

## **EUROPEAN AND NATIONAL MEASURES IN SUPPORT OF PUBLIC-PRIVATE PARTNERSHIPS IN HIGHER EDUCATION**

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**Abstract.** The improvement of higher education and its transformation into a source of economic growth and innovation is a shared priority for the EU countries. Public-private partnerships are a successful mechanism that increase and motivate the sharing of resources, knowledge and achievements in response to the underfunding of the higher education institutions and improves the efficiency and effectiveness in spending public resources. In the Bulgarian higher education sector, PPPs are an underutilized opportunity in key areas such as research and development and innovative cooperation between the universities and the business sector. In the context of the benefits of PPPs in higher education, the article summarizes the leading European instruments designed to enhance the role of universities in the area of research and innovation. By assessing the implementation of key existing opportunities at national level and summarizing the reasons for the “modest” local capacity for effective use of the designated funding, the article focuses on the need for establishment of an institutional environment that encourages partnerships.

**Keywords:** public-private partnership; higher education; benefits; regional initiatives; funding mechanisms

### **Introduction**

The national governments are under constant pressure to provide a wide range of public services within limited budgets frames. The financial restrains impact their abilities to conduct effective policies in major social sectors such as education that often results in public frustration and discontent. The constant pressure for increase of the effectiveness and efficiency when spending public money urge authorities to seek diverse sources that could contribute to their competitiveness and financial sustainability. The public-private partnerships (PPPs), introduced by the New Public Management in the 1990s, already proved to be a successful mechanism that could help public institutions and organizations to meet these challenges. The main purpose of these partnerships is to generate benefits for all engaged participants on

the basis of shared resources, creation and transfer of new knowledge and economic profit from the outputs of their collaboration.

PPPs are implemented in various publicly financed services for many years, but the higher education institutions only recently engage more actively in such projects. The national public policies in many developed and developing countries targeted at primary and secondary educational levels increased the demand for higher education worldwide. At the same time the universities – the major representative institutions of the higher education (HE) sector and predominantly funded by public resources, experience serious difficulties to finance their core functions related to scientific research and teaching. The PPPs become more and more attractive for both public and private sectors as their implementation, especially if related to research and development (R&D), receive increased support from key supranational and local organizations and institutions.

The main purpose of the present article is to provide a synthesized review of the European initiatives that support PPPs in HE and to assess how Bulgaria implements and benefits from the key community mechanisms. The chosen method is a desk research, based on information published in relevant survey reports and official sources. Since PPPs might be established in different forms and cover various areas of interest, the main focus is on the initiatives that support and encourage R&D collaboration.

### **Benefits of PPPs in HE**

PPPs are usually broadly defined as a long-term contractual arrangement between the public and the private sectors so as to combine their strengths. A comprehensive working definition for PPPs in education is provided by Draxler (2008) who defines multi-stakeholder partnerships as the pooling and managing of resources, as well as the mobilization of competencies and commitments by public, business and civil society partners to contribute to expansion and quality of education. They are founded on (1) the principles of international rights, ethical principles and organizational agreements underlying education sector development and management, (2) on consultation with other stakeholders and (3) on shared decision-making, risk, benefit and accountability.

Many researchers and renowned organizations point out various benefits of PPPs for the HE additional to the prior urge for financial resources (Table 1). Whether these benefits would be realized depends significantly on (Barrera-Osorio et al, 2012): (1) how well is the PPP designed, (2) on the national regulatory framework and (3) on the capacity of the government to oversee and enforce its contracts and partnerships with the private sector. These prerequisites are crucial, as the risks to the public partner can be significant (Tilak, 2016) – the business culture may overwhelm the universities and significantly alter the structure, function and values of higher education by causing serious distortions in research priorities and research findings.

