



# Researchers' Mobility in the Western Balkans

## INTERNATIONAL SERVICE FACILITY

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*Date: 10 May 2021, revised version: 17 August 2021*

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*\*This designation is without prejudice to positions on status, and is in line with UNSCR 1244/1999 and the ICJ Opinion on the Kosovo declaration of independence.*

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# 1. Abstract/Summary



The authors of the study shed light on the question whether there is scope for further initiatives to encourage and increase mobility-based training of researchers from the Western Balkans. The first part of the study deals with analysing the research and development systems and the economic performance of the Western Balkan Six (WB6)<sup>1</sup>, looking amongst other things at their Gross Domestic R&D Expenditure. Secondly, the study sets out to analyse mobility streams of researchers from the WB6 within structured regional and European mobility-based training programmes such as ERASMUS+, MSCA and COST. A third focus deals with the exploration of intersectoral mobility: what are the motives and drivers of policy makers for launching intersectoral mobility policies? What are barriers and obstacles to intersectoral mobility-based training and how can they be removed? Does the encouragement of intersectoral mobility-based training constitute an explicit policy priority in WB6 and if so, how is cooperation between academia and industry promoted?

On the basis of empirical observations as well as on findings from the literature research, the authors suggest four mobility schemes, of which three are related to geographical mobility and one to intersectoral mobility. The first scheme is a support measure based on the 'Seal of Excellence' for post-doctoral researchers. Secondly, the authors suggest forming a voluntary alliance of major mid- to large-scale research infrastructure providers in order to enable excellent researchers from the WB6 to access their European research infrastructures. A third suggestion deals with forming international research teams that jointly develop European and international research projects with special emphasis on transfer of knowledge between academia and the business sector. With respect to the encouragement of intersectoral mobility, the authors propose a regional adaptation of the very successful Knowledge Transfer Partnerships-Programme (KTP) that has been operating in the UK since 1975.

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<sup>1</sup> The Western Balkan Six include Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia (WB6).

## 2. Introduction



Mobility-based training of human resources constitutes an important policy matter in European politics. One of the major challenges for Europe is to make European researchers more mobile and to provide a more attractive environment for creative and innovative researchers. Mobility is not an end in itself but rather the means to reach a goal, and connected directly to the substantive quality of research and to the development of productive work relationships.<sup>2</sup>

The importance of mobility of European researchers was already clear for the founders of the European Research Area (ERA). The European Commission's (EC) Communication of January 2000 'Towards a European Research Area' identified increasing the number of mobile researchers in Europe as a central objective in constructing the ERA. The Communication also advocated the introduction of a European dimension to scientific careers. To contribute to the development of ERA, the European Charter for Researchers and The European Code of Conduct for the Recruitment of Researchers (henceforward called "Charter and Code") were established by the EC in 2005.<sup>3</sup>

The mission of Charter and Code is to ensure open, transparent and merit-based recruitment of researchers, safeguard good working conditions and to enable professional development for researchers at all stages of their careers. It also highlights the importance of recognising and valuing research mobility, internationally, across sectors and interdisciplinary. Mobility is treated as an important means of enhancing scientific knowledge and professional development at any stage of a researcher's career.

The integration of the Western Balkan Six (WB6) into the ERA and the promotion of interregional research cooperation as a contribution towards the Stabilisation and Association Process (SAP) are of central importance for the research policy of both the region and the European Union (EU). The WB6 have been coping with a large amount of essential political, social and financial issues in the last decades. Consequently, research and development (R&D) as well as mobility-based training were not ranked high on the political agenda. The region has developed from a partly state-directed and partly socialist self-governed economy to a market economy, new states were called into being after the war with their own regimes, and the national expenditures for R&D have been extremely low, allocating resources on other parts. However, with the Bologna Process for Higher Education in early 2000, a new decade of change started. The importance of the Bologna Process is based on the fact that mobility already commences at the higher education level and develops towards a research career. Several of the WB6 have used this process as an incentive to reform their higher education system<sup>4</sup> and to recognise mobility as an important topic that has to be focused on when striving towards ERA integration. Mobility is also emphasised in the Western Balkans Regional R&D Strategy for Innovation<sup>5</sup> where it is suggested that "reforms promoting the mobility of researchers, within the region and between the region and other countries, both in Europe and elsewhere such as adopting common PhD programmes, diploma equivalence, and lower visa requirement for scientists – should be advanced to assist with counteracting brain drain and promoting 'brain circulation'".<sup>6</sup> Progress in the area of researchers' mobility will contribute to further WB6 integration to ERA (Priority 4: Strengthen mobility of researchers and free flow of knowledge and technology, through greater cooperation among Member

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<sup>2</sup> European Science Foundation (2013). Developing Research Career In and Beyond Europe. A Report by the ESF Member Organisation Forum 'European Alliance on Research Career Development (EARCD)

<sup>3</sup> See Inzelt, A (2010): Analysis of Researchers' Mobility in the Context of the European Research Area. Available at: [https://ec.europa.eu/research/evaluations/pdf/archive/fp7-evidence-base/experts\\_analysis/a.%20inzelt\\_-\\_researchers'\\_mobility.pdf](https://ec.europa.eu/research/evaluations/pdf/archive/fp7-evidence-base/experts_analysis/a.%20inzelt_-_researchers'_mobility.pdf)

<sup>4</sup> Solitander, V. & Tzatzanis-Stepanivoic, E. (2008): Barriers to international Mobility and the Integration of Researchers from Western Balkan Countries (WBC) in the European Research Area (ERA). Information Office of the S&T Steering Platform for the Western Balkan Countries, p. 19

<sup>5</sup> <https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-R%26D-Strategy-Innovation.pdf>

<sup>6</sup> Cowey, L. (2016). Mobility of researchers in the Western Balkans Region. Draft study and action plan. December 2016, p.7

States, to ensure that everyone benefits from research and its results). The importance of researchers' mobility is furthermore highlighted by the fact that it is one of the priorities of the Berlin Process.

This report addresses Activity No. 6 of the Specific Contract (21)<sup>7</sup> under the Framework Contract of the International Service Facility and the EU<sup>8</sup>: "Analysis for the provision of a researchers' mobility system". The work delivered under this Specific Contract supports the strong engagement of the EC towards the EU enlargement and integration of the Western Balkans into the ERA. Partners involved in this particular activity are DLR, ZSI, the Technopolis Group and Intrasoft.

Acknowledging that researchers' mobility is gaining importance on the political agenda in the WB6, this report has four objectives:

- 1) To study geographical mobility-based training patterns among researchers from the WB6, whereas emphasis will be placed upon researchers' participation in EU mobility-based training schemes such as ERASMUS+ or Marie Skłodowska-Curie Actions (MSCA).
- 2) To identify the most important barriers to intersectoral mobility-based training in the WB6 as well as good practices and policy messages regarding how to address them.
- 3) To provide recommendations and guidelines to the governments of the WB6 so as to raise the remaining obstacles and promote researchers' mobility.
- 4) To suggest first ideas for the design of researchers' mobility-based training schemes and policy instruments in the WB6.

The report is structured in eight chapters: The first chapter provides an abstract of the report. The second chapter introduces the topic of researchers' mobility in the Western Balkans. The third chapter familiarises the reader with the most important mobility terminology, introducing the terms geographical and intersectoral mobility-based training. The fourth chapter contains an overview of the methodology and the approach used in this study. The fifth chapter provides background information on the research and development systems of the Western Balkans, shedding light on the gross domestic expenditure of the WB6 on research and development per capita. The sixth chapter deals with exploring geographical mobility-based training patterns of researchers from the Western Balkans. The core objective is to determine to what extent researchers from the WB6 participate in structured regional and European mobility programmes. The seventh chapter looks into the concept of intersectoral mobility-based training and presents the state of play in WB6. Both the sixth and the seventh chapter conclude with some policy recommendations on the set-up of researchers' mobility-based training schemes in the Western Balkans. The eighth chapter provides some concluding remarks and an outlook.

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<sup>7</sup> SF(21): "Support for the Steering Platform on Research and Innovation for Western Balkan Countries – phase II", No. LC-01122975

<sup>8</sup> Service Facility in Support of the Strategic Development of International Cooperation in Research and Innovation N°30-CE-0838742/00-87 [PP-04341-2016]

## 3. Definitions and Terminology



The purpose of this chapter is to introduce the concept of geographical mobility-based training on the one hand and intersectoral mobility-based training on the other hand. Both concepts play a major role throughout this study.

### Geographical Mobility

In the case of geographical international mobility of academic researchers, mobility can be defined as an event where a researcher has permanently or temporarily left an academic institution in the home country (or current residential country) to work full-time as a researcher for at least three consecutive months at an academic institution in another country. The mobility threshold is set to three months because it is the standard threshold used by the MORE studies, which will be presented further below in this chapter. It is also a useful threshold because it implicates that the researcher has the chance to integrate relatively deeply in the new research environment, and typically also that practical arrangements – both professional and private – tend to become more complex.

This definition of geographical international mobility of academic researchers means the inclusion of several kinds of such mobility:

- Mobility to a permanent research position
- Mobility to a research position that is limited in time, for instance a post-doc
- Temporary mobility as visiting researcher etc.

### Intersectoral Mobility

Intersectoral mobility (between academia and the private sector, and ultimately also the public sector outside of academia) is defined as an event where a researcher has permanently or temporarily either left an academic institution to work for at least three consecutive months in a company or another public workplace, or left a company or another public workplace to work for at least three consecutive months in an academic institution. It is common that researchers leave their previous workplace to work in another sector but not full-time. The definition implicates the inclusion of several sorts of sectoral mobility:

- Mobility from academia to a permanent research position at a company or public workplace
- Mobility from academia to (one's own) start-up company
- Mobility from industry or public workplace to a permanent research position in academia
- Temporary mobility from industry or public workplace to academia, typically part-time 20-50 per cent
- Temporary mobility from academia to industry or public workplace

It should be clear from the above that whereas international geographic mobility schemes require a period of time in another country, intersectoral mobility (ISM) predominantly takes place at the national level, reflecting the fact that intersectoral networks are often quite localised. There is however some ISM that also involves an international mobility component, either through bi-lateral arrangements between EU countries, or through an international period of mobility.<sup>9</sup>

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<sup>9</sup> Whitle, M. et al. (2018). Study on fostering industrial talents in research at European level, European Commission Directorate-General for Research and Innovation, p.8



## 4. Methodology and Approach to the Present Study



This study is based on the analysis of both primary and secondary data. Some of the information presented in this report stems from desk research. To be precise, the authors carried out a literature review on researchers' mobility with a view to find out what is known about the geographical mobility of researchers, in relation to patterns of mobility, drivers of and barriers to mobility and the benefits and consequences of mobility, with a clear focus on researchers moving from and to the Western Balkans. The literature review covered project reports, relevant websites and research papers on the subject matter.

