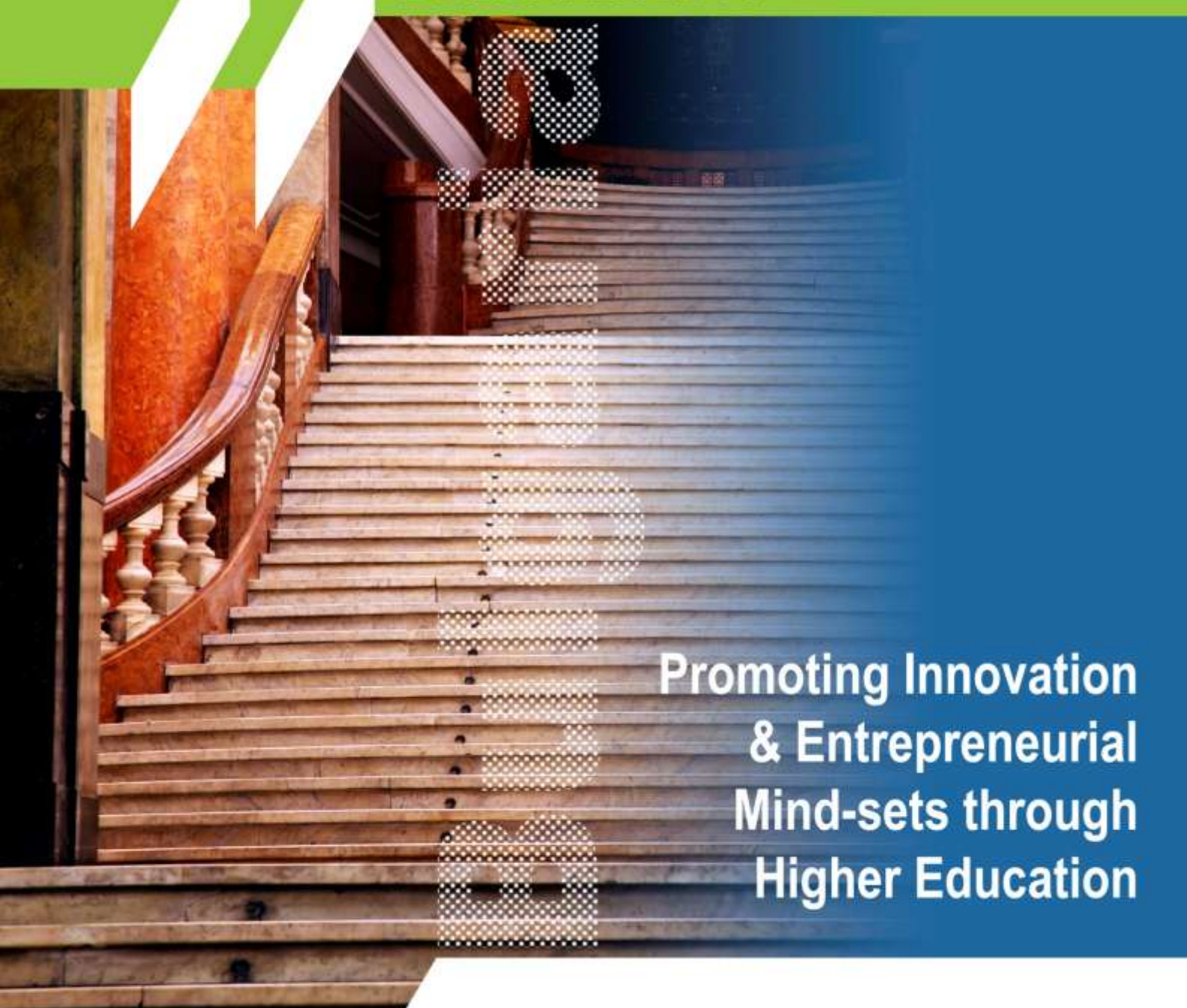




HEInnovate Reviews

Universities, Entrepreneurship,
and Local Development

BULGARIA 2014



**Promoting Innovation
& Entrepreneurial
Mind-sets through
Higher Education**

OECD Working Papers should not be reported as representing the official views of the OECD or of its member countries. The opinions expressed and arguments employed are those of the authors.

Working Papers describe preliminary results or research in progress by the author(s) and are published to stimulate discussion on a broad range of issues on which the OECD works.

Authorised for publication by Sergio Arzeni, Director, Centre for Entrepreneurship, SMEs, Tourism and Local Development

Cover: Joseph Tixier; Picture: © VILevi / Shutterstock.com

© OECD 2015

You can copy, download or print OECD content for your own use, and you can include excerpts from OECD publications, databases and multimedia products in your own documents, presentations, blogs, websites and teaching materials, provided that suitable acknowledgment of the source and copyright owner is given. All requests for public or commercial use and translation rights should be submitted to rights@oecd.org. Requests for permission to photocopy portions of this material for public or commercial use shall be addressed directly to the Copyright Clearance Center (CCC) at info@copyright.com or the Centre français d'exploitation du droit de copie (CFC) at contact@cfcopies.com.

**HEINNOVATE REVIEWS ON
PROMOTING INNOVATIVE AND ENTREPRENEURIAL HEIS**

COUNTRY-LEVEL REVIEW BULGARIA

REVIEW REPORT

Prepared by the Organisation for Economic Co-operation and Development

MAY 2015

Contacts:

Andrea-Rosalinde HOFER, Organisation for Economic Co-operation and Development
Email: andrea-rosalinde.hofer@oecd.org

Georgi DIMITROV, European Commission
Email: georgi.dimitrov@ec.europa.eu

ACKNOWLEDGEMENTS

This review has been undertaken by the Local Economic and Employment Development Programme (LEED) of the Organisation of Economic Co-operation and Development (OECD) and the European Commission Directorate for Education and Culture in collaboration with the Ministry of Education and Science of Bulgaria.

The work would not have been possible without the contributions, commitments and dedication of many people.

The authors firstly thank the higher education institutions, who participated in the in-depth review: the University "Angel Kunchev" in Ruse, the University of Economics in Varna, the University of Forestry in Sofia, the University of Mining and Geology "St. Ivan Rilski" in Sofia, and the Technical University of Sofia. Thanks are extended to the rectors and vice rectors, to academic staff members and the students for their interest, openness and commitment to engage in this review. Special thanks are given to all other HEIs and the many students who participated in the online surveys.

The authors are also grateful to the project leaders in the Ministry of Education and Science of Bulgaria, Ivana Radonova and Maria Fartunova, and their colleagues for their very valuable collaboration throughout the entire review process. Special thanks go to the translators and interpreters!

Svetlana Avramova free-lance sociologist and higher education expert prepared a substantial background report, acted as the local review co-ordinator, and participated as national expert in the review team. Maria Helena Nazare, professor emeritus, former rector of the University of Aveiro (Portugal) and current president of the European University Association (EUA), and Gerald Braun, founding director of the Hanseatic Institute for Entrepreneurship and Regional Development, and professor emeritus at the University of Rostock were the peer-reviewers. Roberta Moscon from the European Commission DG Education and Culture accompanied the review team during the study visit in May. Dr Andrea-Rosalinde Hofer from the OECD LEED Programme led the review team and prepared this report. The work was supervised by Dr Jonathan Potter, Senior Economist in the OECD Centre for Entrepreneurship, SMEs and Local Development.

Milena Stoycheva, CEO of Junior Achievement Bulgaria, Ruslan Rakhmatullin from the European Commission DG JRC IPTS – Smart Specialisation Platform, and Fabio Previdi from the University of Bergamo provided very valuable contributions to the HEInnovate workshop in Sofia on 26 September 2014.

Special thanks go to Joseph Tixier, Barbara Cachova, Eleanor Davies and Emma Tynan for their invaluable support in organising the study visit and the dissemination of the report. All work in the Local Economic and Employment Development Programme of the OECD. Ekin Genc, trainee in the European Commission, DG Education and Culture provided valuable comments on a draft version of this review report. Lesley Hetherington language edited the report.

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	4
ACRONYMS	7
INTRODUCTION.....	8
The context of the study	8
Review methodology	9
CHAPTER 1 THE CONTEXT FOR INNOVATIVE AND ENTREPRENEURIAL HEIS IN BULGARIA	12
Innovation, entrepreneurship and higher education.....	12
The Bulgarian context.....	13
References.....	17
CHAPTER 2 LEADERSHIP AND GOVERNANCE	19
Introduction.....	19
Recommendations.....	25
Learning models	27
CHAPTER 3 ORGANISATIONAL CAPACITY, PEOPLE AND INCENTIVES.....	32
Introduction.....	32
Findings	32
Recommendations.....	40
Learning models	42
CHAPTER 4 TEACHING AND LEARNING	50
Introduction.....	50
Findings	50
Recommendations.....	56
Learning models	57
CHAPTER 5 PATHWAYS FOR ENTREPRENEURS.....	61
Introduction.....	61
Findings	61
Recommendations.....	65
Learning model.....	65
CHAPTER 6 KNOWLEDGE EXCHANGE PARTNERSHIPS	67
Introduction.....	67
Findings	67
Recommendations.....	70
Learning model.....	72
CHAPTER 7 INTERNATIONALISATION	75
Introduction.....	75
Findings	76
Learning model.....	78
CHAPTER 8 CONCLUSIONS AND THE WAY FORWARD.....	79
ANNEX.....	83
HEInnovate – dimensions and statements	83
HEInnovate Leader Survey – questions illustrated in this report’s figures	87

Figures

Figure 1.	HEI objectives related to entrepreneurship promotion	21
Figure 2.	Positions in entrepreneurship promotion	22
Figure 3.	Involvement of externals in HEI governing boards	23
Figure 4.	Types of rewards for significant contributions by externals	23
Figure 5.	Organisation and support practices in fundraising	33
Figure 6.	Current and expected sources of financing for entrepreneurship promotion ..	34
Figure 7.	Interdisciplinary study programmes	35
Figure 8.	Student-researcher collaboration beyond final thesis.....	35
Figure 9.	Use of teaching styles	36
Figure 10.	Student-researcher collaboration beyond final thesis.....	37
Figure 11.	Coordination models for entrepreneurship promotion in HEIs.....	38
Figure 12.	Example of individual RASCA Valuation of annual achievements	44
Figure 13.	Entrepreneurship education activities at different levels of studies	51
Figure 14.	Offer and demand for teaching methods in entrepreneurship education.....	53
Figure 15.	Teaching staff in entrepreneurship education	54
Figure 16.	Offer and demand in HEI start-up support measures	63
Figure 17.	HEI partners in business start-up support	64
Figure 18.	Current and planned forms of knowledge exchange	68
Figure 19.	Knowledge exchange partners of HEIs	69
Figure 20.	Support measures before, during and after internships	70
Figure 21.	Internship/placement processes and actors at UniBg	74
Figure 22.	Internationalisation practices	76
Figure 23.	Support for internationalisation	77

Boxes

Box 1.	Continuing education at the University of Ruse	24
Box 2.	Involving students in research activities at specialised HEIs.....	36
Box 3.	Brand-Idea.....	38
Box 4.	Business Booster Sofia.....	39
Box 5.	Promoting entrepreneurship in the border area between Bulgaria and Greece	51
Box 6.	Junior Achievement Bulgaria.....	52
Box 7.	CONEEECT – Educating Entrepreneurship Educators	55
Box 8.	Small grants for technology entrepreneurship	63
Box 9.	Beehive: co-working spaces for young entrepreneurs and freelancers	64

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

INTRODUCTION

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). These HEIs are designed to empower students and staff to demonstrate enterprise, innovation and creativity in teaching, research and third mission. They direct their activities to enhance learning, knowledge production and exchange, and they are dedicated to 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 underemployment 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. However, these are often the result of time and effort invested by highly-motivated individuals without sufficient and sustainable resources for institutional impact. 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 the sustainable structures and resources required to 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 at 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.

Review methodology

Conceptual framework

The methodology used in this review is based on HEInnovate, a guiding framework for innovative and entrepreneurial HEIs. HEInnovate was developed as a collaboration between 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 provided 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 an effective systematic approach for mobilising young people for entrepreneurial careers. Eastern Germany, Tunisia, the Czech Republic and Poland participated in a review series. In collaboration with HEInnovate, the focus of this review series has been broadened to include leadership, organisational change, internationalisation, and knowledge exchange, in addition to entrepreneurship support.

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 shared need for guidelines and support to help HEIs to start, implement and sustain organisational change. HEInnovate is a response to this need (see Annex for a brief presentation of the 7 dimensions and 45 statements).

HEInnovate self-assessment tool

The internet platform www.heinnovate.eu was launched in November 2013. It offers HEIs free use of 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 shared exercise. A main advantage of the 'group function' is that it allows the exploration of different perspectives of how entrepreneurship and innovation can be translated into the higher education institution. It also identifies gaps and builds new synergies. The 'group function' can encourage respondents to look beyond their own areas of responsibility and take a more holistic approach, adopting the perspective of a possible change agent.

This self-assessment activity can be repeated multiple times to support the participating HEI to track organisational change over time. The data is solely for the use of the participating organisation. HEInnovate does not store any data. At the time of writing this report more than 500 HEIs, from all over the world, have created an account on the HEInnovate website.

HEInnovate country-level review

The HEInnovate methodology can 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 independent assessment of areas for improvement in the policy framework. The recommendations identify both measures that HEIs may undertake themselves and policy measures that can be promoted by national government and sub-national government structures.

For the country-level review process, a number of HEIs were selected for an in-depth review. The case-study HEIs included the 'leading' HEIs in the country, in terms of number of students, breadth of

teaching and research, internationalisation, knowledge exchange activities, as well as level of aspiration to become innovative and entrepreneurial HEIs. Surveys were 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 between March and May 2014, an online survey of leaders and students administered to all 51 HEIs in the period May to September 2014, and a final workshop involving all HEIs, to discuss the findings of the case study peer reviews and the surveys organised in Sofia at the end of September 2014.

A background report was prepared to provide an overview of the higher education system in Bulgaria. Regional and local economies, labour market and demographic characteristics and trends, and profiles of the case-study HEIs were also prepared. Key findings from the background report were discussed with the Ministry of Education and Science and the five case study HEIs in an inaugural 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, and 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 from the findings of 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 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 sent to all HEIs in Bulgaria. The seven parts of the questionnaire asked about (i) the strategic directions of the HEI, (ii) management of human and financial resources, (iii) teaching and learning environment, (iv) current practices in knowledge exchange, (v) current practices in internationalisation. In the final part, respondents were asked, about the current practices in (vi) entrepreneurship education, and (vii) start-up support. In developing the questions, the seven dimensions of HEInnovate were used as a conceptual framework.