**Table 1.** Benefits of PPPS in HE

Benefits for the public partner	Benefits for the private partner	Common benefits for higher education
<ul style="list-style-type: none"> <li>– Acquire additional resources;</li> <li>– Access to management and implementation expertise;</li> <li>– Growth of economic relevance of education and reaching specific target groups;</li> <li>– Innovation and diversity of education provision;</li> <li>– Introduction/Increased use of technologies in the learning environment;</li> <li>– Cost reductions;</li> <li>– Speed and efficiency in project execution;</li> <li>– Outsourcing of non-core assets;</li> <li>– Higher chance of employment after graduation;</li> <li>– Risk transfer.</li> </ul>	<ul style="list-style-type: none"> <li>– Enhanced corporate image and prestige / social responsibility;</li> <li>– Proximity to decision makers of the public sector in a non-commercial context;</li> <li>– Market penetration / reduced costs for same;</li> <li>– Accessible information about public sector planning;</li> <li>– Access to technologies, knowledge and resources;</li> <li>– Gaining competitive advantage and diversification of product portfolio;</li> <li>– Option for testing new products and innovation as well as their marketing effectiveness;</li> <li>– Recruiting custom-trained employees.</li> </ul>	<ul style="list-style-type: none"> <li>→ – Increased financial resources;</li> <li>Increased participation rates in HE;</li> <li>Overcome public service operating restrictions such as obsolete salary scales, restrictive civil service work rules;</li> <li>Increased relevance of programs and research;</li> <li>Secure new skills that may not exist in the sector;</li> <li>– Sustainability of the outcomes.</li> </ul>

*Source:* adapted from Warasthe, 2017;LaRocque, 2011;EY-Parthenon, 2011<sup>1)</sup>

The improvement of HE is a recognized public priority – the higher share of more educated population is an investment with a high and long-term return. Knowledge and education are scalable intangible assets whose growth impact the whole society as they further contribute to various entities (spillover effect). In addition, education, technology and ideas create synergies that transform in strong incentives for businesses and governments to promote openness, sharing and partnerships. This calls for the adoption of a different type of policy that provides conditions for growth of high-value and effective intangible assets through creation, dissemination and combination of knowledge as basis for a new approach to economic growth.

The relationship between economic growth and educational qualifications and skills has been extensively studied by economics. Rising income and wealth, aspirations, changing employment patterns and career development (OECD, 1997) significantly contribute to the attractiveness of HE not only for younger people but also for those who are already an active part of the workforce.

Key drivers for the increased demand of HE are both the societal and individual benefits related with the attainment of a higher degree. The first are generally associated

with increased earnings and employability (European Commission, 2010) as personal earnings grow proportionally with the acquired degree. A search of the Organization for Economic Co-operation and Development (OECD) reveals that adults with a short-cycle tertiary education earn on average 20% more than adults with upper secondary education. For those with bachelors' degree the increase is 44 %, while for people with a master's or doctoral degree it is estimated to be 91% (OECD, 2019). The higher education degree also contributes indirectly to the individuals. The well-educated people are more likely to engage in political and civil activities, and less likely to indulge in unhealthy practices (Department for Business Innovation & Skills, 2013).

Social benefits are mainly related to the enhanced productivity that translates into higher output and incomes for the whole society (Archer, 2005). Broader economic and societal benefits also result from enhanced educational attainment and include greater social cohesion, trust, tolerance and social mobility, crime reduction and political stability. In a UK research (Department for Business Innovation & Skills, 2013) it is estimated that a 16-percentage point increase in those educated to degree level could lead to more than £1 billion annual savings in reduced crime costs in the country. Another UK study revealed that productivity in enterprises is estimated to be 30% higher if the entire workforce has a degree than if none do.

The demand for HE is raising, but the dedicated public funding is shrinking. In 2016 the OECD members spent an average of 5% of their GDP on educational institutions from primary to tertiary levels as the share of national resources devoted to HE is much smaller – 1.5% (OECD, 2019). The total educational expenditures decreased with more than two-thirds as a share of GDP in the member and partner countries of the Organization for the period of 2010 – 2016. The main reason is the slower growth of public expenditures for education compared with the GDP growth. Although the decrease was slight for the tertiary level (only 4%) in comparison to the others, it still remains underfunded. This trend is similar for the European Union (EU) Member states – the level of government expenditure on education as a ratio to GDP<sup>2)</sup> decreased over the 2001 – 2018 period from 4.8 % to 4.6 %. For 2018 pre-primary and primary education accounted for 1.6 % of GDP, secondary education – for 1.7 %, while the tertiary education only for 0.8%. In time when the demand for HE and public expectations are rising while public funds are already insufficient, the private companies become more attractive and desirable partners for the universities.