We gained insights into the economic performance of the WB6 by consulting various databases such as Eurostat, the Global Innovation Index as well as the European Innovation Scoreboard (EIS). With respect to the determination of geographical mobility-based training patterns of WB6 researchers, we made use of official EU statistics on structured regional and EU mobility-based training programmes such as ERASMUS+, COST and MSCA.

As regards intersectoral mobility, hardly any secondary literature was available on this very topic. As a consequence, we conducted a small qualitative survey among representatives of education and research ministries in the region. First and foremost, we wanted to find out whether national ISM schemes already exist and, if so, how well they are accepted (e.g., in terms of participation rates). Both the questions and the answers to our survey can be found in the appendix.

Preliminary findings of this study were presented and discussed at the meeting of the Western Balkans Steering Platform on Research and Innovation<sup>10</sup> on 27 January 2021. Valuable input came from the science and education ministries from the region. Last but not least, the authors sought advice and input from other researchers and policy makers dealing with researchers' mobility in the Western Balkans.<sup>11</sup>

In attempt to address the limitations of the study, it is important to note that the literature review and content analysis were limited in scope due to the restricted availability of information sources. Whereas some information could be retrieved on the subject matter of geographical mobility-based training, only two studies could be identified that dealt with intersectoral mobility in the Western Balkans (see section 7.3). The research was complicated by the fact that there is a major shortage of reliable and valid statistical data on the situation. Statistical data to analyse the demographic trends are missing or outdated especially for Kosovo, Albania and – albeit to a lesser extent – Bosnia and Herzegovina. With respect to North Macedonia, Montenegro and Serbia, more information on the socio-economic situation was available.

A previous version of this report was circulated in May and June 2021 among representatives of MSCA, COST and DG EAC. Suggestions for changes and additions were taken into account when elaborating the final project report. The authors would like to take this opportunity to express their thanks to all those who have given their feedback.

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<sup>10</sup> For more information about the Western Balkans Steering Platform on Research and Innovation, see <https://wbc-rti.info/theme/16>.

<sup>11</sup> Special thanks go to Dr. Lisa Cowey (expert), as well as to Stéphanie Demart and Thierry Devars, both MSCA programme officers at the European Commission, DG EAC.

## 5. Research and Development in the WB6

This chapter has two objectives: The first one is to shed light into the economic performance of the WB6 in terms of Gross Expenditure on R&D spending. The second one is to analyse the performance of the WB6 according to the Global Innovation Index (GII) and the European Innovation Scoreboard (EIS). Learning more about these aspects is important, as one would assume that mobility flows go from weakly performing to strongly performing economies, resulting in brain-drain. To put it differently, the better states perform in terms of offering initial training opportunities, attractive salaries and career prospects for researchers, the more likely they are to attract highly talented people. Current differences regarding all these aspects prevent the creation of a truly dynamic career environment and open market for researchers that is characterised by brain circulation rather than brain drain.

The research sector in the Western Balkans overall is characterised by lagging scientific capacity, resulting from the insufficient supply of inputs, human resources, research funding, and facilities and a regulatory regime that does not fully encourage performance. To improve the situation in the region, different initiatives were undertaken by the EU in cooperation with the Western Balkans during the last decade.<sup>12</sup> There are, however, also remarkable differences between the WB6.

Collaboration between EU and the WB6 started in 1993. At that time, the European Council meeting in Copenhagen in June endorsed an Action Plan in Science and Technology aiming to contribute to the reinforcement of the Science & Technology (S&T) capacities of each country and of the region as a whole.<sup>13</sup> Ever since then, there has been a series of regional initiatives aimed to achieve a better and stronger integration of existing policies and initiatives with a view to achieve the common interests of the Western Balkan region.<sup>14</sup>

### 5.1. General Expenditure on R&D of the WB6

One of the key aims of the EU during the last couple of decades has been to encourage increasing levels of research investment, in order to provide a stimulus to the EU's competitiveness. In the WB6, the biggest challenge for research policy is the steady growth of R&D public financing, as well as increasing the private funding from industry to research and innovation. Investment in research and development for the entire region is at low level under 1% in the best case with Serbia (0.92%) and lag behind the EU-28 average which is around 2% (see also Table 1, year of reference: 2018). There are no data available for Albania, Bosnia and Herzegovina and Kosovo.

<sup>12</sup> <https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-Research&Innovation-Overview.pdf>.

<sup>13</sup> European Commission, Roadmap for EU–Enlargement Countries S&T cooperation, Oct 2017. Pg.1 online: [https://ec.europa.eu/research/iscp/pdf/policy/enlarge\\_roadmap\\_2017.pdf](https://ec.europa.eu/research/iscp/pdf/policy/enlarge_roadmap_2017.pdf).

<sup>14</sup> Zotaj, E. & Statosvci, G. (2019): Education and Research in the Western Balkan Region: An assessment of countries' experiences and their performance in EU funded programmes (Case study: Albania, Kosovo and Serbia). European Movement in Albania (EMA), p. 8

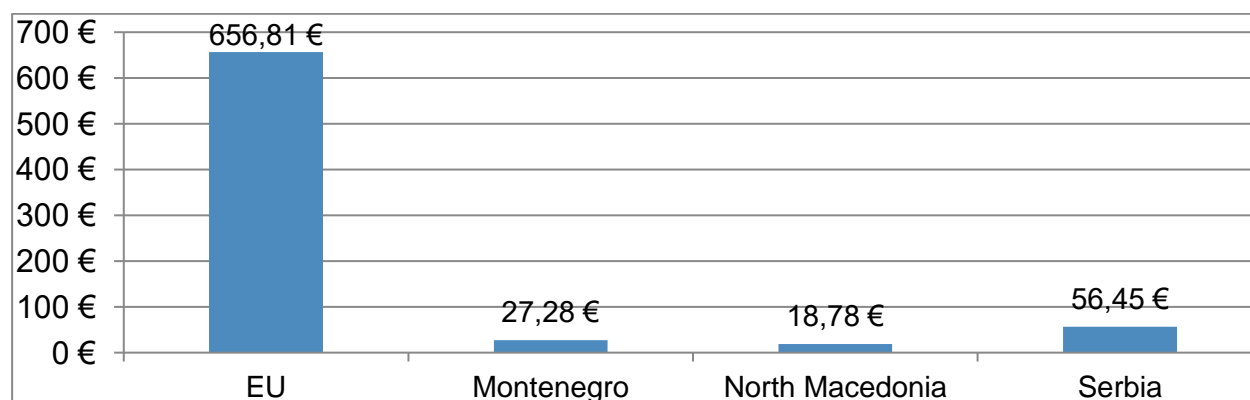
**Table 1: General expenditure on R&D in % of GDP (GERD) in the Western Balkans for 2018**

Country	General expenditure on R&D (GERD) (online data code: T2020_20)
<b>EU-28</b>	2.12
<b>Serbia</b>	0.92
<b>North Macedonia</b>	0.37
<b>Montenegro</b>	0.36

Source of data: Eurostat. Retrieved from the WWW on August 4, 2020

R&D expenditure per inhabitant in 2018 varied among the WB6 (no data available for Albania, Kosovo and Bosnia and Herzegovina) from €18.78 in North Macedonia to €56,45 in Serbia (see also Figure 1). In comparison, general expenditure on R&D (GERD) stood at €336.5 billion in the EU-28 in 2018, which equated to an average of €656.81 of R&D expenditure per inhabitant.<sup>15</sup>

**Figure 1: General R&D expenditure per inhabitant in 2018**



Source: Eurostat, the authors' calculations.

With respect to the above, the following pattern becomes evident: in terms of gross investments made into research and development, the Western Balkans lag far behind the EU average. In fact, the low involvement of the business sector in research and development is one of the biggest challenges that the region faces. While firms do innovate in the economy where they are located, they spend only few resources on R&D-related activities.

Weak R&D systems in the Western Balkans are amongst the reasons why skilled researchers seek employment opportunities abroad. The migration of large numbers of scientists, engineers, and technicians during the 1990s was one of the dramatic events for the research sector in the region<sup>16</sup>, compromising research capacity in the years to come. Although the economic performance has improved over the years, brain-drain still remains a huge problem: The Global Competitiveness Report (2019 edition)<sup>17</sup> released by the World Economic Forum found that Bosnia and Herzegovina, North Macedonia, and Serbia are among the top-ranked countries with the biggest brain-drain in the world.<sup>18</sup>

<sup>15</sup> [https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R\\_%26\\_D\\_expenditure#Gross\\_domestic\\_expenditure\\_on\\_R\\_26\\_D](https://ec.europa.eu/eurostat/statistics-explained/index.php?title=R_%26_D_expenditure#Gross_domestic_expenditure_on_R_26_D)

<sup>16</sup> <https://www.worldbank.org/content/dam/Worldbank/document/eca/Western-Balkans-Research&Innovation-Overview.pdf>

<sup>17</sup> [http://www3.weforum.org/docs/WEF\\_TheGlobalCompetitivenessReport2019.pdf](http://www3.weforum.org/docs/WEF_TheGlobalCompetitivenessReport2019.pdf). Retrieved from the WWW on August 4, 2020.

<sup>18</sup> <https://europeanwesternbalkans.com/2020/02/03/wef-four-balkan-countries-top-global-ranking-with-biggest-brain-drain/>. Retrieved from the WWW on August 4, 2020.