A total of 20 HEIs (14 public and 6 private) participated in the survey in the period June to August 2014.¹ Each HEI received an individual report, which compared their responses, in the seven HEInnovate dimensions, to the average scores of all HEInnovate users. For several challenges related to the promotion of entrepreneurship, the report included comparisons with the average responses from an eastern Germany sample (41 public HEIs), and a Polish sample (23 public and private HEIs).

During the same period, a separate questionnaire was sent to students across all HEIs. The channels used for this included: 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. In total 367 students from 23 HEIs participated in the survey and answered questions about work experience and future job expectations.

In a second survey, 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. In total 196 students completed the second part of the questionnaire.

Finally, in order 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, 2014 in Sofia. Representatives of more than 30 HEIs and key organisations in the entrepreneurship ecosystem attended the workshop.

This report was reviewed by the Ministry of Education and Science of Bulgaria and presented in a press conference on 29 May 2015 under the auspices of Prof Nicolai Denkov, State Secretary in the Ministry of Education and Science of Bulgaria with the participation of the European Commission and the Organisation for Economic Co-operation and Development

¹ 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

In order to act as sustainable engines for development, HEIs require high levels of institutional autonomy and accountability mechanisms that allow for flexibility. Key building blocks include modern and forward looking leadership, professional planning and management and adequate funding. 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 be developed.

This makes it difficult to use the concept for research purposes, however 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 exist, and learning from good practices will enhance organisational change.

Organisational change: overcoming the standstill

Transformation of traditional organisations, with firmly established hierarchies, rules and routines, needs time and joint effort 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 persists. This persistence is stronger in some countries and cultures.

Overcoming these 'conceptual' barriers requires a system-wide understanding of what is expected from HEIs. Each institution needs to translate this 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 is 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 areas of economic potential.

Prior to the global financial crisis, GDP growth rates were around 6%. Recovery has been 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).²

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. In these regions, regional GDP per capita accounts for less than 33% of the EU-27 average (2011), whereas in the South-West, which includes the capital city Sofia, it reaches 72%. The South-West, with an industry focus on services and medium to high-tech manufacturing, accounts for almost 50% of the national GDP.

Migration is still an issue throughout the country. According to the 2011 migration survey of the Government of Bulgaria, lack of career options, low wages and the demand for better education were main reasons for leaving the country. For lower skilled workers, current or future unemployment and the lack of jobs were key push factors (SEEMIG, 2013).³ 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).

² Latest available data from Eurostat is of 2012. The average household income in the EU-27 was EUR 20,085.

³ 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 performance 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%), and consultancy and information services (6%). Since 2005, export products and services in ICT have seen a 14-times increase and account for almost 50% 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 low levels of innovation, particularly in the small business sector. The 2014 Innovation Scoreboard of the EU ranks Bulgaria, together with Latvia and Romania, as a "modest innovator" country, whose innovation performance⁴ is less than 50% of 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 combined expenditures in the government and higher education sector reached 0.24 % 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 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, was 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, out-of-date 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; 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).

⁴ 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. Currently, the Bulgarian system in the area of research suffers from the conflict between BAS, and HEIs who aim to increase their research capacity. This conflict increases the probability of wasted resources, duplication of investment and diminishing diversity.

The Ministry of Education and Science has created initiatives to build more bridges between BAS and HEIs. A number of BAS members are chair holders or academic staff members in other HEIs and BAS has established a network of local/regional offices across the country. However, co-ordination of these research activities, between BAS and the universities, seems to lack systemic co-ordination. This hinders universities in finding their role in the national and local innovation systems. This is further hindered by the continued perception, by large industrial organisations and businesses, that universities are "teaching" institutions which issue degrees.

Additionally, the gaps in the current system indicate that research activities carried out at BAS may fail to take into consideration the new profiles of graduates, and the career ambitions of doctoral graduates and young researchers. The career opportunities for these graduates may lie outside academia or in a 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, in turn, constrained the role of HEIs in local and regional economic development with respect to the provision of a skilled workforce. Contributions to innovation, entrepreneurship and regional and national competitiveness were neglected. A new Strategy for Higher Education has now been prepared by the Ministry of Education and Science. The strategy is expected to provide coordination for policies and measures that 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 of this Agreement is to direct policy interventions into areas which have growth potential and competitive advantages. The identified areas are information/communication technologies, electronics, healthcare/biotechnology, nanotechnology, environmental protection/energy efficiency, space technology applications, food production and food processing technologies. It is expected that this intervention will create new innovative firms and jobs. The target is around 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 9 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%. This 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.⁵ Users e.g. (future) students, parents, firms, can compare all HEIs across 52 professional study fields against more than 80 indicators, which measure different aspects of HEI performance, 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. However, 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 is to provide access to education for students and employees across the country, including areas with less favourable household incomes (NEEA, 2013). Although this policy has had some success, a regional concentration of HEIs in richer areas has emerged with 22 HEIs located in Sofia, 7 in Plovdiv and 5 in Varna. The average numbers of students per HEI is 6,200 in the public sector and 3,500 in the private sector. The University of Sofia "St. Kliment Ohridski" has approximately 21,000 students and is the largest HEI in the country. Second is the Technical University of Sofia with approximately 9,100 students.

The higher education system currently suffers from an imbalance between supply 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 available places exceeded the demand by 11.3%. This meant that 8,000 places, of the 71,000 available, remained vacant.

The 51 HEIs tend to act independently, with little co-ordination amongst themselves. There are examples of spurious competition resulting in losses of efficiency. There is a need for re-organisation with more collaboration between HEIs and more joint utilisation of infrastructure and resources. The aim is to build a well-functioning system that allows and caters for diversity. This would support institutional-level priorities and goals in being realistically set and achieved within the wider system-level strategic objectives (see also World Bank, 2012a).

Internationalisation of HE is underway, but there are systemic barriers that need to be addressed. Although the Higher Education Act allows for the establishment of joint and double programs/degrees is arranged in the, 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 low number of joint degree programmes and persistent barriers in obtaining formal recognition of higher education degrees obtained abroad, renders the international mobility of students very difficult.

Changes ahead for the Bulgarian higher education system

In 2013, the Open Society Sofia published MacroWatch⁶ on the current situation of the higher education system in Bulgaria. The key recommendations were:

⁵<http://rsvu.mon.bg/rsvu3/?locale=en#HomePlace>:

⁶MacroWatch 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 is recommended.
- *Make public university funding to a greater extent dependent upon outcomes,* in particular in terms of quantity and 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.* Raising the attractiveness of academic positions will need comprehensive measures to increase remuneration, professional prestige, training opportunities and career opportunities.

References

Clark, B. R. (1998), *Creating entrepreneurial universities: Organizational pathways of transformation*, Oxford: Pergamon Press.

EIU (2014), *Country Report Bulgaria*, November 2014, Economist Intelligence Unit, London.

European Commission and OECD, (2012), "A Guiding Framework for Entrepreneurial Universities", Brussels.

EU (2012), *The European Higher Education Area in 2012: Bologna Process Implementation Report*. Published by the Education, Audiovisual and Culture Executive Agency, Eurydice, Brussels.

EU (2013), *From Shadow Economy to Formal Economy. Levelling the Playing Field in the Single Market*. Published online at www.europarl.europa.eu/meetdocs/2009_2014/documents/imco/dv/studylevellingplayingfield_/studylevellingplayingfield_en.pdf; accessed 16 December 2014.

EU (2014), *Innovation Union Scoreboard 2014*, prepared by H. Hollanders and N. Es-Sadki, Maastricht Economic and Social Research Institute on Innovation and Technology (UNU-MERIT), Brussels.

Etzkowitz, H. (1983), "Entrepreneurial scientists and entrepreneurial universities in American academic Science", *Minerva*, Vol. 21(2), pp. 198–233.

Government of Bulgaria (2014), *Partnership Agreement of the Republic of Bulgaria Outlining the Support from the European Structural and Investment Funds for the 2014-2020 Period*, Version 3.0, August.

Guerrero, M. and Urbano, D. (2012), *the creation and development of entrepreneurial universities in Spain: An institutional approach*, Nova Science Publishers, New York.

HEInnovate (2014), *The Entrepreneurial Higher Education Institution. A Review of the Concept and its Relevance Today*. Online available at www.heinnovate.eu

Klofsten, M. and Jones-Evans, D. (2000), “Comparing academic entrepreneurship in Europe: The case of Sweden and Ireland”, *Small Business Economics*, Vol. 14(4), pp. 299–309.

NEEA (2013), *Self-Evaluation Report. Based on Standards and Guidelines for Quality Assurance in the European Higher Education Area*. National Evaluation and Accreditation Agency of the Republic of Bulgaria, Sofia.

Pavlova L., L. Ivancheva (2012), *The Technology Transfer Function: a Challenge for Bulgarian Universities*, Bulgarian Academy of Sciences, published online at www-it.fmi.uni-sofia.bg/.../10_LiliPavlova-TTfunctioninuniversities.ppt; accessed 16 December 2014.

SEEMIG (2013), *Country Report Bulgaria*, published online at www.seemig.eu; accessed 16 December 2014.

World Bank (2012a), *Strengthening Higher Education in Bulgaria*. Options for Improving the Models of Governance, Quality Assurance and Financing of Higher Education Private and Financial Sector Development Department, Central Europe and the Baltic Countries, Europe and Central Asia Region, Washington DC.

World Bank (2012b), *Going for Smart Growth. Making Research and Innovation Work for Bulgaria*. Private and Financial Sector Development Department, Central Europe and the Baltic Countries, Europe and Central Asia Region, Washington DC.

CHAPTER 2 LEADERSHIP AND GOVERNANCE⁷

Introduction

Leadership and governance are two critical and challenging factors in developing an innovative and entrepreneurial HEI. Positive and responsive leadership is required to maintain 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. This requires that the organisation is not overloaded with managerial systems.

In the following section, leadership refers to the ability of the rector, deans or heads of departments to lead 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 to take action and deliver impact. Leadership exists and should be encouraged throughout the ecosystem both within and outside the institution's organisational boundaries.⁸

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.

Entrepreneurship and innovation are buzzwords for the young generation ...

The terminology of entrepreneurship has entered HE but not at the mission and leadership level. For Bulgaria's young generation, entrepreneurship and innovation have become buzzwords. They are also used in higher education, but mostly by staff and students, and not yet as part of core-mission and leadership initiatives. There are some exceptions e.g. 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

⁷ Maria Helena Nazare was the main contributor to this chapter.

⁸ See Hannon (2014), in HEInnovate Guidance Note on Leadership and Governance, available at www.heinnovate.eu.

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. They need to be able to engage the entire academic community into a change process, and, at the same time, to promote, both within and beyond the institutional borders, an understanding that HEIs are not ivory towers, but one of the most fundamental assets a country has by which 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 lacking among the demonstrated values and aspirations of Bulgarian HEIs. Even in the country's largest university of economics which has an institute, a department and several dedicated entrepreneurship courses, the word 'entrepreneurship' is absent from official presentations. Additionally, those HEIs which offer entrepreneurship do not publish information about this on their main websites.

In order to create 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 needs to be developed. The most difficult barriers to overcome are likely to be the intellectual or ideological beliefs of academic staff, which come from misperceptions and myths about the meanings, values and purposes of entrepreneurship. To overcome these, effective leadership needs to:

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

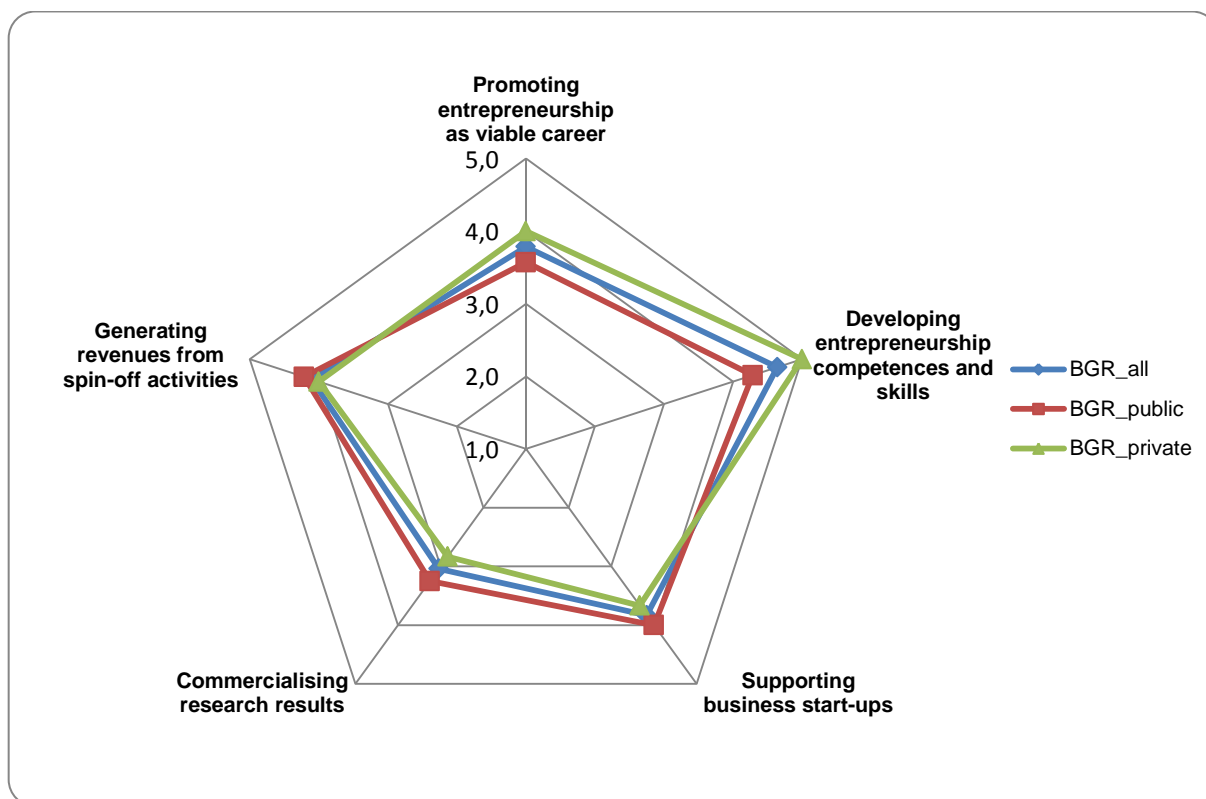
Absence of a long-term national policy framework that guides and support innovation and entrepreneurship

The existence of a long-term national policy framework that guides and supports innovation and entrepreneurship is key to establishing and sustaining institutional commitment within HEIs. This 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 ample potential to foster innovation and entrepreneurship in HEIs. The surveyed HEIs were asked about the importance of five different aspects of entrepreneurship promotion (promoting self-employment and entrepreneurship as 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). They rated all of these between moderately important and important. The results received revealed entrepreneurship as a viable career for graduates. The comparison of private and public HEIs reveals little or 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.