### **Regional initiatives that support PPPs in HE**

At present many universities worldwide have adapted some type of interaction with local, national or multinational industry partners. The type of interaction and its degree of intensity depends on various external and internal factors such as research capacity within the university, an industrial base involved in R&D activities, the existence of legislation and focused public policies, initiatives, structures or programs that stimulate collaborative R&D<sup>3)</sup>, etc. The EU institutions provide various instruments for support

of PPP implementation in HE as Member States (MS) could benefit from significant financial support and comprehensive guidance.

In the European strategy “Europe 2020”<sup>4)</sup>, the European commission (EC) acknowledges the crucial role of HE for the future of the EU. The Strategy’s three priorities – to achieve smart, sustainable and inclusive growth, are all related to the core missions of the higher education institutions (HEIs) – R&D and transfer of knowledge<sup>5)</sup>. The Europe 2020 Flagship Initiative is called “Innovation Union”. It supports Innovation Partnerships so as to accelerate research, developments and market deployments of innovation so as to tackle major societal challenges, poor expertise and resources and to boost the EU industry competitiveness (European Commission, 2011). If the EC manages to achieve its target – 3 % of the EU GDP to be spent on R&D by 2020, this could result in creation of 3.7 million jobs and increase the annual GDP with almost 800 billion EUR by 2025.

A recent EUROSTAT report<sup>6)</sup> reveals that although R&D expenditures in EU are increasing between 2002 – 2017, they are still below the target and reach up to 2.06% in 2017. The data strongly varies per Member States as only in seven countries the gross domestic expenditure on R&D surpassed that of China (2.13% in 2017) and in four – the reported 2.79 % in the USA. The business enterprises account for the biggest part of R&D investments (66 % in 2017), followed by the HE sector (22.1%). This confirms the important role that business has in the process – it has the means, the technological resources and is interested to invest in R&D and skilled workforce. On the other hand, universities need to expand and diversify their funding so as to ensure sustainability and competitiveness, based on quality of teaching and a broad portfolio of research and knowledge with high scientific and practical relevance. This confirms the necessity for implementation of well-designed and supervised PPPs. Despite the complexity of such endeavor that requires not only a “platonic” interest in the partnership but also in-depth, specialized expertise from both business and universities, the benefits of synchronizing their needs, resources and outputs justify the efforts and the risks. The significant societal benefits of the synergies and spillovers that these partnerships create support the development of more active and focused public policies that combine different instruments - from more comprehensive and encouraging legislation, to increased public funding for R&D.

The “Innovation Union”<sup>7)</sup> is implemented by the support of the financial instrument “Horizon 2020” – the biggest EU Research and Innovation programme ever with nearly 80 billion EUR of funding available over 7 years (2014 to 2020). Its main goal is Europe to produce world-class science, barriers to innovation to be removed and to be easier for public and private sectors to work together in delivering innovation. Horizon 2020 is open for various groups of participants – international partnerships, industry and scientists and at present two different types of PPPs are implemented under the program<sup>8)</sup>. The first represent long-term PPPs – the so-called Joint Undertakings (JUs) or Joint Technology Initiatives (JTIs), and typically involve EU, industrial association(s) and other partners<sup>9)</sup>. For example, the JTI “Innovative Medicines”, launched in 2007,

has brought together over 6000 researchers in 650 academic and research teams, 409 industry teams, 120 Small and medium sized enterprises (SME) teams, 25 teams in patient organization and 17 teams in regulatory bodies<sup>10</sup>). The second type are the contractual Public-Private Partnerships (cPPP). They are an important instrument that enables interested industry and EU to work together. To date, ten cPPPs are in place – some already dating back to 2008 (Factories of the Future, Energy-efficient buildings, etc) whilst others have been set up later when Horizon 2020 started (Sustainable Process Industry, Robotics, 5G Infrastructure, Big Data Value and Cybersecurity, etc).