## 5.2. The Western Balkans' performance according to the Global Innovation Index and the European Innovation Scoreboard

The Global Innovation Index (GII) provides detailed metrics about the innovation performance of 131 countries and economies around the world. In 2019, according to the GI, the five most developed countries in the world in terms of innovation were Switzerland, Sweden, the United States, the Netherlands and Great Britain (with scores between 61.44 and 67.24 points on a scale from 0-100). With the value of the GI amounting to 30.34 (Albania) and 37.7 (Montenegro) points, the Western Balkans were significantly lagging behind the most developed European countries (see also Table 2).

**Table 2: Score of Western Balkans (no data available for Kosovo) according to the Global Innovation Index by years.**

Score	2013	2014	2015	2016	2017	2018	2019
<b>Albania</b>	30.9	30.5	30.7	28.4	28.9	41.56	30.34
<b>Bosnia and Herzegovina</b>	36.2	32.4	32.3	29.6	30.2	41.62	31.41
<b>North Macedonia</b>	38.2	36.9	38	35.4	35.4	40.74	35.29
<b>Montenegro</b>	41	37	41.2	37.4	38.1	44.7	37.7
<b>Serbia</b>	37.9	35.9	36.5	33.8	35.3	43.50	35.71

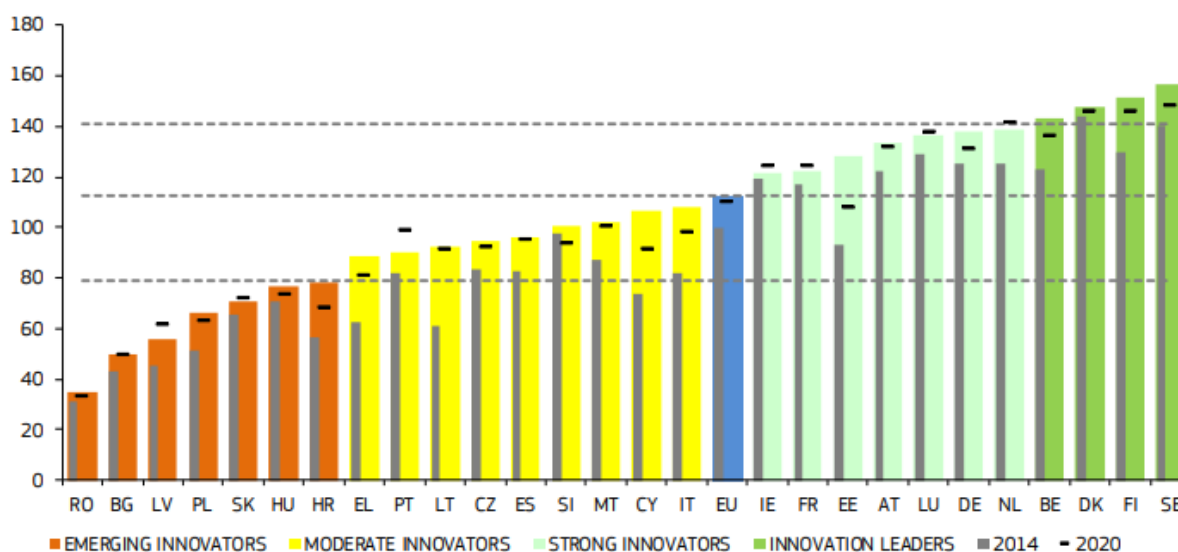
Source: Global Innovation Index Reports 2013 -2019

The European Innovation Scoreboard (EIS) (2021 edition), another comparative tool to determine the relative strength of R&D systems in European and non-European countries, places the Western Balkans into the group of emerging innovators (no data available for Albania and Kosovo).<sup>19</sup> Again, this is below the EU-average, as the EU-27 belong to the category of strong innovators.<sup>20</sup>

<sup>19</sup> [https://ec.europa.eu/growth/industry/policy/innovation/scoreboards\\_en](https://ec.europa.eu/growth/industry/policy/innovation/scoreboards_en)

<sup>20</sup> Hollander, H. & Es-Sadki, N. (2021). European Innovation Scoreboard 2021. Publications Office of the European Union, Luxembourg.

Figure 2: Performance of EU Member States' innovation systems.



Coloured columns show countries' performance in 2021, using the most recent data for 32 indicators, relative to that of the EU in 2014. The horizontal hyphens show performance in 2020, using the next most recent data, relative to that of the EU in 2014. Grey columns show countries' performance in 2014 relative to that of the EU 2014. For all years, the same measurement methodology has been used. The dashed lines show the threshold values between the performance groups, where the threshold values of 70%, 100%, and 125% have been adjusted upward to reflect the performance increase of the EU between 2014-2021.

Source: European Innovation Scoreboard 2021 Main Report, p. 16.

The above analysis indicates that R&D policy is one of the areas in which the Western Balkans still need to catch up with the EU-average. R&D expenditures tend to be low and generate limited scientific and economic results, while spending is mainly concentrated in the public sector, with low research commercialisation. In terms of this mobility study, brain drain of talented researchers seems most likely to be slowed down by means of strengthening the R&D capacities of the Western Balkans. In unleashing this potential, the encouragement of intersectoral mobility can play a vital role. Referring to the EIS (see Figure 2), the report 'Mobility of Researchers between Academia and Industry – Practical Recommendations'<sup>21</sup> uncovered a correlation between countries with high intersectoral mobility and innovation performance. The report found amongst other things that countries with strong innovation performance promote collaboration between university and industry, e.g., by means of establishing joint doctoral training projects with the industry. In chapter 6 of this study at hand, the availability of intersectoral mobility-based training schemes in the WB6 will be explored.

### 5.3. R&D Personnel of the WB6

The number of well-trained staff is one of the main conditions for a well-functioning research and innovation system. Eurostat and UNESCO data of R&D personnel in full-time-equivalent (FTE) in the WB6 show that the number of R&D personnel (no data available for Albania and Kosovo) has continuously increased in the period between 2013 and 2018. However, the quantity of R&D personnel in the economies included in the data collection shows significant differences in the number of R&D personnel. The combined total number of R&D personnel in Bosnia and Herzegovina (2.216 FTE), North Macedonia (1.995 FTE) and Montenegro (703 FTE) does not even

<sup>21</sup> [http://ec.europa.eu/euraxess/pdf/research\\_policies/mobility\\_of\\_researchers\\_light.pdf](http://ec.europa.eu/euraxess/pdf/research_policies/mobility_of_researchers_light.pdf)

account for one fourth of Serbia's (20.868 FTE) R&D personnel in 2018. Still, even Serbia's numbers are low compared to the average of the EU-28 in 2018 with 103.630 persons of R&D personnel (in FTE).<sup>22</sup>

**Table 3: R&D personnel of the WB6, 2013-2018**

	2013	2014	2015	2016	2017	2018
<b>Bosnia and Herzegovina</b>	1.399	1.767	2.172*	2.109*	2.425*	2.216*
<b>North Macedonia</b>	1.563	1.965	2.024	2.107	1.870	1.995
<b>Montenegro</b>	529	600	673	624	611	703
<b>Serbia</b>	18.143	19.446	21.573	21.603	20.788	20.868

Source: Eurostat, Total R&D personnel FTE, all sectors; \* Bosnia and Herzegovina Data 2015-2018 by UNESCO: <http://data.uis.unesco.org/index.aspx?queryid=63#>

This fact is being confirmed by Eurostat data regarding R&D personnel as a percentage of the population in 2018. While Serbia is again leading the WB6 (no data available for Albania, Bosnia and Herzegovina and Kosovo) with 0.67%, followed by Montenegro with 0.26% and North Macedonia with 0.21%, the overall results of these three economies are low compared to the EU-28 average of 1.34% regarding R&D personnel as a percentage of the population.

While taking a look at the employment of the personnel in the different sectors, the numbers reveal the following results for 2018: R&D personnel in the business enterprise sector as a percentage of the population is very low in all economies where data is available in comparison to the EU-28 average. Serbia is again leading among the three by far with 0.095%, followed by Montenegro with 0.035% and North Macedonia with 0.024%.<sup>23</sup> Interestingly, Serbia's share of R&D personnel in the government and the higher education sector is with 0.172% respectively 0.41% higher than the EU-28 average with 0.168% respectively 0.37%. Montenegro and North Macedonia are both lagging behind Serbian and EU-28 numbers with 0.090% respectively 0.024% in the government sector and 0.12% for Montenegro and 0.13% for North Macedonia in the higher education sector.<sup>24</sup> The percentage for R&D personnel in the private non-profit sector in Montenegro measured against the total population is almost as high as the EU-28 average with 0.0097% in comparison to 0.0101%. North Macedonia's numbers in this area are significantly lower with 0.0047% – no data available for Serbia.<sup>25</sup>

Concluding, these statistics confirm the overall situation of the research and innovation capabilities of the WB6. The total number of R&D personnel is low, just as the percentage of R&D personnel of the population in comparison to the EU-28 average. Serbia is the most competitive economy of the WB6 by far, which is proven by the numbers of the percentage of R&D personnel in the government and in the higher education sector as a percentage of population. These results lead to the following conclusion: On the one hand, Serbia's research and innovation capabilities are focussed in the government and the higher education sector and thus make these sectors competitive with regard to these statistics in comparison to the EU-28 average. On the other hand, these numbers prove the considerable backlog of R&D personnel in the private sector. The discrepancy in the number of researchers in the government and higher education sector on one side and the private sector on the other side also reveal one of the main weaknesses of the Serbian research and innovation system, as there is far too little innovation and research dynamism in the private sector and especially in small and medium-sized enterprises.

Both Montenegro and North Macedonia perform on a relatively low level with regard to the percentage of R&D personnel in the four mentioned sectors and their numbers are well-below the EU-28 average except for Montenegro's relative percentage of R&D personnel in the private-non-profit sector, which is almost as high as the EU-28 average.

<sup>22</sup> [https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd\\_p\\_perssci&lang=en](https://appsso.eurostat.ec.europa.eu/nui/show.do?dataset=rd_p_perssci&lang=en).