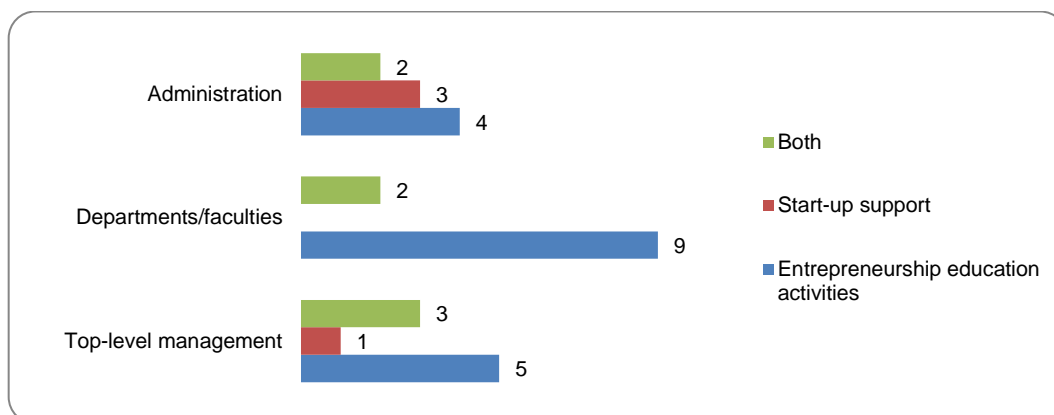
Notes: Questions ST05; (n=20, one response per line).

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, both at the university management level and in faculties and departments. Many universities across the OECD area have established specific posts to take responsibility for entrepreneurship promotion. These should be at senior management level, within faculties, departments and other units. Initially, this may be a part-time role, moving over-time towards creating a small team of dedicated individuals, including external ambassadors.

More than half of the surveyed HEIs had assigned tasks related to entrepreneurship promotion to their staff (Figure 2). Most of the positions were for entrepreneurship education activities, 11 at the level of department and faculties, 8 in top-level management and 6 in the administration. Positions for both entrepreneurship education and start-up support within top-level management were found in 3 HEIs.

Figure 2. Positions in entrepreneurship promotion



Notes: Questions ES08 (n=17, one response per line); ES16 (n=12, one response per line).
 Source: OECD HEI Leader Survey Bulgaria (2014).

In all cases, the appointment of HEInnovate project co-ordinators in the HEI is an indicator of commitment from the senior management

Too much still depends upon the motivation of individuals

Currently, many promising initiatives are carried out by individuals. It is not enough to rely on individual enthusiasm and commitment; more needs to be done to build a common support framework that brings together individual initiatives, and facilitates their growth. This would support people who initiate activities that exemplify the innovative and entrepreneurial HEI agenda. Examples, which include interdisciplinary education activities allowing students from different faculties/departments to learn, create, experiment, test and apply new technologies, should be publicly recognised and rewarded.

The principle of academic autonomy enables the rector to define strategy, guidelines, and objectives for the development of their institution. The rector can make decisions, including decisions for promoting entrepreneurship in all its aspects and dimensions. It is important to include entrepreneurship as one of the criteria in the system for assessing the quality of education.

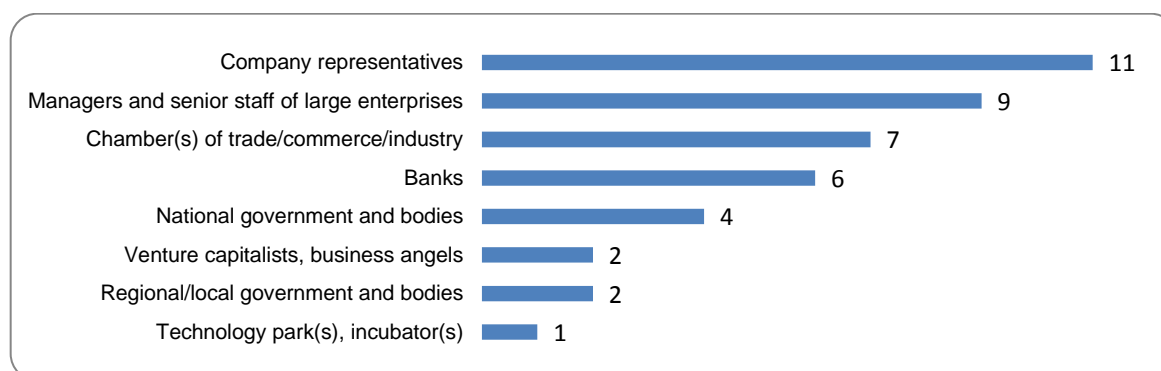
In practice this autonomy is sometimes used as a shield against public pressure for change.

Involvement of externals in governing boards

A truly innovative and entrepreneurial HEI is also perceived as such by its external stakeholders. Achieving this is 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. It requires a clear strategy, proactive leadership and incentives for externals if they are to engage effectively and contribute to HEI core matters and control mechanisms.

The majority of surveyed HEIs in Bulgaria reported having multiple external organisations represented on their governing boards. Mostly these were company representatives and owners/senior managers of large firms. The second prevalent group comprised business representative organisations (e.g., Chambers) and banks. Technology parks, venture capital providers and business angels were only represented on the board of two HEIs (Figure 3). Key actors in the emerging start-up ecosystem in Bulgaria, e.g. co-working space initiatives such as betahouse, and venture capital funds, such as LUNCHub and ELEVEN, have few or no contact HEIs.

Figure 3. Involvement of externals in HEI governing boards

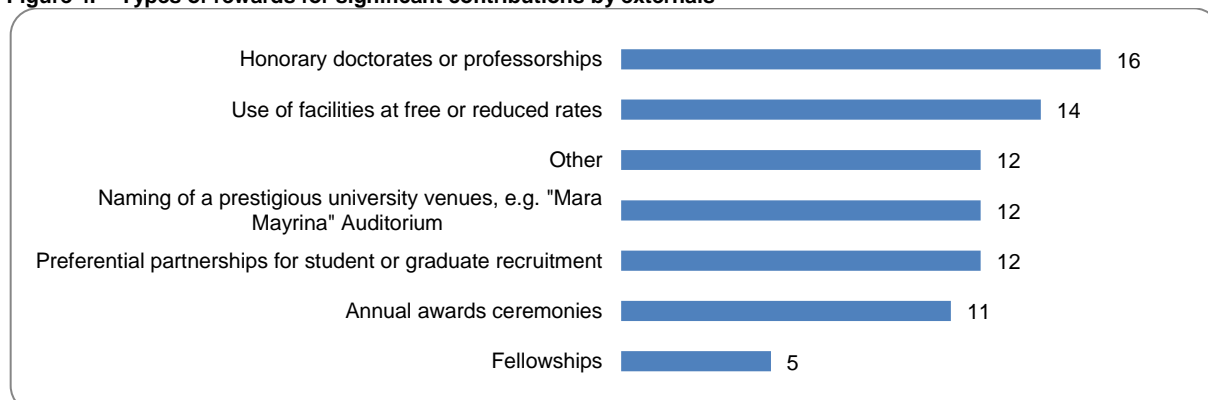


Notes: Questions: ST15; (n=13, one response per line).
Source: OECD HEI Leader Survey Bulgaria (2014).

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 follows 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 forms of reward to recognise and sustain their contribution to the entrepreneurial university. This process is institution-specific and depends upon the overall strategic focus of the university and its financial resources.

All HEIs have the capacity to offer rewards/recognition for external stakeholders who provide significant contributions to university development. Honorary doctorates/professorships and the use of facilities at reduced or free rates were the most offered types of recognition (Figure 4). Many have established boards of trustees to assist in the design of study programmes, provide financial/material resources (laboratories and equipment), and help the HEIs to reach 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/business partners to design training programmes meeting their employment needs can be an effective way to establish strategic partnerships with key local organisations. 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. One aspect of this has been the establishment of a board of trustees, which includes key local players who have a say in the definition of the HEIs 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 number of ad-hoc experts offer further education and training courses to enrolled students, including PhD students, staff members, and alumni of higher and secondary education. These education activities promote employability and 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. 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 Bulgarian engineering graduates find jobs abroad, or in big international IT companies in Bulgaria. The very negative opinion of Bulgarian employers about universities affects 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 coming decades the global economic landscape will change drastically and so will global and local job markets. This creates 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 are establishing strategic mechanisms to steer knowledge partnerships towards more sustainable contributions to graduate employability and employment and hence the competitiveness of local industry. However, specific 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. Total decentralisation prevents the university from developing common policies for fostering interaction. The currently practiced 'decentralised approach' indicates the absence of common criteria through which 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, (the latest one is currently pending) provides a wide-range of autonomy to HEIs. Areas of autonomy includes the postulation of procedures and activities, selection and appointment of academic staff, student admission requirements, teaching methods, curricula development, definition of research projects, 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 is given for 3- 6 years. There is always a follow-up accreditation process. HEIs perceive the accreditation process as being too bureaucratic, equivalent to 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/industry, and academics from abroad in the evaluation panels. This is also requested 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 emerging opportunities in the local economy are burdensome and costly. Adjustments during the accreditation time are difficult to organise. 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. The results seem to be better for private HEIs, but there is no systemic approach. The focus appears to be on lifelong learning activities rather than 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 main economic leaders. The creation of an advisory board with key national and international experts in higher education reform, innovation systems, and entrepreneurship promotion in HEIs, is recommended. The establishment of thematic working groups, involving HEI representatives, should be considered in order to ensure expert knowledge and know-how is represented and wide involvement of the HEI community is achieved. 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 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 would 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,

including HEInnovate in the key performance indicators, applied by NEEA and the University Ranking should be considered.

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 also implies 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. This approach requires the allocation of sustainable human and financial resources, provision of an 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 provide a good starting point. Examples include get-togethers with informal updates from 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.

It is also important to establish ways to increase graduate retention in the university's surrounding economy. Collaboration should be sought with local industry to allow students to practice research with real-life applications and to offer more interdisciplinary learning environments, consequently increasing graduate retention in the local economy.

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 Vice-Rector, or senior management post, 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. This council would advise and support the HEI in building trust, achieving its mission and vision and designing a roadmap to become one of the drivers of entrepreneurship and development in the local/regional economy.

The HEI should respond positively to the suggestions of the Strategy Council. Meetings, should be structured as they are in the corporate world and conducted every trimester. This includes preparing concrete proposals with the required supporting 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 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 in 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 with spin-off potential and for 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 Jülich (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 in universities to build an infrastructure for providing skills and support for technology and knowledge-based innovative ventures. To 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 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, the entrepreneurial HEI competition, started.⁹In April 2010, 83 HEIs submitted project proposals. Of these, 24 received short-term funding to prepare a full proposal for a funding period of three years. In July 2011, 10 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

⁹ The OECD LEED Programme participated in the development of the selection criteria and was part of the jury.

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

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. In order to cover their living expenses, the entrepreneurs receive a grant between EUR 800 - 2,500 per month, depending on their degree, for a maximum period of 12 months. In addition, they receive materials, equipment (worth EUR 10,000 for solo start-ups and EUR 17,000 for team start-ups) and funding for coaching (EUR 5,000) and, if applicable, child benefit (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 enable research teams at universities or research institutes to collect proof to support the case for the technological feasibility of their product idea, as a pre-cursor for preparing the business start-up. The funding can be used for 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. The maximum funding period is 18 months in the pre-start-up phase.

During the second funding phase, the newly founded technology companies can be supported with up to EUR 150,000 to continue the product design, e.g. creating a prototype and to secure external funding for their company.

Contacts: Email: ptj-exist-forschungstransfer@fz-juelich.de

What can be learned from EXIST?

The EXIST project line Culture of Entrepreneurship is very relevant for the Bulgarian context. This is a highly effective approach for stimulating organisational change and developing the innovative and entrepreneurial HEI, because of the:

- Involvement of all HEIs in a competition and coordination framework. EXIST organises twice yearly thematic workshops and conferences. These are hosted by different HEIs.
- Creation of a network of "doers" and researchers. Conferences are organised every year and result in the development of informal platforms and communities of practice.

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

Knowledge Antennas in southern Catalonia¹⁰ (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 existence 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. They also oversee programme 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 activity are

- 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;
- 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.

¹⁰HEInnovate case studies, accessible at www.heinnovate.eu

What can HEIs in Bulgaria learn from this example?

The knowledge antennas have been key facilitators in 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 to the Bulgarian context because of the:

- Effectiveness in strengthening links with industry and businesses through skills development (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 URV's research and teaching networks
- Encouraging of third mission activities amongst the URV community.

Council for Entrepreneurship at the Universidade Nova de Lisboa (Portugal)¹¹

The approach

The Universidade Nova de Lisboa (NOVA), created in 1972, is a decentralised University, with 5 Faculties, 3 Institutes and 1 School located in three different municipalities: Lisboa, Oeiras and Almada. NOVA's academic and research units enjoy a high level of autonomy. NOVA has around 19,000 enrolled students, 1,450 academic staff, 769 non-academic staff and 237 researchers. 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 the region. In 2006, it established a Council for Entrepreneurship¹². Since 2013, this has been chaired by Mr. Buchannan. All the units (Faculties, Institutes and School) of the university have a seat at this Council, so can participate in all the decisions related with activities of entrepreneurship. This has been established to ensure the involvement of the whole university and foster true multidisciplinary work. Connection with the university leadership is guaranteed by Vice Rector João Crespo, who is in the rector's team and responsible for this area.

NOVA and its Council for Entrepreneurship provide an example of how to develop shared knowledge on what is going on inside the university, especially new developments related to entrepreneurship. The participation of different disciplines enables an interdisciplinary approach. The novelty of having this Council chaired by a person from outside the university while having the Vice Rector in charge of the area establishing the liaison with the leadership of the university has added to the impact of this council.

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 emphasise that Mr. Buchannan is not a staff member of the NOVA.

¹¹ This learning model was written by Maria Helena Nazare. The author can be contacted at mhnazare@ua.pt.

¹² <http://www.unl.pt/en/entrepreneurship/>

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 relating to all the initiatives relating to entrepreneurship.

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

Having a well-known person from outside the university, with a recognised track record in support and development of entrepreneurship at national and international level, in the role of Chair of the Council for 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 reaches out to all faculties at NOVA.
- Having a prominent personality as Chair of the Council for Entrepreneurship has attracted key players in the entrepreneurship and innovation ecosystem.

CHAPTER 3

ORGANISATIONAL CAPACITY, PEOPLE AND INCENTIVES¹³

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 development of the bold and creative thinking 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 for universities is important for future development. Identification of different funding sources is the first step. This needs to take into account when, and for how long, these sources will be available. Following on from that, universities need to identify areas which are actively 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.