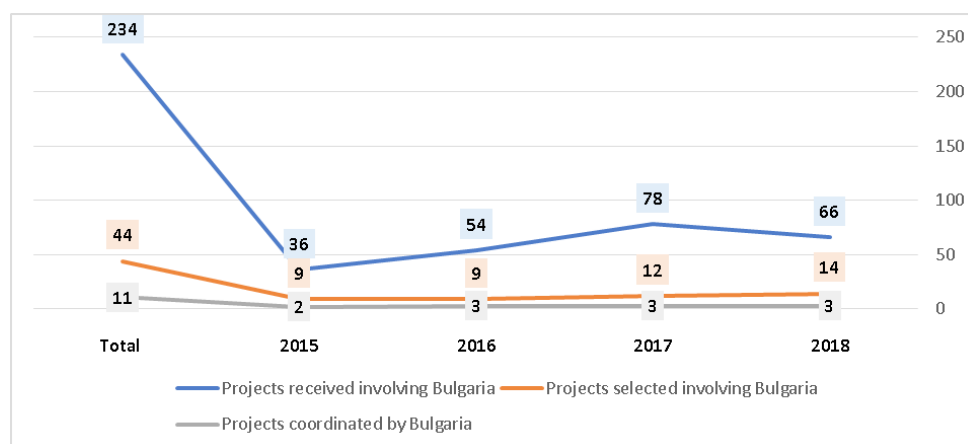
The second major EU program that contributes to the Europe 2020 Strategy and supports PPPs in HE is Erasmus+. With budget of 14.7 billion EUR, it is mainly targeted to students, but also provides opportunities for a wide range of organizations<sup>11</sup>). The program's Key Action 2 – Innovation and good practices, includes various mechanism that support PPPs such as establishment of Strategic Partnerships, Knowledge and Sector Skills Alliances, Capacity building. The business organizations and universities may engage in a number of development and networking activities, including strategic improvement of the professional skills of their staff, organizational capacity building, and creating transnational cooperative partnerships with organizations from other countries in order to produce innovative outputs or exchange best practices. The benefits include an increased capacity to operate at an international level, improved management methods, access to more funding opportunities and projects, increased ability to prepare, manage, and follow-up projects, as well as a more attractive portfolio of opportunities for learners and staff at participating organizations.

### **PPPs in HE sector of Bulgaria**

As per Cordis, the dataset that contains information related to the projects funded by the EU under Horizon 2020, in Bulgaria so far are coordinated 52 local innovation initiatives including various actors – universities, research organization, private companies, state agencies, public associations etc. The total cost of the projects amounts to 64.4 million EUR, as 60.3 million EUR are provided by the EU<sup>12</sup>). The latest country data<sup>13</sup>) shows that Bulgaria is far behind the EU average rates with reference to participation – ranks 20 out of 28 MS, and share of received funding – ranks 23 out of 28 MS. Although more than 5000 applications are submitted from Bulgaria for participation in Horizon 2020 projects, the success rate is 10, 8 % that is under the EU average (12,16 %). The data reasons the EC categorization of the country as a “modest” innovator with rate of research and innovation (R&I) of 0,8 % compared to the EU average of 2,1 % (ranks 24 of 28 MS).

The participation parameters of Bulgaria in the other key programme – Erasmus+, reveal analogical trend. Although the country slightly increased its participation and approval rates for the period 2015 – 2018 (Figure 1), it still ranks far behind the top beneficiaries with reference to Capacity Building in Higher Education action (CBHE) projects (European Commission, 2020). They are part of the Programme's Key action 2

that support PPPs in HE and are aimed at modernizing and reforming HEIs, developing new curricula, improving governance, and building relationships between HEIs and business enterprises. With a total of 2971 applications submitted for the period, those involving Bulgaria are 234 and only 44 were approved. For comparison, the received applications that involve the top programme country with reference to participation – Spain, are 1165 as the approved projects are almost six times more (250) than those involving Bulgaria (European Commission, 2020).