<sup>23</sup> <https://ec.europa.eu/eurostat/databrowser/bookmark/6e9f2dca-27f4-4dce-8f1b-23cf375cc063?lang=en>.

<sup>24</sup> [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_09\\_30/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_09_30/default/table?lang=en) and [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_09\\_30/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_09_30/default/table?lang=en).

<sup>25</sup> [https://ec.europa.eu/eurostat/databrowser/view/sdg\\_09\\_30/default/table?lang=en](https://ec.europa.eu/eurostat/databrowser/view/sdg_09_30/default/table?lang=en).

## 6. Researchers on the Move in the WB6: Exploring Geographical Mobility-Based Training



The aim of this chapter is to analyse mobility streams of researchers from the WB6 within structured regional and European mobility-based training programmes and to identify geographical mobility patterns from the WB6 region to the EU and within the WB6 region.<sup>26</sup> The following structured regional European programmes provide the basis for this comparative analysis scrutinising the geographic mobility exchange patterns regarding the WB6:

- CEEPUS (section 6.1)
- ERASMUS+ (section 6.2)
- Marie Skłodowska-Curie Actions (MSCA) (section 6.3)
- COST (section 6.4)

The selection of these programmes and schemes does not claim to provide a complete picture on mobility, but covers the most important structured mobility programmes<sup>27</sup> available. In fact, all WB6 have also unilateral mobility programmes at disposal, but often they are not limited as regards their geographical scope to the EU or the region, but are open to world-wide mobility. They are often quite limited in terms of the number of available fellowships or grants. Unilateral mobility programmes of non-WB6 economies open to incoming researchers from abroad, such as the ones provided by the German DAAD or the Humboldt Stiftung, are excluded as well. Short-term mobility exchanges within bilateral intergovernmental agreements or MoUs concluded between the WB6 governments or their main agencies and research organisations with their counterparts are neither considered.

To enable a better positioning of the WB6 participation within the above-mentioned structured mobility schemes and to trace mobility exchanges within the neighbourhood of the WB6, the authors of this study also recorded some comparative data for the following countries: Austria, Bulgaria, Croatia, Greece, Hungary, Romania, and Slovenia. All these countries, plus the Czech Republic, Moldova, Poland, Slovakia and the WB6 are members of CEEPUS (Central European Exchange Programme for University Studies). Therefore, data for them were analysed too. Moreover, they are, with the exception of Austria, characterised by somewhat weaker research and innovation systems in comparison to the EU.<sup>28</sup>

Please note that for this study only data from the European training-based mobility programmes published on internet has been used.

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<sup>26</sup> The statistical information presented in this chapter was last updated in June 2021. Updates beyond this date cannot be taken into account.

<sup>27</sup> The term 'structured mobility programmes' for measures set by Research, Technology and Innovation (RTI) policy is used here for (mostly but not exclusively younger) researchers who go abroad for a limited time for training or professional advancement. The research stay takes place through a structured integration into at least partially organised training or further education programmes (e.g., doctoral programmes; laboratory training; training schools) or joint research activities, which often take place within the framework of temporarily established (mostly university) network partnerships. Another structural feature is, that the return of the researchers is planned or at least explicitly requested. This fulfils the requirement of the so-called 'brain circulation', which is opposed to 'brain drain'.

<sup>28</sup> European Commission (2020). European Innovation Scoreboard 2020. Luxembourg: Publications Office of the European Union. doi: 10.2873/168

## 6.1. Participation of the WB6 in CEEPUS

CEEPUS (Central European Exchange Programme for University Studies) is the most important structured regional mobility programme to support academic mobility-based training and cross-border cooperation between higher education institutions (HEI) in the region of Central and Southeast Europe (except Greece). At present, CEEPUS unites universities from Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Hungary, Kosovo, North Macedonia, Moldova, Montenegro, Poland, Romania, Serbia, the Slovak Republic and Slovenia within networks consisting of at least three HEIs from at least two different CEEPUS treaty partners. Mobility of students and researchers<sup>29</sup> takes primarily place in the framework of such CEEPUS networks, which are competitively awarded through annual calls.

At average, a CEEPUS network consists of around 14 participating HEI (i.e., the so-called participations). CEEPUS cumulated 13,366 participations of HEI from the academic year 2005/2006 until 2019/2020 (see Table 4). An overview on the yearly development of the number of CEEPUS networks over time is provided in Schuch (2019).<sup>30</sup>

The highest share of participation has been achieved by Poland (1,490 or 11.15% of all participations in CEEPUS). Poland is positioned in a cluster of CEEPUS partners (plus Romania, Czech Republic, Slovakia and Hungary), whose universities frequently participate in CEEPUS networks. A second cluster consists of Croatia, Austria and Serbia (between 8.10% and 7.92% participation rate), followed by Slovenia (6.24%). The next cluster consists of Bulgaria, North Macedonia, Bosnia and Herzegovina (between 4.73% und 3.37%), followed by the CEEPUS partners Albania, Montenegro, Moldova and Kosovo.

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<sup>29</sup> CEEPUS uses the term 'teachers' instead of 'researchers'. The term 'teachers' is equated in this study with 'researchers', because CEEPUS does not limit the mobility of the non-student faculty to perform only teaching functions, but allows also conducting research. In reality, there is likely to be a high degree of overlap.

<sup>30</sup> Schuch, K. (2019b). The uptake of European programmes in the CEEPUS cooperation area. ZSI: June 2019; DOI: 10.13140/RG.2.2.11363.30243



**Table 4: Participation in CEEPUS networks and ratio between network coordination and network participation differentiated by CEEPUS partners (sum of the academic years 2005/2006 until 2019/2020)**

Country	Networks	in %	Ratio between coordination and participation
Albania	239	1.79	n.a.
Austria	1,068	7.99	1:6
Bosnia and Herzegovina	451	3.37	1:150
Bulgaria	632	4.73	1:14
Croatia	1,082	8.10	1:20
Czech Republic	1,397	10.45	1:17
Hungary	1,352	10.12	1:15
Kosovo	105	0.79	n.a.
Moldova	140	1.05	n.a.
Montenegro	228	1.71	1:46
North Macedonia	512	3.83	1:512
Poland	1,490	11.15	1:13
Romania	1,420	10.62	1:13
Serbia	1,059	7.92	1:15
Slovakia	1,357	10.15	1:16
Slovenia	834	6.24	1:8
<b>Grand Total</b>	<b>13,366</b>	<b>100</b>	<b>1:14</b>

Source: Central CEEPUS Office; own calculations. Greece is not a CEEPUS country and thus excluded.

The participation numbers are of course also influenced by the number of HEI existing in each CEEPUS partner and by its size in terms of population and research capacity. This could also provide a piece of explanation to the high participation numbers of Poland and Romania<sup>31</sup>, while with a rather limited number of universities – like in Slovenia for instance – a certain degree of saturation is more easily achieved.

Most of the CEEPUS networks were coordinated by Austrian universities (174), which had a central hub function especially in the first years of CEEPUS<sup>32</sup>. Frequent coordination was also performed by universities from Poland, Romania and Slovenia (between 113 and 104 coordinated networks). The next cluster consists of Hungary, Slovakia, the Czech Republic and – with some distance – Serbia (between 90 and 69 coordinated networks). This cluster is followed by Croatia (54) and Bulgaria (44), while the number of networks coordinated by HEI from Montenegro, Bosnia and Herzegovina and North Macedonia is comparatively very low (between 5 and 1). No coordination of CEEPUS networks by universities from Albania, Kosovo and Moldova could be identified in the data records.

<sup>31</sup> Although Romania, for instance, has only half the number of R&D personnel than Austria.

<sup>32</sup> Few of these early networks are still in operation.

Researchers' Mobility in the Western Balkans

Table 5: Incoming and outgoing teachers within CEEPUS networks since the academic years 2005/2006 until 2019/2020 (without free-movers) (in person count)

OUT-GOING	I N C O M I N G T O																Grand Total	Balance	R&D personnel (in FTE) (2018)	Sum of inward + outward mobility by 1,000 R&D personnel
	AL	AT	BA	BG	CZ	HR	HU	MD	ME	NM	PL	RO	RS	SI	SK	XK			Eurostat data	Own calculation
AL outg.		24	2	7	7	15	25		4		16	15	4	9	12	9	149	-7	N/A	N/A
AT outg.	32		18	121	109	104	143	3	12	10	133	177	65	39	120	34	1120	572	81.534	34,49
BA outg.	1	37		21	27	53	4		16	4	5	24	113	28	15	1	349	23	1.767	408,04
BG outg.	7	115	16		136	48	83	13	30	29	123	220	66	23	123	17	1049	134	25.809	86,48
CZ outg.	6	137	12	103		247	149	10	27	11	351	247	54	36	548	2	1940	728	74.969	61,47
HR outg.	12	152	71	46	300		117	1	11	24	175	112	91	77	147	10	1346	183	13.029	220,66
HU outg.	15	271	9	48	219	123	2	3	5	12	255	571	139	37	408	2	2119	-180	45.566	89,06
MD outg.		6		20	18	3	3		2	5	37	125	1	1	17		238	-91	N/A	N/A
ME outg.	1	8	8	9	16	13	4	1		2	2	8	11	2	6		91	179	703	513,51
NM outg.T	2	33	9	36	28	33	15		15		11	14	22	18	22	3	261	-28	1.995	247,62
PL outg.	26	219	5	186	516	205	212	32	55	20		372	71	42	618	20	2599	-309	161.993	30,18
RO out	14	254	16	218	323	154	506	79	19	35	335		129	26	538	1	2647	351	31.933	176,78
RS outg.	6	145	174	169	171	172	294	2	31	28	109	418		84	310		2113	-1094	20.868	150,09
SI outg.	5	135	29	29	84	126	62	2	9	36	56	34	117		57	3	784	-304	15.698	80,52
SK outg.	13	141	3	156	711	224	317	1	34	16	677	660	136	56		1	3146	-201	20.268	300,52
XK outg.	2	15		14	3	9	3			1	5	1		2	4		59	44	N/A	N/A
<b>Grand Total</b>	<b>142</b>	<b>1692</b>	<b>372</b>	<b>1183</b>	<b>2668</b>	<b>1529</b>	<b>1939</b>	<b>147</b>	<b>270</b>	<b>233</b>	<b>2290</b>	<b>2998</b>	<b>1019</b>	<b>480</b>	<b>2945</b>	<b>103</b>	<b>20010</b>	<b>0</b>	496.132 <sup>a</sup>	80,66 <sup>a</sup>

Source: Central CEEPUS Office; own calculations; R&D personnel in FTE (2018) taken from EUROSTAT (only latest available data for Bosnia and Herzegovina is from 2014, see also [https://ec.europa.eu/eurostat/web/products-datasets/product?code=rd\\_p\\_perssci](https://ec.europa.eu/eurostat/web/products-datasets/product?code=rd_p_perssci)). <sup>a</sup>Albania, Moldova and Kosovo are excluded.