Building organisational capacity requires HEIs to be actively aware of the different training needs of their staff. A good starting point is to map the competencies and skills required by an innovative and entrepreneurial HEI against the current competencies and skills in the organisation. Faculty at all levels (doctoral students, postdocs, professors, non-academic experts) and in all discipline areas may need training.

There is the need to be creative in order to find ways to gain the interest of external stakeholders. This is very important in the Bulgarian context where the enterprise world shows a rather pessimistic view on the role and capacities of universities as partners for development.

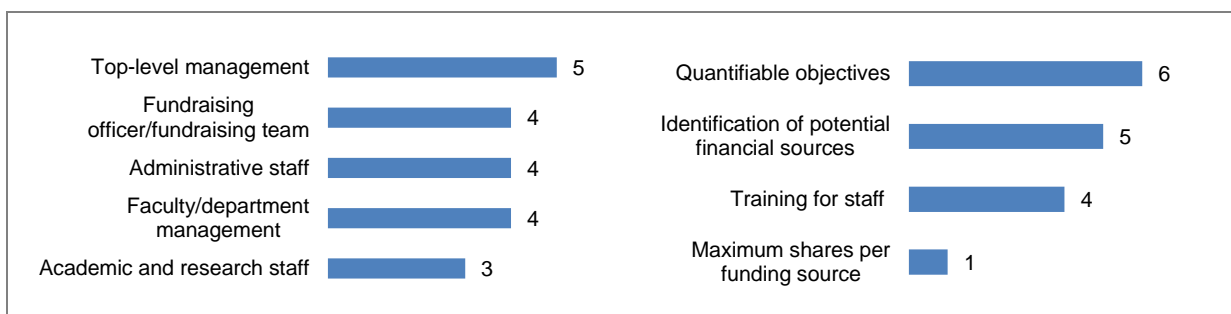
Findings

Active fundraising is practiced

Except for one, all surveyed HEIs reported active fund raising in form of donations, co-financing from individuals, businesses, charities and governmental agencies. 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 regularly identify potential sources of financing. Fundraising training for staff was provided only in four HEIs.

¹³ Maria Helena Nazare was the main contributor to this chapter.

Figure 5. Organisation and support practices in fundraising



Notes: Questions FI02 (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 not yet fully integrated into the wider HEI strategy. Cases exist where faculties earn money from participation in outreach projects and activities. However, it is not standard practice to have common policies for overheads, caps on additional income and reduction of workload across the institution. Common policies can have significant impact on promoting interaction with the business world as well as preventing over-use of time and university facilities. Changing existing decentralised funding mechanisms into a coherent, institution-wide financial strategy is essential for institutional development. However this is likely to raise opposition from faculties, departments and units. Incentives and rewards can help to overcome this opposition and to generate buy-in from all staff.

For 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 information within the organisation to facilitate external communication and avoid duplication of fundraising efforts. Some of this information is held by staff involved in externally (co-)funded projects and not readily available in the higher education institution. The establishment of an institution-wide database, which can be fed and read by all staff, can help to share and update this information.

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

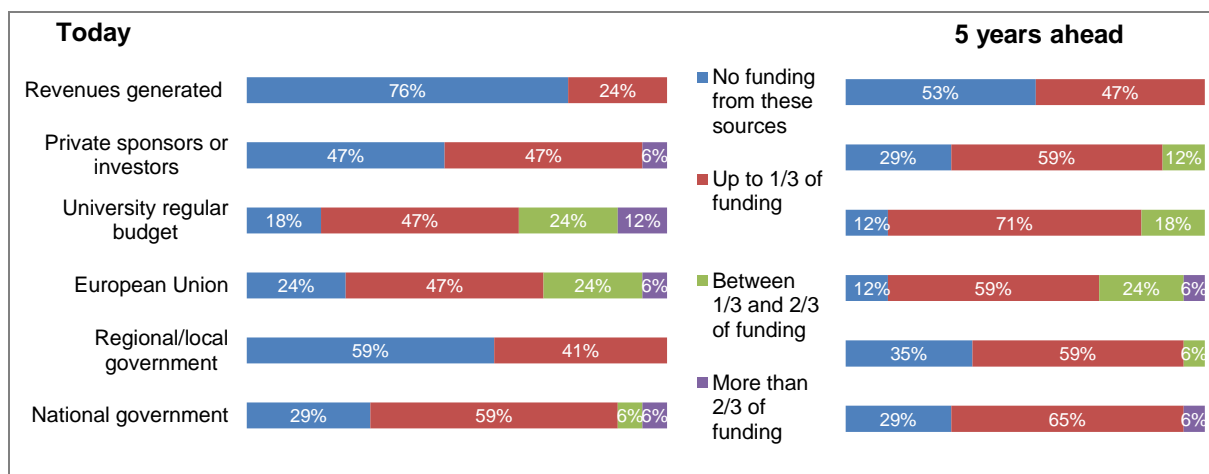
Multi-source funding for entrepreneurship promotion activities

All HEIs surveyed reported using a variety of funding sources for their entrepreneurship promotion activities. All have five-year forecasts which predict a significant increase in funding from private sponsors, investors and the regular HEI budget in addition to revenues generated from these activities. (Figure 6).

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

Currently, 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 both short-term and time-bound availability of resources. This leads to the risk of 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 in an entrepreneurial HEI. Ideally, they 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.

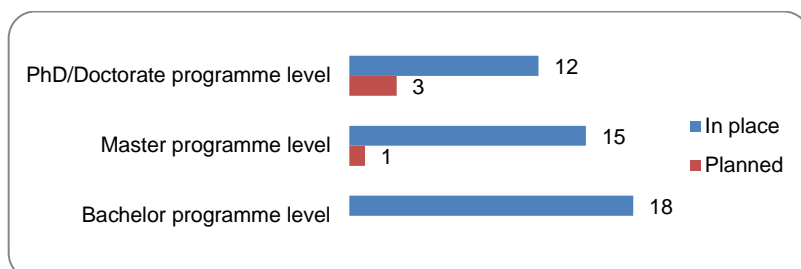
The background research revealed that in Bulgarian HEIs a key barrier to the efficient utilisation of staff capacity is the weak connections and relationships between the different HEI units, and the lack of information exchange. There are cases where staff from one study programme do not know about the activities and results of other study programmes in the same faculty.

Poor collaboration between university units hampers internal integration as well as external collaborations. Effective leadership can make a difference. This became obvious in those case study HEIs where leadership actively promotes communication and organisation-wide exchange. Cross-departmental exchanges in teaching and research also appear to be effective.

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 12 at doctoral programme level (Figure 7). Creating interdisciplinary learning and research environments is a core task in the entrepreneurial university. Issues of local/global societal relevance, such as global warming, waste management, demographic change and the use of smart appliances can be used to promote interdisciplinarity in teaching and research. There are examples of this in Bulgarian HEIs.

Figure 7. Interdisciplinary study programmes

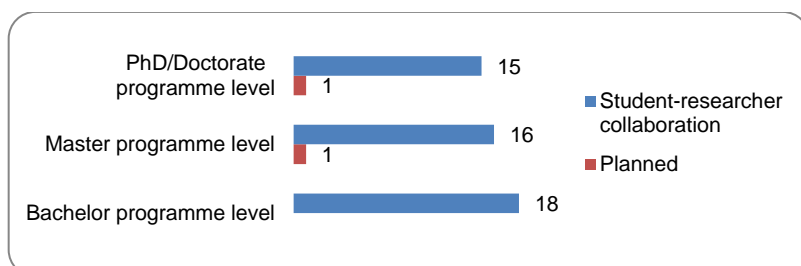


Notes: Questions TL01 (n=20, one response per line. Source: OECD HEI Leader Survey Bulgaria (2014).

Interdisciplinary education activities can be constrained by higher-tier curriculum requirements (e.g. 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 competitions.

Traditional barriers can be overcome by the promotion of student-researcher collaborations (other than final graduation theses.) This is offered by most of the surveyed HEIs at Bachelor level (18), and less often in Master and Doctoral studies (Figure 8).

Figure 8. Student-researcher collaboration beyond final thesis



Notes: Questions TL02 (n=20, one response per line. Source: OECD HEI Leader Survey Bulgaria (2014).

All of the case study HEIs reported having interdisciplinary research teams, often supported by EU (co-) funded trans-national projects. The following examples show 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, with the aim 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 work 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 Faculty of Mining Technology. Around 3,500 students study in 17 BA programmes, 34 Master programmes, and a number of doctoral programmes (11-17). The University organises regular events to coordinate its teaching and the research activities of 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 DutchShell, Italian MultiEurope and 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.

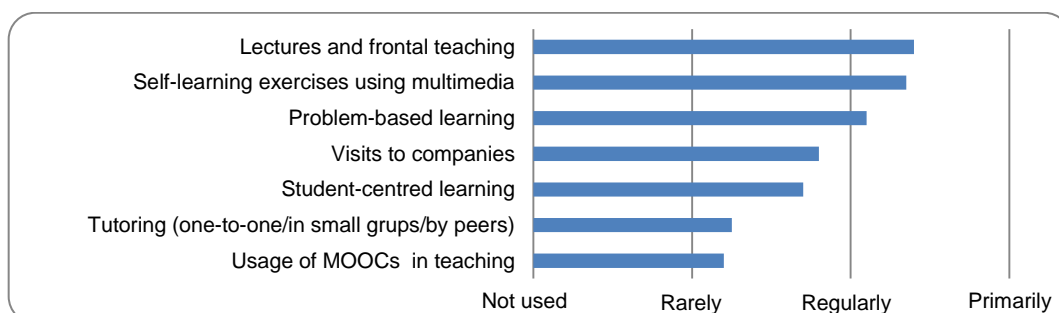
Students are a key part of this. The small-size of the university and its narrow focus are considered by HEI leadership as key enablers for the involvement of students in research activities early on in their studies.

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). Self-learning exercises using multimedia and problem-based learning are also widely used. Less 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. Possible solutions include the flipped classroom and a wider range of electives for students to choose from each academic year. Current procedures for updating teaching content are conservative. Whilst

there are fields where it is unrealistic to expect teaching to cover the latest industrial trends, there is anecdotal evidence that there are lecturers who continue to deliver lectures created 20 years ago.

The volume of information, which is freely available on the Internet, e.g. TED, Coursera, Khan Academy, MIT, has produced new channels of learning. These new channels of learning test traditional student-teacher relationships. The 'flipped classroom' concept is a reaction to this. Students are tasked to 'discover' more of their own learning and to use online sources in place of conventional lectures. This changes the role of the teacher from being an instructor to a facilitator of learning.

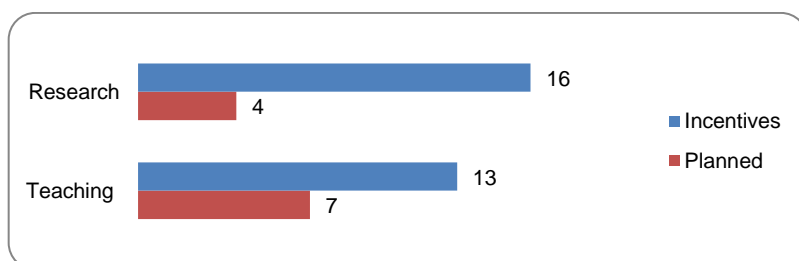
HEIs in Bulgaria need to increase their attractiveness to energetic, competent, ambitious teachers and researchers. Private sector experience is not widely considered as a recruitment criterion. Only 9 of the surveyed HEIs stated that prior experience in the private sector is taken into consideration in the recruitment of teaching and research staff. A further 3 were discussing this in their governing boards.

...will require incentives and training opportunities

There are a few very promising examples of the flipped classroom being used by motivated teachers. It is important that HEI leadership identifies these practices and promotes them across all faculties as good practice through active acknowledgement and provision of resources.

In the surveyed HEIs excellent performance in research was rewarded more often than excellence in teaching (Figure 10). There is, however, movement in promoting quality teaching. 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).

Some educators will initially feel uncomfortable 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 which are student-centred, including problem-based learning and experience orientated education. Educators need to understand the impact on students of non-traditional pedagogies and the requirements for practicing these in terms of preparation, resources, and approaches to learning outcome assessment. This requires time, the availability of training and teaching material in addition to 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 lack. Training opportunities should therefore be offered to all staff, including administrative staff. Administrative staff can play a core, often over-looked 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, chosen by the HEI, takes into account existing relationships, co-ordinates across departments, faculties and other units, and avoids duplication of work inside the university and within the surrounding entrepreneurial ecosystem..

Figure 11. Coordination models for entrepreneurship promotion in HEIs

Dedicated unit	Professors	Entrepreneurship Centre
<ul style="list-style-type: none">• Close links to senior management• Often part of rector's or vice rector's office	<ul style="list-style-type: none">• "Entrepreneurship" professors• Chair entrepreneurship and innovation	<ul style="list-style-type: none">• Easy access to students, staff, alumni and externals• Greater visibility of entrepreneurship

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 Forestry, Sofia
- 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 aim to establish well-functioning entrepreneurship centres. The University of Forestry and the University of Ruse are part of the list above, 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 Idea www.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, launched in 2011, was 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 through small projects implementation, including social innovation
- Re-engineer the process of higher education using the concept of business models as a platform

Establishing Brand Idea as an all-campus initiative meant overcoming administrative barriers and the re-writing of syllabi and study programmes. 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, in Russian and English, and also various business simulation activities related to marketing, innovation management and technology entrepreneurship.

Source : University of Economics in Varna.

Booster is an off-spring of the Technical University in Sofia. This is a student-led initiative at TU which works towards establishing a student-run entrepreneurship centre. Often student-led initiatives have the advantage of achieving 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 from different backgrounds - a co-working space / incubator for the new ventures
- Organise education courses aiming to increase motivation and knowledge in the importance of start-ups and the steps of starting-up a business
- Provide information about potential sources of financing, business partners, certification of productions, including IP rights
- Establish working connections with real business to foster the implementation of TU innovations
- Create a network of committed mentors and investors, ultimately to 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 LaunchHUB, Eleven, the Association of Business Clusters in Bulgaria, the Economic Chambers, JA Bulgaria and various government offices.

