

2. The HEI assesses the level of engagement in entrepreneurial teaching and learning across the institution.

3. The HEI regularly assesses the impact of entrepreneurial teaching and learning.

4. The HEI carries out regular monitoring and evaluation of the universities' knowledge exchange activities.

5. The HEI carries out regular monitoring and evaluation of the impact of start-up support.

Further details on the Guiding Framework are available at: www.heinnovate.eu.