It is interesting to have a look on the ratio between coordination of networks and participation in networks by CEEPUS partners, because frequent coordination could indicate (i) a higher strategic ownership, (ii) available functional network management capacities and/or (iii) some kind of (attributed or self-imposed) leadership attribution. As shown in Table 4 striking differences among the CEEPUS members can be identified in this respect.

At average the CEEPUS members have a ratio of around 1:14 for coordination: participations, which means that out of 14 network participations one participation is in the role of an overall network coordination. Bulgaria, Hungary, Poland, Romania, Serbia, Slovakia and the Czech Republic, Austria and Slovenia are close to average, however, have relatively more overall network coordination than participations. In contrast Albania, Kosovo, Moldova, North Macedonia and Bosnia and Herzegovina are still less integrated in international cooperation, which could refer back to issues mentioned above such as lack of available functional network management capacities or less international credibility. This indicates structural problems, which have to be primarily solved by domestic policies.

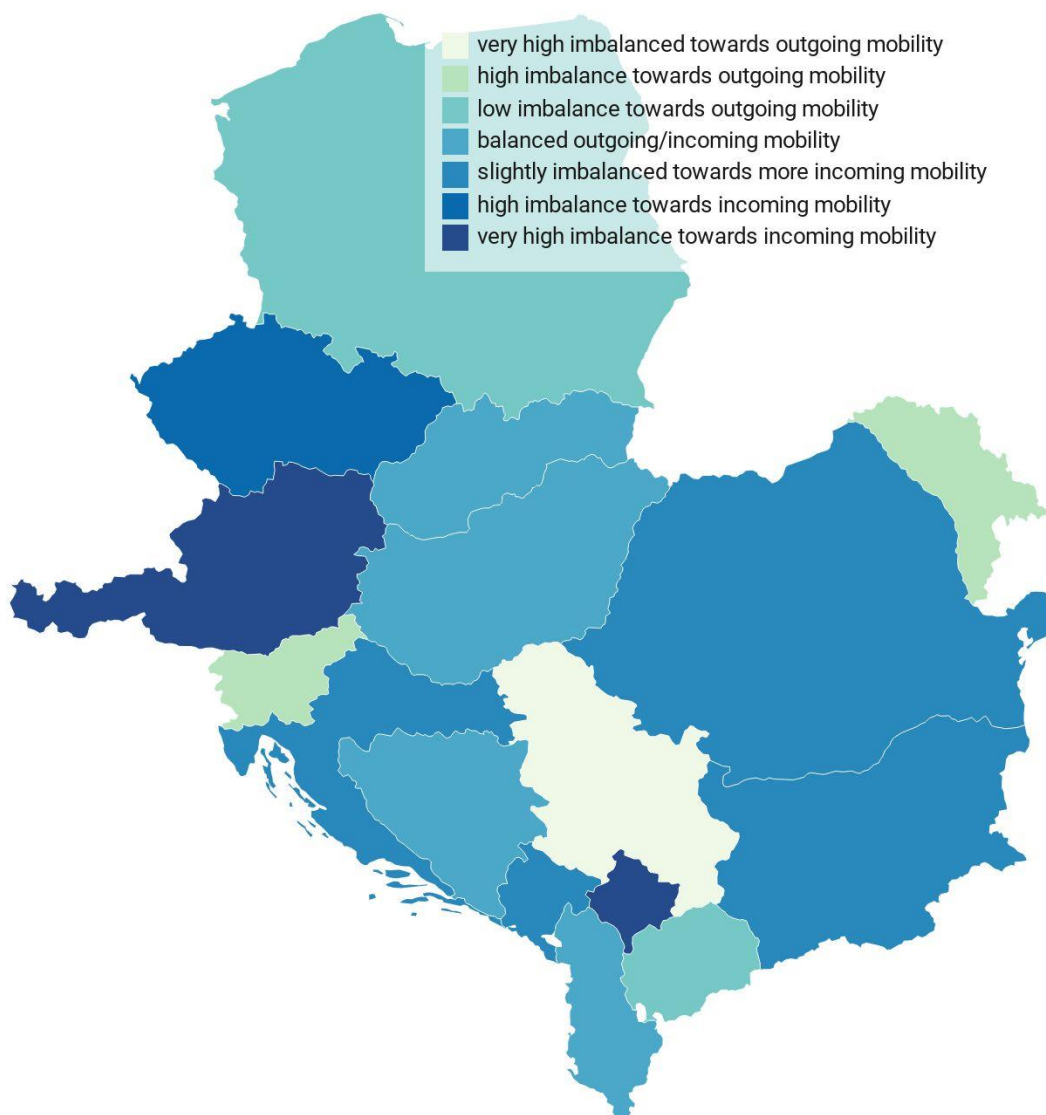
Next to almost 25,000 students, also 20,010 researchers have experienced mobility within CEEPUS networks since the academic year 2005/2006 (data of previous years were not available) (see Table 5). Thus, the number of researchers' mobility was almost as frequent as the number of student mobility, which confirms the dual use of CEEPUS for the benefit of students and researchers.

As shown in Table 5, the highest numbers of outgoing researchers are observed for Slovakia (3,146), Romania (2,647), Poland (2,599), Hungary (2,119), Serbia (2,113) and the Czech Republic (1,940). A 'middle' group consists of Croatia (1,346), Austria (1,120), and Bulgaria (1,049) followed with some distance by Slovenia (784). The highest number of incoming researchers went to Romania (2,998), Slovakia (2,945), and the Czech Republic (2,668), followed with some distance by Poland (2,290), Hungary (1,939), Austria (1,692) and Croatia (1,529).

The incoming/outgoing ratio can also be seen as an indication for the attractiveness of the research system. The Czech Republic for instance has received 738 researchers more than it sent abroad (see Table 5) and its incoming/outgoing ratio is 1:1.38. This value is only surpassed by Austria (1:1.51) and Kosovo (1:1.75). However, the high incoming/outgoing value of Kosovo but also the low levels of for Slovenia and Poland show the weaknesses of a too uncritical use of this indicator as proxy for 'locational R&D attractiveness'. The value for Kosovo, for instance, is partly a statistical artefact caused by low absolute mobility numbers, and can also be partly explained by a considerable number of expatriates who use the opportunity to temporarily return to Kosovo. Slovenia, which has a competitive R&D system, seems rather to be limited by its absorption capacities and the relative low number of universities, while in the case of Poland, for instance, size effects seem to matter. Poland attracted 2,290 researchers from the CEEPUS region during 2005/2006 until 2019/2020, which is the fourth highest value among the CEEPUS members. This number of incoming researchers to Poland is also considerably higher than the number of researchers coming to Austria (1,692), but Poland also has a higher number of universities and researchers, which use CEEPUS for outgoing mobility (2,599).

Figure 3 shows the incoming/outgoing imbalances of the scrutinised CEEPUS members. Those with a high imbalance skewed towards higher outgoing than incoming researchers' mobility are first of all Serbia, followed by Slovenia, Moldova and then Poland and North Macedonia.

Figure 3: Incoming/outgoing mobility imbalance of teachers within CEEPUS networks since the academic years 2005/2006 until 2019/2020



Created with Datawrapper

Source: Central CEEPUS Office; own calculations. Map created with datawrapper.

If we normalise the CEEPUS participation data to get rid of economy size effects, one can relate the number of participations measured in terms of incoming and outgoing researchers with its R&D capacity (expressed in R&D personnel in full-time equivalents [FTE] taken from Eurostat). Table 5 clearly shows that those partners with lower R&D capacity benefit a lot from CEEPUS. Especially Montenegro and Bosnia and Herzegovina have a very high above-average relative participation. This would probably also be true for Kosovo, Albania and Moldova, if FTE-data would have been available for them. In addition, Slovakia, North Macedonia, Croatia, Romania and Serbia have a high above-average relative participation. On the other hand, Table 5 also shows that those members with the highest R&D capacity (expressed in R&D personnel in FTE), have comparatively the lowest relative participation (Poland, Austria, Czech Republic). The others are close to average.

We can thus generalise that the pervasion of CEEPUS and, thus, its relative importance, is comparatively high in the WB6, which show clear above-average relative participation figures if related to their R&D capacities. This points somehow to the heritage of the former Yugoslavia with still existing relations in the field of higher education and research, some shared cultural overlaps and similar languages.

In addition to the mobility exchange within the CEEPUS networks, also more than 6,500 so called free-movers based on Art. 2, para 6 of the CEEPUS-3 treaty, were supported since the academic year 2005/2006 by CEEPUS. Thus, in total, around 1,571 researchers and 2,106 students (both inclusive free-movers) have gained mobility experiences per academic year from 2005/2006 to 2018/2019 at average, which is an impressive number.