Classes are offered in the early evening 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 "cohort" has already graduated. Applications for the second course were so numerous that parallel classes have been 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 is to develop 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 increasing HEI networks, creating research links, updating syllabi and involving key industry experts in teaching. Bespoke further education offers and research contracts can provide an additional revenue channel. At all case study and surveyed HEIs, efforts are underway to institutionalise alumni relations, e.g. through the 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 are an underutilised potential for the HEI. Career centres and alumni associations have only been formed 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. This needs to be sufficiently resourced and provide 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 should be supported. Furthermore, training possibilities should also exist for those academic staff, who would like to contribute to the organisational change agenda. In-house training is often a less resource intensive option for the university (budget) and individual staff (time). In-house training can increase collaboration across units. Internships and temporary placements (secondments) in businesses and business support organisations are also possible training opportunities. 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 for contributions to the entrepreneurial agenda should be available at an individual level as well as at faculty/department level. The development of a framework of indicators to measure interactions, and the establishment of a policy of incentives and light rules for engagement is recommended. Incentives do not need to be additional salary, e.g., support for participation in conferences, for acquisition of software or hardware, scholarships for students, reduction of teaching load are usually well received.

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 both inside and outside the HEI.

The student associations in Bulgarian HEIs should be actively involved 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. This 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. They can 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 reward 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 conferring awards on external stakeholders including entrepreneurs, regional bodies and associations and alumni. Where awards and other recognition mechanisms exist, regulations need to be checked as to whether they allow the recognition of entrepreneurship achievements as a 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 in helping the HEI to understand how their curriculum can be improved. Graduates are the best ambassadors of their alma mater and can contribute useful suggestions. Many are keen to contribute; their perceived value in the job market is strongly linked to the reputation of the university from which they obtained their degree. Alumni can help deliver the message to potential students that studying in the institution leads to great jobs. Alumni also carry great 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 the HEI. Alumni should be actively involved in knowledge exchange activities. There are different ways for this, such as:¹⁴

(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	...

¹⁴ Read more in the HEInnovate Guidance note on HEI – Business/External Relationships for Knowledge Exchange; online available at www.heinnovate.eu

Stronger alumni connections can be facilitated in many ways. Examples include 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>).

Learning models

Promoting excellent performance in teaching, research and external relations: lessons learned from Rovira i Virgili University (Spain)¹⁵

The approach

The Rovira i Virgili University (URV), was founded in 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 6 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.

¹⁵ 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.

- 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.
- 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:

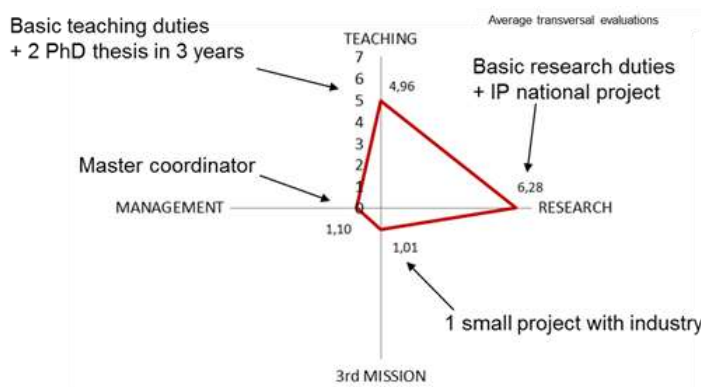
1. Teaching: credits, tutorships, merits, extra activities, examining boards.
2. Research: merits, active projects, doctoral theses, scientific output, other research-related activities.
3. Outreach and knowledge exchange: including technology transfer, cultural activities, involvement in society and 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

Figure 12. Example of individual RASCA Valuation of annual achievements



Source: RASCA, Rovira i Virgili University

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)¹⁶

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. A total of 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 (SCE). The SCE 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. Organising the entrepreneurship support at MUAS in this form was preferred over the establishment of a single entrepreneurship chair. This approach has facilitated interdisciplinarity in entrepreneurship support. The ‘An-Institut’ choice created a problem of distance from central university management. Overcoming this has required constant strategic action in 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 SCE and prepared the ground for the institutional establishment of entrepreneurship support at the university. Anchoring and embedding entrepreneurship has been the result of a decade of cohabitation and collaboration, facilitated by the competitive awarding of public financing. Of particular importance was the SCE-MUAS partnership’s success in acquiring German federal government funding in 2007 and in 2011 (See learning model on EXIST above). The awarding of public funding was an important trigger in broadening the university-internal acceptance and support for entrepreneurship and the strategic anchoring mentioned above. It allowed for the expansion of human resources involved in the active education and start-up support activities and investment in incubation space, which increased entrepreneurship 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 as evidence that there is demand for entrepreneurship courses where support goes beyond the curricular offer. Providing incentives is needed in order for professors to play a more active role in idea scouting and realisation. Systematic training opportunities for people involved in entrepreneurship promotion are also offered.

¹⁶ Draws on a case study prepared by staff of the Strascheg Center for Entrepreneurship.

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.

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.

Contacts: Klaus Sailer, director of the Strascheg Center for Entrepreneurship and Professor for Entrepreneurship at the Munich University of Applied Sciences. Email: Klaus.Sailer@sce.de

Students boosting the commercialisation of research results at Chalmers School of Entrepreneurship (Sweden)¹⁷

The approach

There are two universities in the city of Gothenburg: Gothenburg University¹⁸, 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 in Chalmers' 16 departments. It is estimated that over a thousand research projects are conducted on an ongoing basis and more than

¹⁷ This learning model was prepared by Tomas Karlsson from Chalmers University of Technology.

¹⁸ The structure of the University of Gothenburg is that of a traditional European university, with nine faculties: Arts (subdivided into five schools), Social Sciences, Medicine, Odontology, and Science.

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 houses 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 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 the ideas that have market potential. The work of students in these teams is credit-bearing and integrated into a master's level education on technology commercialisation or entrepreneurship. It qualifies educational budget funding. 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 seems 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)¹⁹

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 (a large body 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 highest 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 responsibilities that are not explicitly attributed to other areas.

¹⁹ This learning model was prepared by Maria Helena Nazare. The author can be contacted at mhnazare@ua.pt

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 there is a considerable level of interaction between the university and the regional economy. This is reflected in the university engagement with local enterprises and their associations, in the extensive 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 most clearly observed in its increasing interaction with regional SMEs in training and 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 enterprise 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. This is combined with a set of incentives for 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 2010, these services (except the science park) were coordinated and developed their functions under the same direction and reported to the same Vice Rector. However, due to their activities, funding and staff growth, it was decided to separate them into different entities. Currently they have separate functions and they develop joint initiatives and cooperation in specific areas.

The "CPI Business Circle" is an initiative of the City of Innovation, the science park, in Valencia and UPV. It is a customer loyalty plan with the aim to maintain and increase the interaction with enterprises which are already customers and partners of the university. The main beneficiaries of this activity are 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 services exclusively for its partners. These include sectorial enterprise meetings, an e-bulletin and a one-stop-shop for enterprise partners seeking services at the UPV. Also, enterprise members of the Business Circle are entitled to receive 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 combined with an 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 only 10% of any additional external funding payments to individuals that have a contractual relation with the university.
2. *Contractual conditions allowing income from external sources.* Academic staff are entitled to develop research activities through the university and receive 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 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 IP costs from their projects' funding, they are allowed to receive up to 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.
- Create a number of different incentives to motivate staff to contribute to entrepreneurship activities

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

CHAPTER 4 TEACHING AND LEARNING²⁰

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 will 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’ are of specific importance. These learning strategies need strong support by the HEI leadership, qualified facilitators with entrepreneurial background and external networks in 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 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

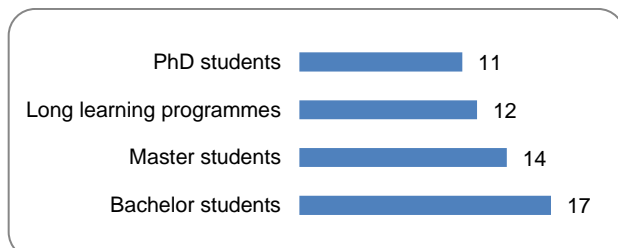
Almost all of the surveyed HEIs (17 of 20) reported that they were currently offering entrepreneurship education activities that aim at fostering opportunity recognition, idea generation, and/or increase the motivation and knowledge about self-employment and starting-up and running a business. Half of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

All of the HEIs offer entrepreneurship education activities at Bachelor level, but little more than half of them offer these activities for doctoral students (Figure 12). Some universities also offer full study programmes on entrepreneurship, such as for example the University of Ruse, which offer a

²⁰ Gerald Braun was the main contributor to this chapter.

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

Figure 13. 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 it appears that the objectives of the entrepreneurship education offered are not explicitly formulated and differ between educators. They range from knowing about competing theories of entrepreneurship to the 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 understanding of entrepreneurship is concentrated on 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, business economics and 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.

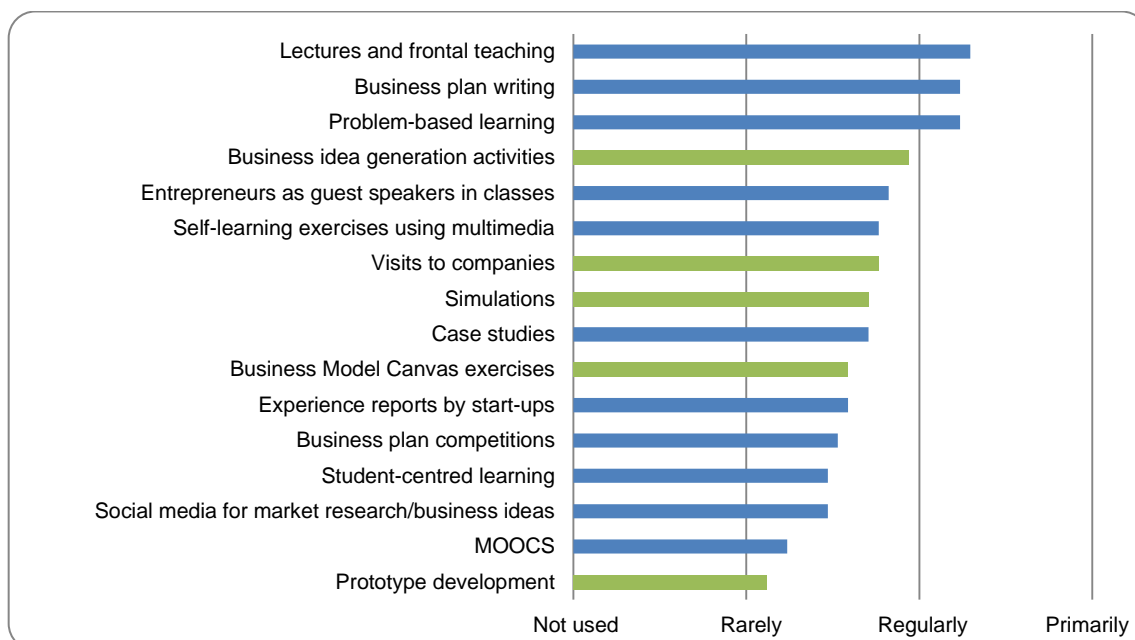
Only half of the HEIs currently offering entrepreneurship education activities had a formal evaluation practice in place. Where this was the case, a specific questionnaire was used. Only one HEI reported to use a focus group approach.

A mix of teaching styles but a focus on frontal teaching

The surveyed HEIs reported a mix of teaching methods being used in the entrepreneurship education activities. Most predominant were lectures and face to face 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 less common.

Of the surveyed students, who had already participated in an entrepreneurship education activity offered at a Bulgarian HEI, 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, and prototype development activities. All of these are currently only rarely used at HEIs (Figure 13).

Figure 14. Offer and demand for teaching methods in entrepreneurship education



Notes: Questions EE07 (n=17, one response per line), OECD HEI Leader Survey Bulgaria (2014); in green, student answers from 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.

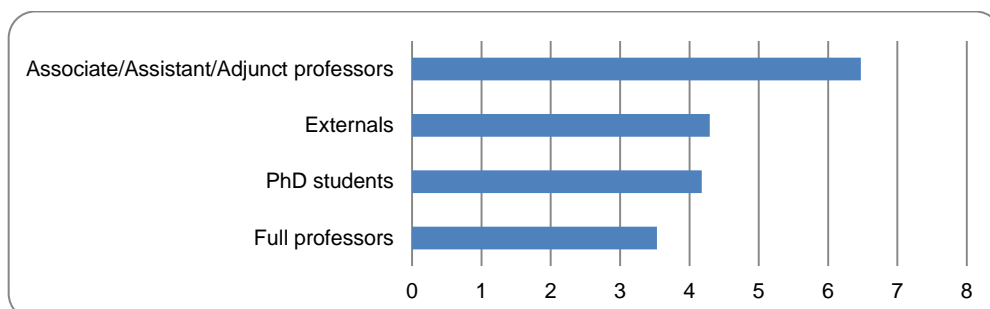
Entrepreneurship educators with different profiles

Currently the academic staff members who teach entrepreneurship are often economists, not always with a specific basic background or training in 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 are often motivated by the opportunity to spot and recruit talented students.

Figure 15. Teaching staff in entrepreneurship education



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

At all the 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).

Entire courses can be co-delivered or team-taught by academics and practitioners. This offers 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 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 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, especially for external contributors, 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. 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, 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 the 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. In this example 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. Within 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 add immense value to teaching, research and the university's societal engagement activities. For example, involvement of students in designing

the formats and content 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 for 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 promising initiatives in Bulgaria and in the neighbouring countries. 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 of the higher education institution, would like to offer activities to this end. This could include a combination of (i) introduction of 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.

A multitude of software programmes is available for academic entrepreneurship education, in particular for (i) business plan writing and (ii) business simulations using a competitive team base. Many are freeware. Pedagogical research demonstrates that blended learning approaches (combination of classroom teaching, consultancy with software) motivates entrepreneurship students and generates good results. This innovative methodology should be tested and, where possible, implemented in entrepreneurship courses.

Successful entrepreneurship education is based on a pedagogical approach that is the opposite of 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.) are needed. To develop the necessary competences for entrepreneurship education, training of trainer courses (by external facilitators) should be carried out, preferably not just for one HEI but for a network of those universities engaged in a 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" paradigm shift 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. These should be adapted according to students' local needs (keywords: action learning, needs and student-centred learning approaches, participatory teamwork, facilitators from the business community as trainer.) Development and implementation of entrepreneurial soft skill development should be supported by orientation in (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 students 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 Educators²¹

The approach:

Since 2006, Poland has been conducting "grassroots" activities to support academic initiatives for implementation in educational programmes within the field of entrepreneurship. This led to the creation of an informal Innovative Academic Entrepreneurship Education Network www.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". A total of 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 contained 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 with 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 support entrepreneurship training. However, there are examples of success such as the Warsaw University of Technology where the two

²¹ OECD (2013), *Supporting Graduate Entrepreneurship in Wielkopolska and Kujawsko-Pomorskie, Poland*, OECD LEED Programme.

entrepreneurship courses, "Innovative entrepreneurship" and "Technological entrepreneurship", were taught between 2009 and 2013.