Source: adapted from European Commission, 2020

**Figure 1.** Capacity-building for HE projects – Bulgaria

The participation of Bulgaria in the Jean Monnet initiative, part of the Erasmus + program aimed to develop EU studies by supporting Modules, Chairs, and Centers of Excellence, reveal the same unsatisfactory results. For the reviewed period (2014 – 2018) the data shows that the country is not among the top contenders. The applications from Bulgaria represent only 0,7 % (33) from the overall received applications (4 838) as only seven projects were approved. For comparison, the application from France and Italy were respectively 585 and 558, as 157 were the approved projects for each country.

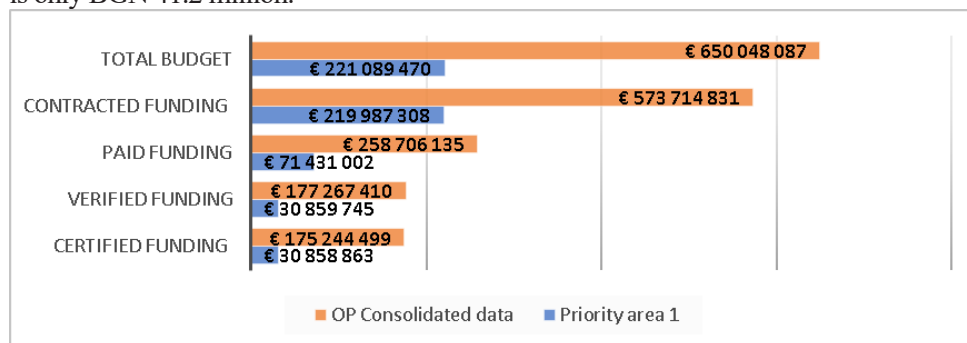
The reasons why the EC defines Bulgaria as a “modest innovator” and the poorest performer in the EU include structural underfunding, difficult procedures to access project funding, fragmented funding in different areas, poor connections between science, education and business, and lack of strategic focus of the interventions in the area<sup>14)</sup>. To overcome these negative trends the county has been granted with 650 million EUR under Operational Program (OP) “Science and Education for Smart Growth” 2014 – 2020. The OP aims to increase significantly the R&D funding, mobilizing both public and private investments with a focus on research excellence, provision of systemic support to market-oriented R&D activities and development of leading research centers.



The interim OP reports reveal that Bulgaria experiences difficulties with the absorption of the grant. In a letter<sup>15)</sup> from 9<sup>th</sup> of February 2017, the EC criticized the Bulgarian Ministry of Education and Science for the management and implementation of the program and pointed out a major structural and functional problem: the lack of distinct separation between the organizational and control functions between the entities that allocates funds under the program, those who receive money and the entities engaged with supervision of their implementation. Contributing to the inefficient management are also the vague criteria for the formation of the Ministry's project management teams, problems with the project evaluation and with the organization of the inspections.

Approximately 36 % of the total programme funds are devoted to priority area 01 "Scientific research and technological advancement". New partnerships with private entities and the creation of new businesses are encouraged so as to improve the competitiveness of the Bulgarian research system and the economy as a whole. Almost 178 million EUR (72% of total priority budget) were granted by the government to support the construction and development of 4 Centers of Excellence and 9 Centers of Competence<sup>16)</sup>. They are predominantly based on PPPs and at present unite the efforts of 59 institutes of the Bulgarian Academy of Science (BAS), universities, scientific and business organizations.

The latest interim report (Figure2) reveals the total volume of contracted activities under the OP (88.3%) and in particular that under investment priority 1 (99.5%), is way ahead of the volume of verified and certified funding. The data published on the website of EUMIS 2020<sup>17)</sup>, the information system for management and monitoring of EU funds in Bulgaria, also confirms this trend as at present the agreed funding for the four centers of excellence amounts to BGN 158 million, and the actual amounts paid to beneficiaries is only BGN 41.2 million.