### 6.2. Participation of the WB6 in ERASMUS+

ERASMUS+ is the EU's major programme to support education, training, youth and sport in Europe. Its budget of €14.7 billion (2014-2020) provides opportunities for over 4 million Europeans (of which around 2 million are students and around 800,000 are lecturers, teachers, trainers, and education staff as well as youth workers<sup>33</sup>) to study, train, and gain experience abroad. The aim of ERASMUS+ is to contribute to the Europe 2020 strategy for growth, jobs, social equity and inclusion, as well as the aims of the EU's strategic framework for education and training.<sup>34</sup>

Eligible countries for ERASMUS+ are divided into Programme countries and Partner countries. Programme countries pay an entry ticket and are eligible for all actions of ERASMUS+, while Partner countries can only take part in some, and are subject to specific conditions.<sup>35</sup> All 27 EU Member States, Norway, Liechtenstein, Turkey and Iceland as well as North Macedonia and Serbia<sup>36</sup> are Programme countries. Albania, Bosnia and Herzegovina, Kosovo and Montenegro are Partner countries from the Western Balkan region.<sup>37</sup>

ERASMUS+ is a powerful programme even if only the field of higher education, as in this paper, is concerned. Table 6 shows the number of outgoing staff members<sup>38</sup> from several ERASMUS+ Programme countries in the period from 2014/15 to 2017/18. From these countries, around 51,000 staff members were going to other countries in these four years.<sup>39</sup> The incoming figures are in total lower: almost 45,000 staff members went to the selected countries within the four years under scrutiny. Negative balances of staff members (incoming minus outgoing) are observable for Bulgaria, Hungary, Romania and Slovenia. North Macedonia is the only WB6 economy in this table for which corresponding data were provided in the factsheets published by the European Commission.<sup>40</sup>

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<sup>33</sup> The others are mainly pupils and apprentices.

<sup>34</sup> Information taken from <https://ec.europa.eu/programmes/erasmus-plus/>

<sup>35</sup> Information taken from [https://ec.europa.eu/programmes/erasmus-plus/about/who-can-take-part\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/who-can-take-part_en)

<sup>36</sup> Serbia became Programme country on 5<sup>th</sup> February 2019.

<sup>37</sup> Information taken from <https://ec.europa.eu/programmes/erasmus-plus/>. There the partner countries from the Eastern Partnership, the South-Mediterranean countries and other regions in the world are listed too.

<sup>38</sup> Please take note that the definition of "staff" differs between CEEPUS and ERASMUS+.

<sup>39</sup> Source: country factsheets 2018 published in January 2020 at [https://ec.europa.eu/programmes/erasmus-plus/about/factsheets\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/factsheets_en); accessed on 3 August 2020

<sup>40</sup> Country factsheets 2018 published in January 2020 at [https://ec.europa.eu/programmes/erasmus-plus/about/factsheets\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/factsheets_en); accessed on 3 August 2020

**Table 6: Participation of selected ERASMUS+ Programme countries in ERASMUS+ (2014/15 – 2017/18) differentiated by outgoing and incoming staff**

2014/2015 – 2017/2018					
	Outgoing staff	Incoming staff	Balance of staff (incoming minus outgoing)	Total R&D personnel in HES <sup>a</sup> 2017 (headcount)	Outgoing staff in % of R&D Personnel in the HES (headcount) 2017
Austria	6.557	6.890	333	48.363	13,56
Bulgaria	6.662	4.074	-2.588	9.287	71,73
Croatia	3.161	3.921	760	11.386	27,76
Greece	5750	7147	1397	45.206	12,71
Hungary	9.620	8.580	-1.040	23.816	40,39
<b>North Macedonia</b>	<b>269</b>	<b>807</b>	<b>538</b>	<b>2.853</b>	<b>9,43</b>
Romania	15.829	9.924	-5.905	19.101	82,87
Slovenia	3.400	3.254	-146	5.212	65,23
<b>Sum</b>	<b>51.248</b>	<b>44.597</b>	<b>-6.651</b>	<b>165.224</b>	<b>31,02</b>

Source: country factsheets 2018 published in January 2020 at [https://ec.europa.eu/programmes/erasmus-plus/about/factsheets\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/factsheets_en); accessed on 3 August 2020; EUROSTAT data on R&D personnel; accessed on 3 August 2020; own calculations.

<sup>a</sup> Higher Education Sector

Data for Serbia was not available, because it became a Programme country not before 5<sup>th</sup> February 2019.

Although ERASMUS+ statistics use a different definition for staff than R&D personnel according to OECD/Eurostat, the relation of the ERASMUS+ staff figures vis-a-vis R&D personnel in the Higher Education Sector (HES) in headcount (2017) shown in Table 6 gives a first rough approximation about how intensively ERASMUS+ was used for exchange of HES personnel. By deliberately ignoring – but not forgetting – this haziness in definition, one could estimate with caution that at average roughly around a fourth to a third<sup>41</sup> of R&D personnel from the CEEPUS countries were making use of ERASMUS+ (outgoing only) between 2014 and 2017. Although the comparability used here is limited, the leverage effect of ERASMUS+ on personnel exchange can be considered as very high in general. North Macedonia, however, is the exception in this picture.

**Table 7: Participation of the WB6 in ERASMUS+ (2015–2019) differentiated by outgoing and incoming students/staff**

	Outgoing students and staff (2015-2019)	Incoming students and staff (2015-2019)	Balance
Albania	5.552	3.281	-2.271
Bosnia and Herzegovina	5.885	3.562	-2.323
Kosovo	2.771	1.418	-1.353
Montenegro	2.008	1.188	-820
North Macedonia	1.359	1.173	-186
Serbia	6.913	4.319	-2.594
<b>Sum</b>	<b>23.129</b>	<b>13.786</b>	<b>-9.361</b>

Source: country factsheets published at [https://ec.europa.eu/programmes/erasmus-plus/about/factsheets\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/factsheets_en); accessed on 3 August 2020; own calculations

<sup>41</sup> One should also bear in mind that one person can have more than just 1 mobility grant in the three academic years under scrutiny (2014/15 - 2016/17) and that staff in ERASMUS+ includes also administrative personnel.

Since such detailed data were not available for all WB6 economies in the country fact sheet 2018<sup>42</sup>, Table 7 summarises basic information about the use of ERASMUS+ for the WB6 with aggregated data from 2015 to 2019. Unfortunately, the published fact sheets do not allow a differentiation between students and staff. By taking the distribution between students and staff of those into account, which are ERASMUS+ Programme countries, we would estimate that the ration between students and staff is around 3:1. From 2015 to 2018 more than 23,000 students and staff members from Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia went to other ERASMUS+ destinations. During the same period, these Partner countries received almost 14,000 incoming students or staff. The balance between incoming and outgoing is clearly negative there.

Schuch (2019)<sup>43</sup> shows that there are pronounced mobility patterns within the southeast European region and with regard to the regional neighbouring countries, which are also CEEPUS members, and for which sufficient data are available because they are ERASMUS+ programme countries. There are for instance strong ERASMUS+ mobility streams of outgoing staff from Croatia to Slovenia and vice-versa as well as from North Macedonia to Slovenia. It is quite likely that the WB6 ERASMUS+ Partner countries use the programme also to a good deal for mobility within the wider region. It is for instance known that the top receiving countries within ERASMUS+ for outgoing mobility from North Macedonia are Turkey, Croatia and Bulgaria.<sup>44</sup>

### 6.3. Participation of the WB6 in Marie Skłodowska-Curie Actions

Within Europe's R&D programme Horizon 2020, the Marie Skłodowska-Curie Actions (MSCA) provide several sub-instruments that support structured researchers' mobility:<sup>45</sup>

- **Innovative Training Networks (ITN):** ITNs support competitively selected joint research training and/or high-quality doctoral programmes, implemented by European partnerships of universities, research institutions, and non-academic organisations from different countries across Europe and beyond. ITNs aim to train a new generation of creative, entrepreneurial and innovative early-stage researchers, able to face current and future challenges and to convert knowledge and ideas into products and services for economic and social benefit
- **Individual Fellowships (IF):** IFs allow experienced researchers or post-docs of any nationality to work on personal research projects together with the institution of their choice and boost their career through high-quality training and skills development. IF also allows researchers to resume research after a career break, to return to Europe after carrying out research abroad and finally to work on R&I projects outside the academic sector.
- **Research and Innovation Staff Exchanges (RISE):** RISE supports short-term international and inter-sectoral exchanges of staff members involved in research and innovation to develop sustainable collaborative projects between different organisations (from the academic and non-academic sectors). It helps researchers, technical, administrative and managerial staff to develop their knowledge, skills and careers and ensure the transfer of knowledge.

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<sup>42</sup> Published in January 2020 at [https://ec.europa.eu/programmes/erasmus-plus/about/factsheets\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/factsheets_en)

<sup>43</sup> Schuch, K. (2019). The uptake of European programmes in the CEEPUS cooperation area. ZSI: June 2019; DOI: 10.13140/RG.2.2.11363.30243

<sup>44</sup> This information is available in the ERASMUS+ country factsheet of North Macedonia. [https://ec.europa.eu/programmes/erasmus-plus/about/factsheets\\_en](https://ec.europa.eu/programmes/erasmus-plus/about/factsheets_en); accessed on 7 August 2020.

<sup>45</sup> Definitions taken from <https://ec.europa.eu/programmes/horizon2020/en/h2020-section/marie-sklodowska-curie-actions>; accessed on 31 July 2020.

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- Co-funding of regional, national and international programmes (COFUND): COFUND provides organisations with financial support to develop their own regional, national or international doctoral or fellowship programme to train early stage and experienced researchers, develop their career and foster excellence in training.
- European Researchers' Night (NIGHT): The NIGHT is a Europe-wide public event dedicated to bring science and research closer to the general public and to stimulate interest in research careers, especially among young people. NIGHT is not considered in this analysis.

The analysis of data in Table 8 shows several interesting aspects:

If we take the wider region as reference, we firstly see that participation in MSCA is uneven. We can distinguish the following clusters:

- Greece and Austria have the highest mobility numbers (and corresponding funding inflow). Economy size factors and research capacity factors influence these numbers.
- In the second cluster we find a number of mid-sized "new" members, namely Romania, Hungary, and Bulgaria, and the smaller-sized Slovenia as well as Serbia and Croatia.
- The remaining WB6 show considerably lower involvement rates.