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 Learning²²

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 based on a constructivist learning paradigm. Emphasis is on soft-skills development. Soft skills include achievement motivation, risk taking, internal locus of control, networking, and performance orientation. These can be considered as entrepreneurial hard skills. The rationale was to build an entrepreneurial class in society, to replace that which had been suppressed 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.

The key success factors of ROXI are development of 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 and 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. The format uses team-teaching using facilitators/moderators with an entrepreneurial background and entrepreneurs. Participants are selected and have to pay fees. Consultancy and follow-up after starting a business are 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.

²² This learning model was prepared by Gerald Braun. The author can be contacted at gerald.braun@uni-rostock.de

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.
- Start-up rates per training between 31% and 66%, mainly in the service sector (health, education) depending on study course, gender, actual economic situation.
- Creation of 119 sustainable high-tech firms, 292 jobs in knowledge-intensive industries, and approximately EUR 5 additional investments from the EU in the period 1998-2008.
- Selected by EU as reference project BEPART, with 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, and 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. It was designed and first proposed 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 and participants (Bachelors, Masters, EMBA's, IMBA's, and Executives) as a first awareness course in entrepreneurship.

The main objective is to develop a good awareness about entrepreneurship and the key success factors needed 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 from 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 allocated in the first half-day.
- Second half-day: Teamwork begins, preparing presentations, developing the evaluation method, making 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 present the point of view of an entrepreneur. Ideally one of the entrepreneurs whose business plans was at the heart of the case study delivers a lecture on their experience and thought processes.

The key success factors were (i) having the possibility to invite one of the business plan entrepreneurs into the classroom (ii) taking the time to brief the coaches about their role (they don't bring solutions or technical advice, but they facilitate 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 ENTREPRENEURS²³

Introduction

Entrepreneurial HEIs offer pathways and support for potential entrepreneurs, staff and students, to take innovative ideas to society and the market economy. Based on the assumption that students and staff participating in entrepreneurship education activities are often considering undertaking the additional step of starting-up a business, where 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 from outside the HEI. Establishing a well-functioning interface requires a partnership framework that defines the roles of the different stakeholders and eventually the tailoring of external support services to the particular needs of academic entrepreneurs.

Supporting entrepreneurial behaviour of students and staff can be challenging as it is unlikely to 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. availability of 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 information about their entrepreneurship promotion activities on their main website. 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/>).

²³ 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 which are part of the Global Entrepreneurship week. These activities exist in Bulgaria, e.g. the 2nd edition of the Start-up Weekend Varna in March 2014, but they seem to be organised without active support from 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 on campus. To increase outreach and impact of such initiatives more institutional support should be provided.

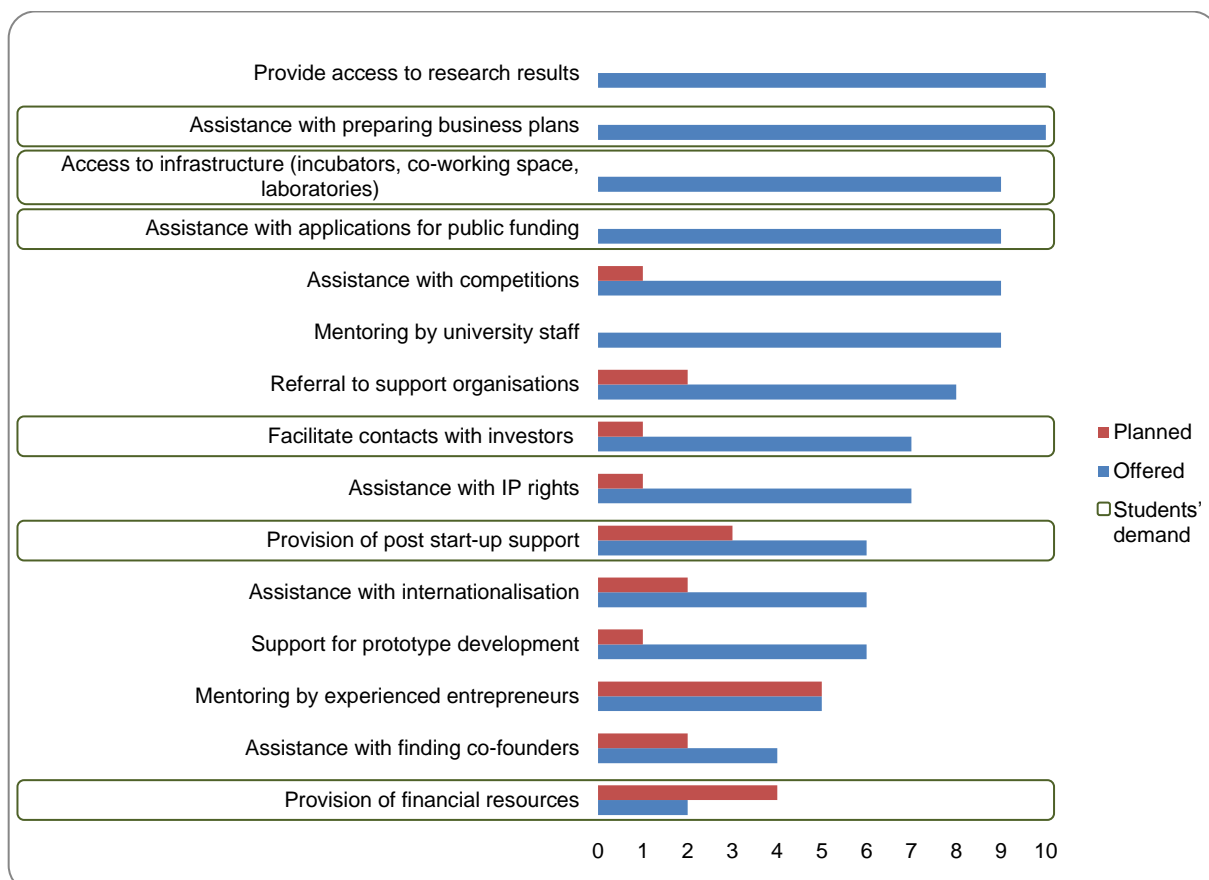
A variety of start-up support measures

Half of the surveyed HEIs stated that they currently provide special support measures for individuals or teams who are interested in venture creation. Although this is a good starting point, more needs to be done to create a systematic business start-up offer, which is easily accessible. In all case study HEIs, the observation from focus groups with students was that there is the need for more systematic start-up support in HEIs across all stages, from idea generation, to starting up a business. There is a need for role models, e.g., start-ups by former students. These should be utilised more in the official 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, more than 2/3rds of the surveyed students were interested in access to infrastructure e.g. co-working spaces and incubation facilities, assistance with funding applications, with 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.

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.

Figure 16. Offer and demand in HEI start-up support measures



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

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 an 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) were eligible. 169 applications were submitted, of which 41 were invited for an interview panel organised in the Ministry of Economy and Energy. 20 project ideas were selected 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;

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 support this kind of initiative and provide co-working spaces, which initially can act as basic premises and broadband Internet connections.

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

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

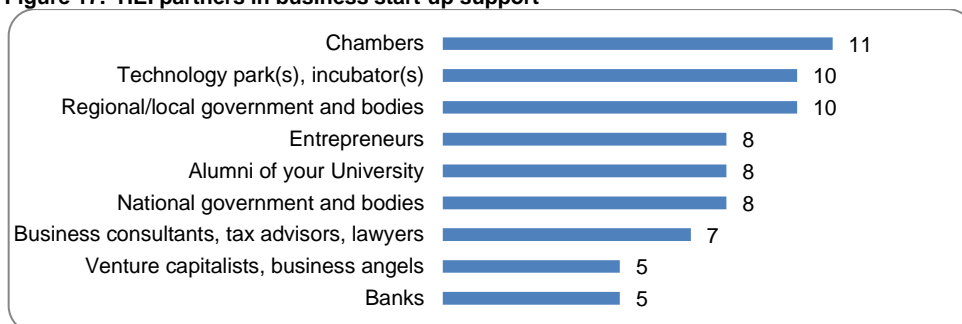
Beehive is a co-working space in Varna, that offers 24/7 access to rented office space for individuals and small teams. Rental agreements can vary between one day and more than one year for desk space, the use of broadband Internet, telephone, printing and copying facilities, and conference rooms. Co-working 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 with various external agents to deliver their entrepreneurship activities. All HEIs that currently provide start-up support (10) collaborate with the Chambers, technology parks (if applicable), and regional governments. Only half of them partnered with venture capital providers, business angels and banks. Business consultants were also not key partners (Figure 17).

Figure 17. 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 chance of new venture success through exchange of experience based tips and tricks, and access to networks. Effective mentoring can 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 staff

with entrepreneurial experience to act as mentors. Involving experienced entrepreneurs from outside requires more collaboration with the existing entrepreneurship ecosystem. Experienced businessmen and business angels are already successfully involved 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. For HEIs in Sofia the establishment of Sofiatec may change this. In the long-term it will be important to establish a knowledge intensive infrastructure in proximity to HEIs throughout Bulgaria. This will 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 to go. This keeps motivation high. HEIs need to establish more easy access points with the currently emerging, vibrant ecosystem in the country. The existing entrepreneurship centres can play a key role in this. Offering academic would-be entrepreneurs an 'address' e.g. in form of a co-working space with access to laboratories, helps to both commercialise research and 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 is located in the [Gründerwerkstatt](#), comprises 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. So far, 30 teams have won national and international competitions. The *Gründerwerkstatt* is managed by one full-time project leader, and student support staff.

New tenants are selected through a 2 stage process based on a business plan proposal submitted by either 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 interdisciplinarity of the *Gründerwerkstatt* with team members including engineers, natural scientists, lawyers, economists, historians, artists, designers, and architects. The co-working space approach has helped many teams to resolve difficulties in how to 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, e.g., for overcoming conflicts in teams.

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

CHAPTER 6 KNOWLEDGE EXCHANGE PARTNERSHIPS²⁴

Introduction

Not smallness, but loneliness can become a key challenge 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 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 from all players, combined with tangible results, can help to overcome this type of conceptual barrier and lead to recognition of the 'win-win' potential among all network players.

From the HEI perspective, knowledge exchange includes the outflow of knowledge, e.g. through research collaboration, graduation, and staff changing employment, and the inflow of knowledge, e.g. the temporary hiring of new staff, lecturers, incoming exchange students and researchers, and forms of research collaboration. Additionally, the sharing of knowledge within the HEI is a key aspect 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
- Technology transfer, e.g., licensing, selling of prototypes, spin-offs.

Findings

HEIs have difficulties in establishing themselves in the emerging innovation system

Over the last few years HEIs in Bulgaria 'opened up' towards the needs of the economy and society. However, some reservations and prejudices persist on all sides. Some HEI leaders tend to argue that it is not the HEI obligation to take labour market trends into consideration when teaching or assessing their graduates. From regular surveys there is evidence that business representatives do not believe that Bulgarian HEIs nurture entrepreneurial mind-sets and competencies. HEIs are considered to be conservative and not sufficiently receptive and responsive towards current and future labour market needs. Overall, it seems that employers apply criteria other than university titles, when looking for high skilled workers, including training certificates from renowned (inter-)national companies.

The economic value of effective knowledge exchange is much greater than just the positive impact on the private business sector. The public sector and non-governmental organisations also have

²⁴ Gerald Braun was the main contributor to this chapter.

a need for university generated knowledge, innovation and enterprising individuals e.g. in the health and education sectors, in public administration, chambers of industry, labour offices, and social services. A major building block in creating vibrant knowledge exchange communities is building communication and relationships to ensure that all sides of the network have a clear understanding of respective expectations, limitations and requirements.

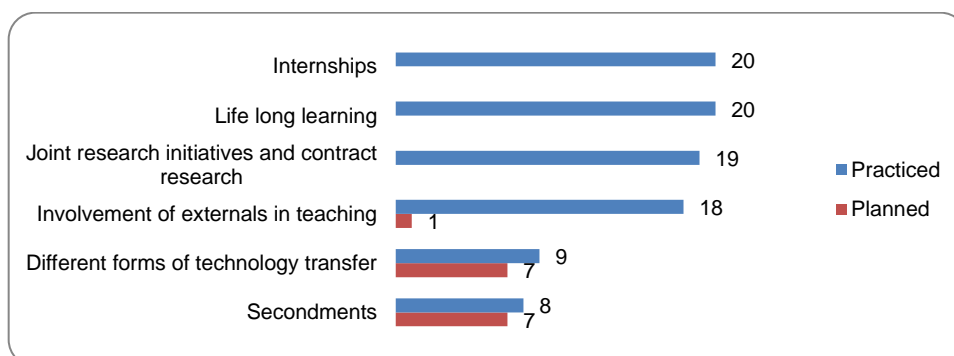
Information gathered during the study visits about barriers to knowledge exchange uncovered conflicting perspectives indicating different understandings of the higher education legal framework in the country. For example, the question of the university autonomy to sign contracts with industry and business partners, public procurement law and the law for public private partnerships, and the freedom to adapt curriculum and course content without risking non-accreditation or withdrawal of accreditation was widely raised.

Portfolio of knowledge exchange activities

Different types of knowledge exchange activities are currently underway (Fig. 18). All surveyed HEIs collaborate with external partners on internships and lifelong learning and most also collaborate on joint research and teaching activities. Only half practice different forms of knowledge transfer, such as licensing, co-patenting and spin-offs, the selling of prototypes or secondments (the temporary transfer of staff to a partner organisation.)

Many HEIs regularly organise research conferences. This can be a good starting point to encourage inflow, sharing, and co-creation of knowledge.

Figure 18. Current and planned forms of knowledge exchange



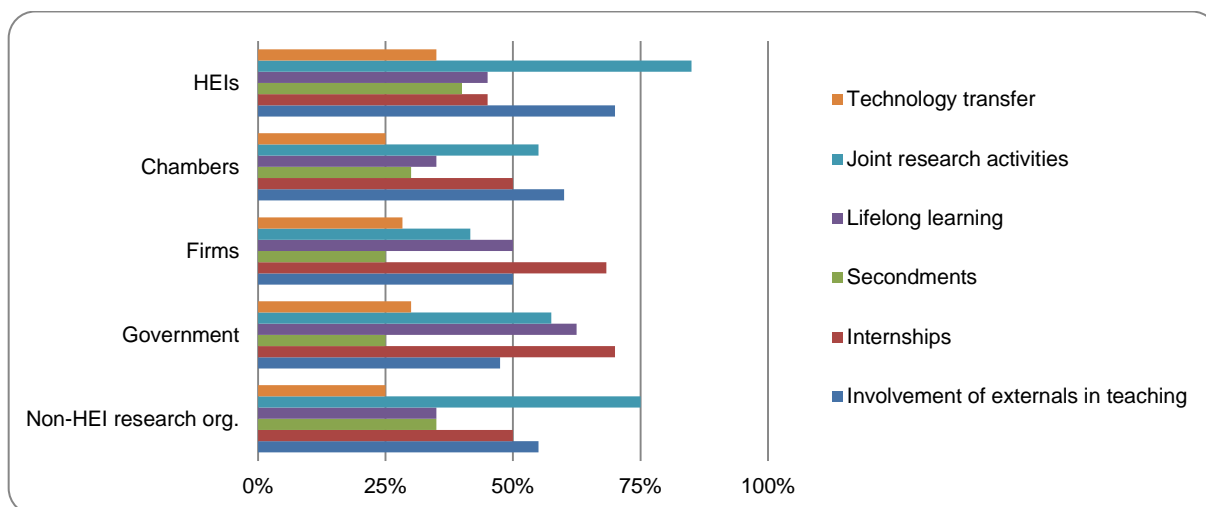
Notes: Questions KE04 (n=20, one response per line). Source: OECD HEI Leader Survey Bulgaria (2014).