Source: Executive Agency Science and education for smart growth Operational Programme<sup>18)</sup>

**Figure 2.** OP "Science and Education for Smart Growth" financial parameters (as to 31.01.2020)



The implementation of PPPs in HE related to R&D receive institutional (and financial) support at both Community and national levels. The application of the principles of good (public) governance in this area should be based on active networking between public institutions and their partners, established on a consensual strategic vision (i.e. reflects the long-term perspectives of development) with transparent, sustainable and beneficial rules of conduct. The participation in such networks is endorsed by two interrelated activities that share a common goal but rely on different mechanisms. The first is related to the establishment and development of proper institutional environment. It takes more time and supports the process via institutional decisions and well-designed rules. The movement forward is ensured by legislation and regulations based on the principle of balance of interests and stable social consensus. The effectiveness of the institutional framework paves the way and accelerates the second activity - the financial (partnership networks, considered as a financial mechanism). In strategic areas such as R&D, the lack of interest and investment (as a result of missing / poor legislation and regulations) should be compensated by the state (through funding via public programs, direct / targeted government funding or procurement) as high levels of coordination and synchronization are needed. Without a sustainable institutional environment, university-business relationships are incidental, one-time interactions. The networks (around which PPPs are built, including those in HE) are sustainable, cooperative and interrelated interactions as a result of business, technological and information exchange, mutual adaptation of products and processes. The achievement of well-functioning and desired partnerships would result from a diligent public policy especially designed to provide the necessary institutional conditions. The PPP initiation and implementation are not a one-time act. They represent an “investment process” and just like network management require focused supervision and relationship support.

Bulgaria only recently engaged in the establishment of institutional infrastructure for implementation of PPPs in the HE. Important steps for the promotion of PPPs were the amendments to the Higher Education Act from the end of 2016, which provided the universities with initiative and expanded academic autonomy by permitting them to associate with other persons and the establishment of companies for the purposes of the economic realization of results from scientific research and objects of intellectual property (Art. 21, & 1, item 15 of the Higher Education Act). In 2017 was adopted the National Strategy for Development of Scientific Research in the Republic of Bulgaria for the period 2017 – 2030. It comes to provide a political and managerial support to overcome the weaknesses of the research system in our country. Of particular importance among them are the weak links of research organizations with business, the passive position of the private sector towards research and the lack or ineffective incentives for real private investment in R&D. The establishment of a PPP is not just a technical opportunity to find contact points between business and universities and to increase the R&D funding. The

political, and hence the economic potential of PPP networks is conveyed through their transformation into specific policy communities. Not “administratively born” partnerships, a product of the transfer of competencies to non-state structures and levels, but partnerships that develop and elaborate policies with activities based on control, resulting from a combination of growing independence and possession of knowledge and technical expertise. Three years later with Provision № 61 from 2<sup>nd</sup> of April 2020 the specific practical regulation of the key idea for economic realization of the results of scientific research and objects of intellectual property became a fact. To what extent institutional accumulation will encourage and activate the opportunities for PPP in HE remains to be revealed.

The current analysis shows that Bulgaria, despite its access to significant financial and educational resources for PPPs implementation, still fails to utilize their full potential in the HE sector. The participation and approval rates of the national projects under the two key EU initiatives are below the community average. The absorption rate of financing under OP “Science and Education for Smart Growth” 2014 – 2020 is rather disproportionate in terms of the ratio between contracted and certified funding. The reasons may be different – complicated application procedures, lack of local institutional and individual entrepreneurial culture, timely and adequate legislative support, insufficiently established international networks, etc. Bulgarian HEIs and private companies should focus their efforts to align more effectively their interests and needs and review the good European practices with reference to design, implementation and monitoring of PPPs. The EU plans to continue its financial and expert support in the area, and if these efforts prove to be effective this could result in significant increase of research capacity of both universities and businesses, their competitiveness and overall economic growth and well-being of the society.

## NOTES

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