**Table 8: Participation, success rates, networks and EU contribution received in MSCA by the WB6 and the wider region**

	No. of domestic re-searchers funded by MSCA (2014-2019)	No. of re-searchers going to ...	Inward-outward difference	EU contribution to domestic organisations (in mio. €)	Share of female researchers involved in MSCA actions in %	Success rate in %	From the wider region among the top 10 incoming (re-searchers going to ...)	From the wider region among the top 10 outgoing (re-searchers from ...)	R&D personnel (in FTE) (2018)	Sum of inward + outward mobility by 1000 R&D personnel
<b>AL</b>	<b>32</b>	<b>4</b>	<b>-28</b>	<b>0,08</b>	<b>63</b>	<b>9,09</b>	<b>AT</b>	<b>AT</b>	<b>N/A</b>	<b>N/A</b>
AT	322	808	486	123,81	36	13,55	RO		81.534	13,86
<b>BA</b>	<b>41</b>	<b>10</b>	<b>-31</b>	<b>0,98</b>	<b>54</b>	<b>25,00</b>	<b>SL, RS, NM</b>	<b>SL, AT, HR</b>	<b>1.767</b>	<b>28,86</b>
BG	169	125	-44	6,83	49	18,83	NM	NM	25.809	11,39
GR	1397	868	-529	77,37	42	12,37	BG	AT	51.092	44,33
HR	158	59	-99	7,46	47	10,62	BA, RS, RO	AT, RO	13.029	16,66
HU	244	105	-139	17,90	43	9,82	RS	AT	45.566	7,66
<b>ME</b>	<b>12</b>	<b>0</b>	<b>-12</b>	<b>0,08</b>	<b>67</b>	<b>11,54</b>	<b>HU</b>		<b>703</b>	<b>17,07</b>
<b>NM</b>	<b>30</b>	<b>4</b>	<b>-26</b>	<b>0,28</b>	<b>67</b>	<b>5,26</b>		<b>AT</b>	<b>1.995</b>	<b>17,04</b>
RO	346	147	-199	12,22	52	13,38	HR, NM	AT	31.933	15,44
<b>RS</b>	<b>246</b>	<b>61</b>	<b>-185</b>	<b>7,76</b>	<b>58</b>	<b>15,54</b>	<b>BA</b>	<b>BA</b>	<b>20.868</b>	<b>14,71</b>
SL	199	160	-39	17,87	45	7,86	BA	AT	15.698	22,87
<b>XK</b>	<b>3</b>	<b>4</b>	<b>1</b>	<b>N/A</b>	<b>100</b>	<b>6,67</b>			<b>N/A</b>	<b>N/A</b>
<b>Total</b>	<b>3199</b>	<b>2355</b>	<b>-844</b>	<b>272,64</b>	<b>56</b>	<b>12,27</b>			<b>289994</b>	<b>209,89</b>

Source: data published in country sheets by EC: [https://ec.europa.eu/research/mariecurieactions/msca-numbers\\_en](https://ec.europa.eu/research/mariecurieactions/msca-numbers_en). Last refresh date: 25/11/2019. R&D personnel in FTE (2018) taken from EUROSTAT (only latest available data for Bosnia and Herzegovina is from 2014).<sup>46</sup>

<sup>46</sup> [https://ec.europa.eu/eurostat/web/products-datasets/product?code=rd\\_p\\_perisci](https://ec.europa.eu/eurostat/web/products-datasets/product?code=rd_p_perisci); accessed on 31 July 2020.



Secondly, among the entire wider region only Austria has a positive inward-outward balance. All the others (except Kosovo, which is statistically not significant due to the very low absolute numbers) shows more outgoing than incoming researchers. A positive or balanced inward-outward balance is usually an indication for an attractive research location. When considering the broad geographical coverage of MSCA with its focus on the entire EU, but also beyond, it seems that based on this indicator<sup>47</sup> only Austria is an attractive research location.

Thirdly, the MSCA country profiles published by the EC show also data differentiated by gender. From these data we can conclude that the mobility offers under MSCA are above average used by female researchers from the WB6. Austria, on the contrary, has a distinct surplus of mobile male researchers. The share of male researchers in MSCA actions is also considerably higher in Greece and Hungary. All others are close to a balanced participation in terms of gender.

Fourthly, we observe very large differences as regards the MSCA success rates. The average success rate in MSCA among the EU Member States is 12.71%, among the Associated Countries 12.38% and among the Third Countries 19.04%. Considerably higher success rates have been achieved by Bosnia and Herzegovina and Bulgaria and considerably lower ones by Slovenia, North Macedonia, and Kosovo. All the others from the wider region meander around the average.

Fifthly, Albania, Bosnia and Herzegovina, Croatia, Greece, Hungary, North Macedonia, Romania, and Slovenia list Austria among their 10 top destinations in MSCA. If we look at the origin of inward mobility of researchers to the WB6 we can identify a different picture. The regional component is much more expressed. This is especially true for Bosnia and Herzegovina and Croatia where 3 out of 10 top destinations for incoming MSCA mobilities are from the scrutinised wider neighbourhood region. We can conclude from this observation that, despite the expressed EU-wide claim of MSCA, the regional cooperation component is important and accordingly in demand for several of the cases examined.

Sixthly, if we relate the sum of inward and outward mobility to the capacity approximated by the number of R&D personnel in full-time equivalents, then we can see that Bosnia and Herzegovina and Slovenia make relatively most efficient use of MSCA. They are followed by Montenegro, North Macedonia and Croatia. Especially Hungary in relation to its number of R&D personnel in full-time equivalents, is positioned on the other side of the spectrum.

The most recent MSCA cut-off data<sup>48</sup> for the WB6 reveal that the proportion of non-academic institutions successfully participating in MSCA projects is surprisingly high in WB6 (43.4%).

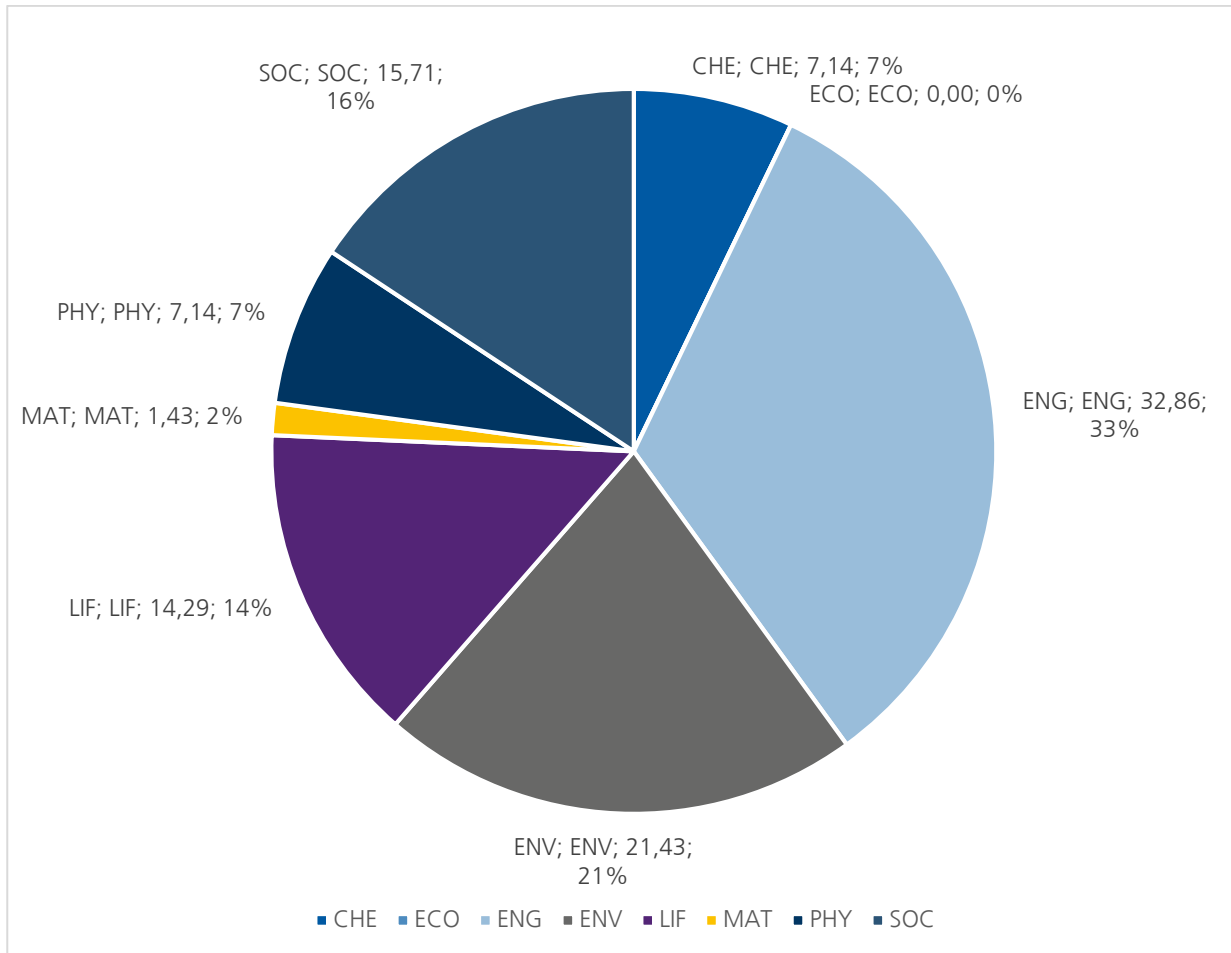
Figure 4 shows the thematic distribution of MSCA projects in the WB6. Almost a third of the successfully acquired MSCA-projects in the WB6 fall into the category of 'Information Science and Engineering' (ENG), followed by 'Environment and Geosciences' (ENV), 'Social Sciences and Humanities' (SOC) and 'Life Sciences' (LIF). There is no successful project in the category 'Economic Science' (ECO). It is worthwhile to note, however, that massive differences between the WB6 exist. For Kosovo, Albania, North Macedonia and Bosnia and Herzegovina, 'Social Sciences and Humanities' are in the lead. In North Macedonia and Bosnia and Herzegovina, this category is on par with 'Information Science and Engineering'. 70% of all successful MSCA projects are implemented by organisations from Serbia. Therefore, the thematic breakdown is essentially dominated by Serbian participation in MSCA projects. Accordingly, Serbia is also mainly manifesting thematic variance in the WB6 region.