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

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

Survey data confirms this (Figure 19). The predominant key partners for joint research activities and technology transfer are identified as 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. However, even for when involving externals in teaching, these a selected more often from other HEIs and Chambers than from businesses.

Figure 19. 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

The background research and the in depth review of the five case study HEIs identified many project-based knowledge exchange activities. The high number of projects (often co-financed by the European Union) can provide individual staff members the opportunity of a salary increase, however, this use of funds makes it difficult to establish institution-wide mechanisms for knowledge sharing. Benefits of this type of knowledge partnership may tend to remain at the 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. Four have dedicated sections and chapters on knowledge exchange in their official university strategy document. The majority mention 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 tends to be a matter of personal motivation rather than being "part of the job". In order to ensure organisation wide commitment, knowledge exchange should be a core area within the organisation's strategy, and incorporated into institutional policy.

Difficulties in the organisation of internships

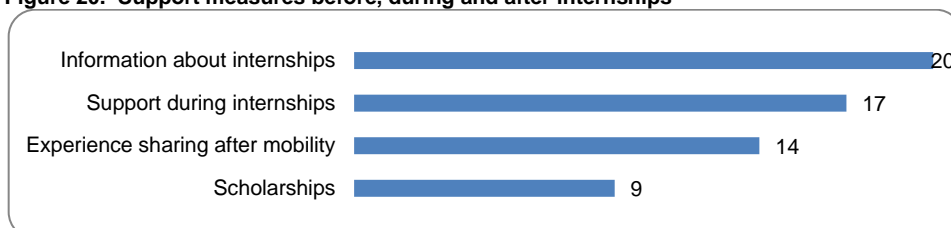
Different government programmes have been introduced to increase practice-based learning through internships. The latest initiative offers a financial reward for company tutors.

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. They feel their supervisors overload them with routine tasks and are not interested in assisting students in doing entrepreneurial project work.

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

The background research and focus groups with students suggest that HEIs have not played a key role in providing guidance and support to students during internships and in the reflection opportunities afterwards. Survey results confirm these (Fig. 20). All HEIs provide information about internship opportunities, fewer provided support during internships or facilitated experience sharing after mobility periods.

Figure 20. 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. There are fewer places offered by the career centre than there are students needing internships. When searching on their own for internship places, many students encountered situations where firms said ‘we will 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 the education process; there is no reflection on the 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 reduces the potential 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 tends to be driven by personal motivation rather than being "part of the job". There is a need for active institutional embedding of knowledge exchange activities, which recognises the importance of individual incentives, but aligns project objectives with an institution-wide strategy. To ensure organisation-wide commitment, knowledge exchange should be a core objective in 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;
- Remain adaptive to changing needs and simple and flexible enough to keep requirements for administrative work low.

Not all potential knowledge exchange partners start with a clear understanding of HEIs, how they work, culture, regulations and timelines and their possible impacts on collaboration. This limits opportunities for knowledge exchange. The establishment of opportunities where external and internal stakeholders can meet, discuss and exchange ideas, can help foster knowledge exchange. Ideally, brainstorming and idea creation activities should be expert-facilitated in order to reduce communication difficulties, and the barriers caused by use of jargon, different working styles and organisational cultures.

Different knowledge exchange activities generate different forms of measurable impact. Some activities have more tangible outcomes than others. The number of patents and licenses, and their associated revenues, 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, or collaboration on internships or secondments. This becomes even harder if these activities are not centrally organised and managed. In cases, where 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, e.g., the number of new activities and the level of sharing of information across the organisation and external partners.

Monitoring and evaluation of knowledge exchange activities starts with mapping the people and organisational units exposed to, and involved in, knowledge exchange activities and distinguishing between different types of activities in order to understand 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. Some core questions are given below.

- **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 to those actively involved in activities? How widely is the intellectual property policy within the organisation understood?
- **Participation:** To what extent are staff and students engaged with local businesses and society, e.g. 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 what 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. Students should also 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 related to academic requirements and co-tutorship arrangements, (iii) providing assistance to the intern during the internship, (iv) making sure that experience reports cover the twin objectives of reflection on the learning experience off campus, and informing other students and teachers. Host organisations, in particular small and medium-sized firms, will welcome greater student support as this reduces the firm's costs and resource allocation.

Learning model

University of Bergamo (Italy): Internship projects as a key success factor²⁵

The approach

The University of Bergamo (UniBg) is a fast growing university with around 16,000 undergraduate and Master's 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, their 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 in the 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, several PhD programmes are also fully taught in English. The number of international faculty members is growing quickly with around 60 foreign professors and more than 20 visiting professors/research fellows from 15 different countries. UniBg has three campuses - humanities, economics and law, and engineering, these are co-located 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: all our graduates should be provided with more experiences, at least one of which is abroad

²⁵ 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 stakeholders are well informed about their duties and roles, which have been jointly defined.

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

- Promote high quality internships
- Design specific personal projects for each candidate
- Match companies needs with individual 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 can actively propose internship projects or react to proposals they receive from the internship office. The internship office started small and has grown to 10 staff members who take care of internships and placements. Internships are, in general, not remunerated.

The "internship project" is owned by the student and is the result of close collaboration with the academic and company tutors. It is based on a well-defined job reference role, with clearly detailed job description, 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 both student and company tutor.

The "internship personal project" is a key learning experience. Students take the lead and responsibility in designing a process which is meaningful increases the relevance of the internship to live business development. Often these projects are linked to key areas in research, organisational development, internationalisation, etc.

Recently, so-called excellence internships were introduced in the law faculty. These internships last 12 months, to provide the interns with the additional preparation needed to be meaningfully included in daily tasks. This initiative was designed in response to requirements from the labour market with respect to graduates of legal studies.

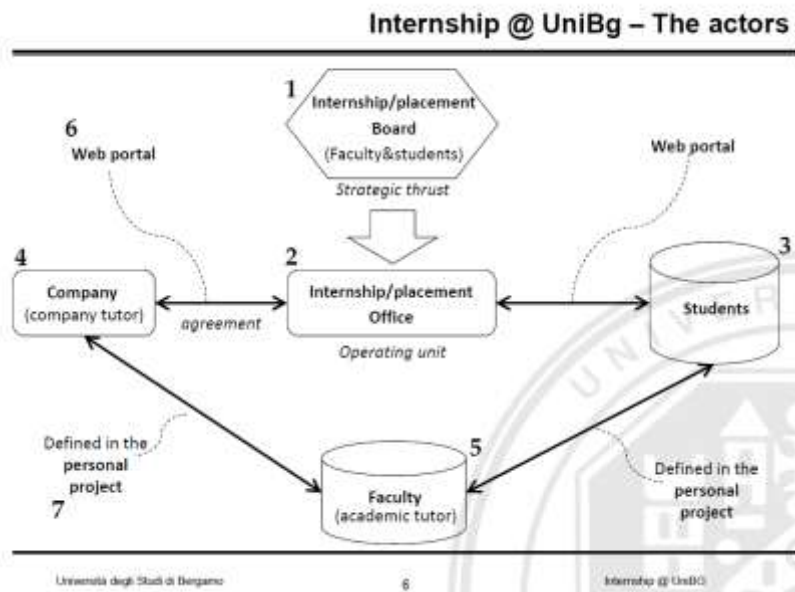
Several multinational corporations are located in the Bergamo area, such as Brembo, Gewiss, Italcem. Most of these operate in the export oriented medium-high technology manufacturing sector. The current success of internships has developed, over time, as the result of an active leadership, and in-depth research of potential areas of collaboration ("looking deep" into company needs and aims, often with the help of alumni).

UniBg currently has approximately:

- 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)

Figure 21. Internship/placement processes and actors at UniBg



Source: University of Bergamo.

What can HEIs in Bulgaria learn from this example?

The importance of the "internship project" as key enabler for learning is a potentially transferable model for Bulgaria. It gives students greater say and responsibility in designing the process and makes the internship meaningful for their studies and professional development.

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

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

Contacts: Prof. Fabio Previdi, Dipartimento di Ingegneria Gestionale, dell'Informazione e della Produzione, Università degli Studi di Bergamo; fabio.previdi@unibg.it

CHAPTER 7 INTERNATIONALISATION²⁶

Introduction

HEIs need to attract and retain excellent human capital, from home and also from abroad. To make that objective attainable, it is crucial for HEIs to recognise and use their unique selling points, e.g. their capacity to attract the academic diaspora of the country, their touristic and cultural offerings, and the opportunities they have to invite and host visiting academics from abroad.

The attractiveness of a HEI to international staff comes from both the quality of the employment on offer and the existence and attractiveness of cultural amenities e.g. 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 find it difficult to compete internationally for students and staff. HEIs which are located in less developed and less attractive localities are likely to suffer from these contextual barriers. Strong local partnerships, involving local government and key local players, including internationally active companies and international corporations help. Other higher education institutions located in the same city/region can make a difference in raising the appeal of universities to foreign staff, by providing attractive opportunities in addition to the basic employment contract. In Bulgaria, the beautiful Danube, mountain resorts, the Black Sea and a lower cost of living can be used as attractive incentives.

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 for an HEI to develop the capacity to deal with the many questions and issues that staff and students may face concerning international mobility. In particular for 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 can also 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 individuals, 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, as well as the 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. It can be used to prepare students and staff for international mobility, enhance sharing of experiences, and organise virtual exchange activities between the home university and international partner organisations.

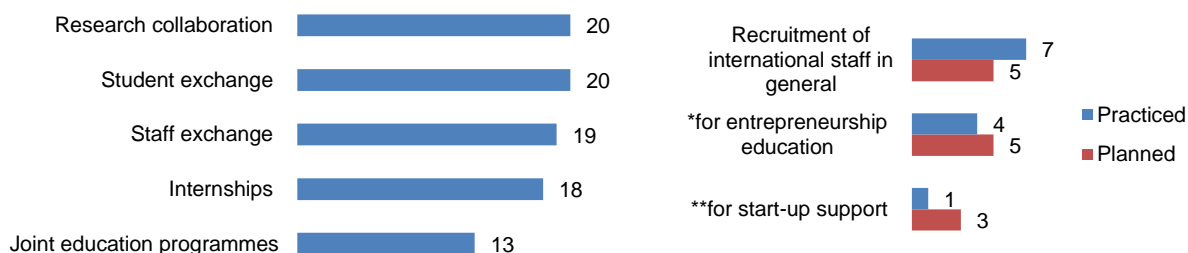
²⁶ Maria Helena Nazare was the main contributor to this chapter.

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. 22).

Figure 22. 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 include 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 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 the numbers of foreign staff very low. Reasons given in the case study universities include language barriers and low wages. None of the case study universities has significantly invested efforts in building their attractiveness to 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, e.g. in the Danube region, have been particularly successful in utilising their geographic location for strategic international collaboration efforts as well as local development initiatives. 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. This develops an entrepreneurial approach to their positioning in the national/international scene by working on applied research fields which are strategic for the future.

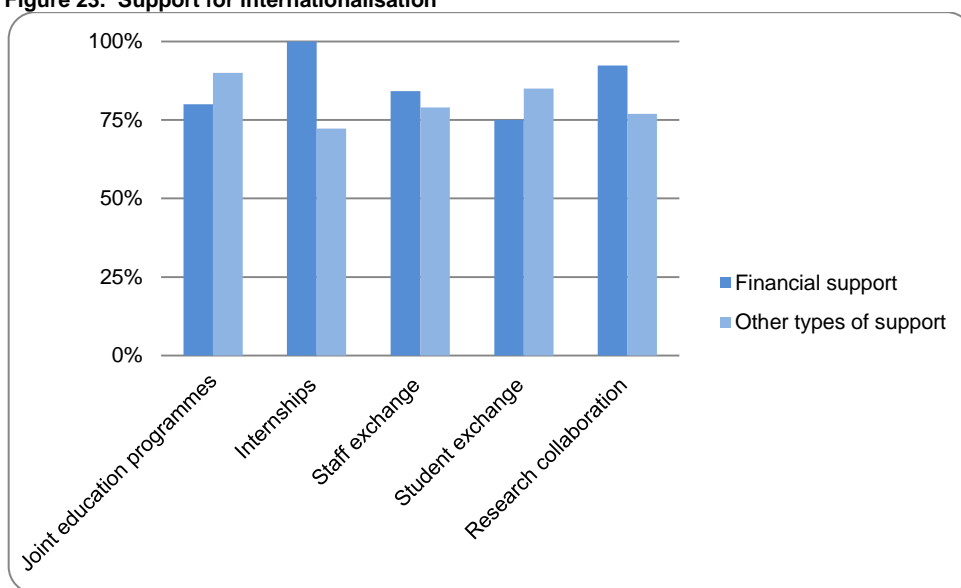
More institutional structures and support are needed

International mobility requires a specific support infrastructure and long-term dedicated resources for 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 responsible for international mobility 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 resources are offered at the surveyed HEIs (Figure 23). All HEIs stated that they provide financial support for international internships, but not all provided other types of support. However, these additional resources are very important to ensure wider knowledge impact across the HEI.

Figure 23. 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 their official HEI strategy document. The majority mention internationalisation throughout their strategy documentation 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 effort into 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 might agree to spending a sabbatical or a few months in their homeland in order 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 after-work courses in Bulgarian and in English can be very useful and have an effect not only on the mobility numbers but on the performance of exchange staff and students.

Learning model

Internationalisation strategy at the Polytechnic University of Valencia (Spain)²⁷

The approach

Internationalization at the Polytechnic University of Valencia (UPV) depends mainly upon the Rector'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 promotes cooperation, learning, teaching and research with an international dimension. In addition to 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 increase international cooperation through exchange visits and collaboration agreements.

Several functional units provide guidance and support regarding foreign academics, researchers and students who are willing to spend their international experience with UPV. This can be through short or long study periods, summer schools, teaching or research stays, international projects, etc.

These four functional Units include:

- [International Exchange Programmes Office \(OPII\)](#): coordinates the participation of UPV in 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 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 of exchange, and advertising their existence, facilitates mobility.

²⁷ 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 a straightforward endeavour. Major obstacles lie deep in the higher education system.

In Bulgaria it seems that HEIs are overwhelmed 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 is to contribute to it, constructively.

To this end, the following recommendations are proposed:

A national-level HEInnovate committee should be established,

This committee would include senior representatives from the Ministries of Education and Science, Economics, and Labour and Social Affairs, the Rectors Conference, and the main economic agents (Chambers, and the entrepreneurship ecosystem). The objective of a 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 should be competitive. Key areas of fundable projects should be defined by the national-level HEInnovate committee, taking into account 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 the following recommendations in the Rectors Conference is suggested. It is understood that some of these 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, an analysis is needed of the strengths and weaknesses, opportunities and threats, involving the entire university community, including students, alumni, and key external partners. This implies defining and building a common understanding of what being innovative and entrepreneurial means to the university. Another key decision is how this understanding can/should be linked with the socio-economic situation of the surrounding local economy. 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 an innovative and entrepreneurial agenda, HEIs should establish a Vice-Rector, or senior manager post, 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 designing a roadmap to be a driver 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 actively supported and resourced, to provide 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 be created for those 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 public audiences inside and outside of 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 conferring awards on 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. Their perceived value in the job market is strongly linked to the reputation of the university where they obtained their 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 to know what to do and where to go. This keeps motivation high. Offering academic would-be entrepreneurs an "address", for example in form of a co-working space with access to laboratories, not only helps to commercialise research, but also helps to build lasting bonds with entrepreneurial alumni.

Increase the institutional embedding of knowledge exchange activities.

Without clear and vocal leadership promoting collaboration, knowledge exchange can become a matter of personal motivation rather than being "part of the job". Taking into consideration the importance of individual incentives is 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, and 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 the people and organisational units exposed to, and involved in, knowledge exchange activities, distinguishing different types of activities in order to establish 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 on 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 low number of double degree programmes 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.

HEInnovate Leader Survey – questions illustrated in this report’s figures

Figure	Questions and items		Page
1	ST05	<p>Are the following objectives for the University? 0/1/2/3/4</p> <ul style="list-style-type: none"> • Promoting self-employment and business start-up as a viable career option to students • Developing entrepreneurial competences and skills in students • Supporting business start-ups by staff • Supporting business start-ups by students • Commercialising research results through technology transfer • Generating revenues for the University from spin-off activities, i.e. businesses which have economic or research links with the University 	27
2	ES08 ES16	<p>Do you have positions related to [Entrepreneurship education or Special support for start-ups] activity in ...? separated answers for Entrepreneurship education and Special support for start-ups</p> <ul style="list-style-type: none"> • Top-level management • Departments/faculties • Administration 	28
3	ST15	<p>Which of the following organisations/individuals are represented on the University’s governing bodies ? Yes/No</p> <ul style="list-style-type: none"> • National government and bodies • Regional/local government and bodies • Chamber(s) of trade/commerce/industry • Technology park(s), incubator(s) • Banks • Venture capitalists, business angels • Company representatives (e.g., owners, managers) • Managers and senior staff of large enterprises 	29
4	ST16	<p>Does the University provide recognition and rewards for external stakeholders, who provide significant contributions to the development of the University? Yes/No</p>	

Figure	Questions and items		Page
	ST17	<p>What kinds of rewards are these? Yes/No</p> <ul style="list-style-type: none"> • Honorary doctorates or professorships • Fellowships • Use of facilities at free or reduced rates • Annual awards ceremonies • Preferential partnerships for student or graduate recruitment • Naming of a prestigious university venues, e.g. “Mara Mayrina” Auditorium • Other 	
5	FI02	<p>How is fundraising organised in the University? Yes/No</p> <ul style="list-style-type: none"> • Fundraising is the responsibility of top-level management. • Fundraising is the responsibility of unit management. • Fundraising is the responsibility of academic and research staff. • Fundraising is the responsibility of administrative staff. • There is a fundraising officer/fundraising team. 	39
	FI03	<p>With regard to fundraising, does the University ...? Yes/No</p> <ul style="list-style-type: none"> • Set quantifiable objectives • Identify potential financial sources • Set a maximum shares per funding source • Provide training for staff involved 	
6	ES10	<p>What is the approximate ratio of the different funding sources the University uses to finance [concrete activities to promote entrepreneurship]? Answers from 0 to 100%</p> <ul style="list-style-type: none"> • Project-specific funding from the national government • Project-specific funding from the regional/local government • Project-specific funding from the European Union • University regular budget • Private sponsors or investors • Revenues generated from these activities (e.g., royalties, licenses, shares,etc.) 	40

Figure	Questions and items		Page
	ES11	<p>Looking ahead for five years what ratio do you expect to come from the following sources for financing [concrete activities to promote entrepreneurship]? Answers from 0 to 100%</p> <ul style="list-style-type: none"> • Project-specific funding from the national government • Project-specific funding from the regional/local government • Project-specific funding from the European Union • University regular budget • Private sponsors or investors • Revenues generated from these activities (e.g., royalties, licenses, shares,etc.) 	
7	TL01	<p>Are there interdisciplinary study programmes at the University at...? Yes/No</p> <ul style="list-style-type: none"> • Bachelor programme level • Master programme level • PhD/Doctorate programme level 	41
8	TL02	<p>Does the University offer education activities that include project-related collaboration between researchers and students other than final graduation theses at...? Yes/No</p> <ul style="list-style-type: none"> • Bachelor programme level • Master programme level • PhD/Doctorate programme level 	
9	TL04	<p>To what extent are the following teaching methods used at the University? Not used/Rarely used/Regularly used/Primarily used/Don't know</p> <ul style="list-style-type: none"> • Lectures and frontal teaching • Problem-based learning • Internships • Visits to companies • Self-learning exercises using multimedia (digital learning environments) • Student-centred learning • Usage of MOOCs (massive open online courses) or online courseware (e.g. MIT) in teaching • Self-production of online lectures/courses • Tutoring (one-to-one/in small groups/by peers) 	42

Figure	Questions and items		Page
10	TL03	Are there formalised processes to identify and reward excellent performance in teaching? Yes/No/No, but discussed in the University's governing bodies	43
	KE01	Are there formalised processes to identify and reward excellent performance in research? Yes/No/No, but discussed in the University's governing bodies	
13	EE02	<p>You've stated earlier that the University currently offers entrepreneurship education activities. For which of the student groups are these offered ?</p> <ul style="list-style-type: none"> • Bachelor students • Master students • PhD students • MBA students • Students in life long learning programmes 	58
14	EE07	<p>To what extent are the following teaching methods currently used in the entrepreneurship education activities at the University? Not used/Rarely used/Regularly used/Primarily used/Don't know</p> <ul style="list-style-type: none"> • Experience reports by start-ups • Entrepreneurs as guest speakers in classes • Lectures and frontal teaching • Problem-based learning • Visits to companies • Forms of work-based learning other than internships and company visits • Self-learning exercises using multimedia • Use of social media (e.g., blogs, Facebook, Linked-in, Xing, Twitter) to develop market research skills or generate business ideas • Business plan writing • Business idea generation activities • Case studies • Simulations or direct application: How to start an entrepreneurial initiative (i.e. business, project, association) • Simulations or direct application: How to further develop an ongoing entrepreneurial initiative (i.e. business, project, association) • Simulations or direct application: How to internationalise an entrepreneurial initiative (i.e. business, project, association) • Business Model Canvas exercises • Prototype development • Business plan competitions • Student-centred learning • Usage of MOOCs (massive online open courses) or online courses (e.g., Coursera, MIT) in teaching 	60

Figure	Questions and items		Page
		<ul style="list-style-type: none"> • Self-production of online lectures/courses 	
	C003*	<p>Please rate the following teaching methods. Good as it is/Should be improved/Should be introduced/Don't think this is useful/Don't know</p> <ul style="list-style-type: none"> • Experience reports by start-ups • Entrepreneurs as guest speakers • Visits to companies • Use of social media (e.g., blogs, Facebook, Linked-In, Xing, Twitter) to develop market research skills or generate business ideas • Business plan writing • Business idea generation activities • Case studies • Simulations or direct applications of how to start/grow an entrepreneurial initiative (i.e. business, project, association) • Business Model Canvas exercises • Prototype development exercises • Business plan competitions • Massive online open courses (MOOCs) or online courses (e.g., Coursera, MIT) in teaching 	
15	EE08	<p>How many teaching staff are at present involved in the entrepreneurship education activities?</p> <ul style="list-style-type: none"> • Full professors • Associate professors • Assistant professors • Researchers • PhD students • Externals 	61

* This question is found in the HEInnovate Student survey

Figure	Questions and items		Page
16	SU02	<p>You've stated earlier that the University currently offers special support measures for individuals or teams, who are interested in starting-up a business. What special support measures are currently offered at the University? What do you plan to offer? Yes/No/No, but planned</p> <ul style="list-style-type: none"> • Mentoring by experienced entrepreneurs • Mentoring by university staff • Support for prototype development • Assistance with patents and intellectual property • Assistance with business plan or start-up competitions • Assistance with preparing business plans • Assistance with applications for public funding • Referral to external business support organisations • Provide access to research results • Assistance with finding co-founders • Assistance with internationalisation • Access to infrastructure (incubators, co-working space, laboratories) • Provision of financial resources • Facilitate contacts with investors (banks, venture capital and business angels) • Provision of post start-up support 	70

Figure	Questions and items		Page
	C008*	<p data-bbox="349 169 2038 229">Please rate the following special support measures. Good as it is/Should be improved/Should be introduced/Don't think this is useful/Don't know</p> <ul data-bbox="398 272 1249 767" style="list-style-type: none"> • Mentoring by entrepreneurs • Mentoring by university staff • Support with prototype development • Assistance with patents and intellectual property issues • Assistance with business plan or idea competitions • Assistance with preparing business plans • Assistance with applications for public funding • Access to research results • Assistance with finding co-founders • Assistance with internationalising the start-up initiative • Access to infrastructure (incubators, co-working space, laboratories) • Provision of financial resources for start-ups • Contacts with investors (banks, venture capital and business angels) • Post start-up support 	
17	ES13	<p data-bbox="349 807 2038 868">With regard to the [concrete activities to promote entrepreneurship], does the University maintain strategic contacts to the following organisations/individuals? Entrepreneurship education/Start-up support/Both</p> <ul data-bbox="398 911 981 1295" style="list-style-type: none"> • National government and bodies • Regional/local government and bodies • Chamber(s) of trade/commerce/industry • Technology park(s), incubator(s) • Other universities • Alumni of your University • Banks • Venture capitalists, business angels • Entrepreneurs • Managers and senior staff of large enterprises • Business consultants, tax advisors, lawyers 	72

* This question is found in the HEInnovate Student survey

Figure	Questions and items		Page																																																															
18	KE04	<p>Knowledge exchange can take on various forms. The focus can be on teaching, research or any form of strategic collaboration. Which of the following are currently practiced at the University or are planned to be introduced? Yes/No/No, but discussed in the University's governing bodies</p> <ul style="list-style-type: none"> • Systematic or ad-hoc involvement of external stakeholders in teaching • Collaboration on internships • Collaboration on secondments, that is, academic staff is loaned on a temporary basis to a partner business or public sector organisation. • Continuous learning and further education programmes for local industry and public sector organisations • Joint research initiatives and contract research • Different forms of technology and knowledge transfer (licensing, copatenting, selling of prototypes, spin-offs) 	75																																																															
19	KE21 to KE28	<p>Which of the following are currently knowledge exchange partners of the University?</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="width: 35%;"></th> <th style="width: 10%; text-align: center;">Involvement in teaching</th> <th style="width: 10%; text-align: center;">Collaboration on internships</th> <th style="width: 10%; text-align: center;">Collaboration on secondments</th> <th style="width: 10%; text-align: center;">Continuous learning</th> <th style="width: 10%; text-align: center;">Joint research</th> <th style="width: 10%; text-align: center;">Technology and knowledge transfer</th> </tr> </thead> <tbody> <tr> <td>Non-university research centres</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>National government and bodies</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Regional/local government and bodies</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Small and medium-sized firms</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Large firms</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Multi-national corporations</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Chamber(s) of trade/commerce/industry</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> <tr> <td>Universities</td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> <td style="text-align: center;"><input type="checkbox"/></td> </tr> </tbody> </table>		Involvement in teaching	Collaboration on internships	Collaboration on secondments	Continuous learning	Joint research	Technology and knowledge transfer	Non-university research centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	National government and bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Regional/local government and bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Small and medium-sized firms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Large firms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Multi-national corporations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Chamber(s) of trade/commerce/industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	Universities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	76
	Involvement in teaching	Collaboration on internships	Collaboration on secondments	Continuous learning	Joint research	Technology and knowledge transfer																																																												
Non-university research centres	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
National government and bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Regional/local government and bodies	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Small and medium-sized firms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Large firms	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Multi-national corporations	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Chamber(s) of trade/commerce/industry	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
Universities	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>	<input type="checkbox"/>																																																												
20	KE10	<p>What does the internship programme include? Yes/No</p> <ul style="list-style-type: none"> • Access to information about mobility opportunities • Continuous support during mobility • Incentives to share experiences after mobility • Scholarships 	77																																																															

Figure	Questions and items		Page
22	IN01	<p>Are the following currently practiced at the University? Yes/No</p> <ul style="list-style-type: none"> • Bilateral or multilateral international joint education programme/s (e.g., double degree programme/s) • International Student exchange programmes • Internships abroad • International research collaboration projects • International staff exchange programmes 	83
	IN04	Does the University have recruitment policies and practices that seek to attract international staff ? Yes/No	
	EE09	Does the University have recruitment policies and practices that seek to attract international staff for the entrepreneurship education activities? Yes/No/No, but discussed in the University's governing bodies	
	SU06	Does the University have recruitment policies and practices that seek to attract international staff for the special support services? Yes/No/No, but discussed in the University's governing bodies	
23	IN02	<p>Does the University provide financial support for these practices (e.g., scholarships and grants, loans, etc.) or does it facilitate application to external financial support providers?</p> <ul style="list-style-type: none"> • Bilateral or multilateral international joint education programme/s (e.g., double degree programme/s) • International Student exchange programmes • Internships abroad • International research collaboration projects • International staff exchange programmes 	84
	IN03	<p>Does the University provide any other type of support for these, apart from financial support?</p> <ul style="list-style-type: none"> • Bilateral or multilateral international joint education programme/s (e.g., double degree programme/s) • International Student exchange programmes • Internships abroad • International research collaboration projects • International staff exchange programmes 	