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<sup>47</sup> We have already noted before that this is a too simple interpretation of this indicator. Greece or Slovenia, for instance, are also known for several pockets of excellence on their territory.

<sup>48</sup> Cut-off date 21 February 2021

Figure 4: Thematic distribution of MSCA projects in the WB6



Note: data does not include COFUND and NIGHT.

For the sake of actuality, Table 9 summarises the most recent MSCA data for the WB6 with the cut-off date 21 February 2021 as made public by the EC during the MSCA Western Balkans contact seminar<sup>49</sup>. Unfortunately, the data for the EU Member States were not yet made publicly available at the time of writing this report. The recent data provided in table 9, however, does not reverse any trends or conclusions made above. On the contrary, the trends already identified have tended to be confirmed overall, and the existing disparities among the WB6 increased further. Serbia's share of acquired MSCA funding in Horizon 2020 among the WB6 has further increased to 84.57%. The overall EU funding for MSCA actions to WB6 organisations is €12.25 million.

<sup>49</sup> "EU-Western Balkans - Training and mobility for researchers and institutions – Online Contact Seminar", 24-25 March 2021.

**Table 9: Most recent success rates, networks and EU contribution received by the WB6 in MSCA**

	No. of domestic researchers funded by MSCA (2014-2019)	No. of researchers going to ...	Inward-outward difference	EU contribution to domestic organisations (in mio. €)	Share of female researchers involved in MSCA actions in %	Success rate in %	From the wider region among the top 10 incoming (researchers going to ...)	From the wider region among the top 10 outgoing (researchers from ...)
AL	49	5	-44	0,21	59	8,89	AT	AT
BA	57	11	-46	1,08	57	23,08	SL, RS, NM	SL, AT, HR
ME	18	0	-18	0,37	67	17,39	HU, RS	
NM	36	4	-32	0,28	69	4,44		AT
RS	285	82	-203	10.63	59	16,61		
XK*	5	4	-1	N/A	100	6,67		
<b>Total</b>	<b>450</b>	<b>106</b>	<b>-344</b>	<b>12,57</b>	<b>-</b>	<b>12,85</b>		

Source: data published in country fiches by EC: [https://ec.europa.eu/research/mariecurieactions/msca-numbers\\_en](https://ec.europa.eu/research/mariecurieactions/msca-numbers_en). Last refresh date: 21/02/2021., accessed on 6 April 2021.

Overall, we can conclude that MSCA is partially a good alternative to the other scrutinised structured mobility programmes, although it is one of the most competitive sub-programmes in Horizon 2020. The absolute participation numbers are still very marginal in the smaller WB6, which, however, is mostly caused by their limited capacities. Within these limited absorption capacities, however, the WB6 are doing quite well as regards the use of MSCA, especially in comparison to the scrutinised Central European partners. The comparatively lower income attractiveness, however, remains a striking problem (with exception of Austria), which most probably can only be solved in the long run by considerable higher investments in the R&I infrastructures and increasing salaries.

#### 6.4. Participation of the WB6 in COST actions

COST is the longest running European research programme. It contributes actively to the 'Spreading Excellence and Widening Participation' goal of HORIZON 2020 with a strong focus on the so-called COST Inclusiveness Target Countries (ITC). The ITC subsume the COST Members, including EU Member States and those associated to HORIZON 2020, less developed in terms of research and innovation. COST has 39 Member States including the WB6 with exception of Kosovo which has COST Near Neighbour status. COST is committed to spend 50% of its total budget for the benefit to the ITCs. A strong focus is on the inclusion of early-stage researchers. COST as a programme itself is financed as a Coordination and Support Action (CSA) in the form of yearly renewed Specific Grant Agreements within a seven-year Framework Partnership Agreement (FPA) under Horizon 2020.

The COST programme is a bottom-up funding scheme, supporting thematic research and innovation networks, which enable cooperation among scientists and researchers (including early-stage career researchers) across Europe in all research areas. Scientists and researchers can participate in science and technology networks, known as COST Actions, through either being part of a new proposal or joining an existing COST Action. COST Actions are basically networking instruments with a strong training component, mainly operationalised through short-term visits and training schools) to co-operate and co-ordinate nationally-funded research activities. COST, however, does not fund

research itself. As a fiche from COST shows<sup>50</sup>, there were more than 730 participations of researchers from WB6 in short-term scientific missions and 1,205 trainees in the period between 2014 and 2019. In both, the share from Serbia was more than 60%.

**Table 10: Participation of the WB6 (except Kosovo) and their neighbourhood in running COST actions in 2020, 2019 and 2018**

	2020	2019			2018		
	Participations	Participations	Chairs	Vice-chairs	Participations	Chairs	Vice-chairs
Greece	286	285	6	14	285	3	15
<b>Serbia</b>	<b>270</b>	<b>271</b>	<b>1</b>	<b>6</b>	<b>261</b>	<b>0</b>	<b>3</b>
Croatia	269	270	1	7	260	3	6
Slovenia	250	248	4	3	236	1	4
Romania	256	244	0	3	237	0	2
Austria	242	243	11	4	247	8	7
<b>Bosnia and Herzegovina</b>	<b>249</b>	<b>240</b>	<b>1</b>	<b>0</b>	<b>207</b>	<b>1</b>	<b>1</b>
Hungary	233	227	1	6	223	1	4
Bulgaria	223	218	0	0	197	0	0
<b>North Macedonia</b>	<b>211</b>	<b>210</b>	<b>1</b>	<b>2</b>	<b>188</b>	<b>0</b>	<b>3</b>
<b>Montenegro</b>	<b>132</b>	<b>121</b>	<b>0</b>	<b>0</b>	<b>92</b>	<b>0</b>	<b>0</b>
<b>Albania</b>	<b>139</b>	<b>105</b>	<b>0</b>	<b>0</b>	<b>27</b>	<b>0</b>	<b>0</b>

Source: Data from COST (2021) Annual Report 2020; COST (2020) Annual Report 2019, and from COST (2019) Annual Report 2018.

Table 10 shows the participation of the WB6 and the wider region in the 291 running COST actions in 2020, respectively 294 in 20219 and 291 running COST actions in 2018. The high involvement of the WB6 is clearly visible. Serbia and Croatia are within the first quartile of all COST members in terms of participation in running COST actions (COST 2020a).<sup>51</sup> In 2020 they participated in more than 90% of the running COST actions<sup>52</sup>. Bosnia and Herzegovina participated in 85.6% of all running COST actions in 2020 and North Macedonia in 72.5%. Only Montenegro and Albania have comparatively lower participation numbers, which is partly caused by the size of their research capacities. Both, however, have increased their participation during the last three years remarkably. Albania has even increased its participation fivefold in the last three years! It needs to be mentioned that Albania became full COST member only in 2018. Kosovo became a Near Neighbour Country to COST in 2018<sup>53</sup>.

Figure 5 shows the development of representation of researchers from the WB6 (except Kosovo) in COST Actions from 2014 to 2018 taken from COST (2020b).<sup>54</sup> The results clearly demonstrate that COST fulfils its commitment to spreading excellence and widening participation. The WB6 COST members clearly increased their participation in COST over time to benefit from the programme. This is a clear indication that the inclusiveness approach of COST is

<sup>50</sup> <https://www.cost.eu/uploads/2020/05/COST-relations-to-the-Western-Balkan-Countries-1.pdf>; accessed on 15 July 2021.

<sup>51</sup> COST (2020a). Annual Report 2019. <https://www.cost.eu/publications/>; accessed on 31 July 2020.

<sup>52</sup> COST (2021). Annual Report 2020. <https://www.cost.eu/publications/>; accessed on 15 July 2021.

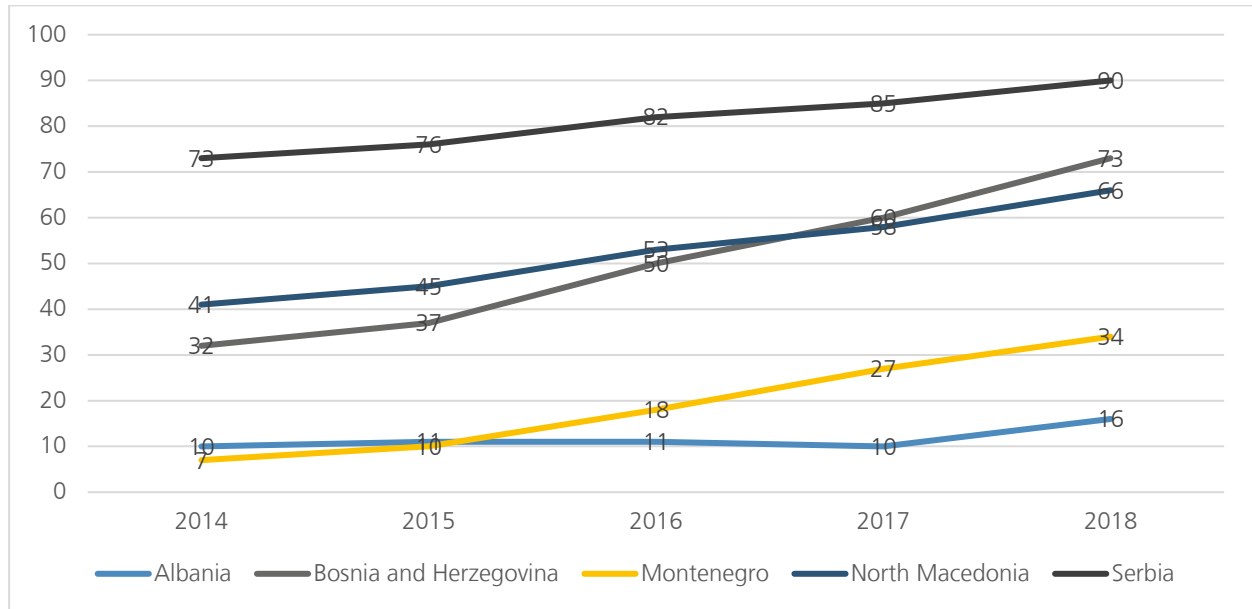
<sup>53</sup> Information about the membership status of the WB6 can be found here: <https://prezi.com/p/wqxjwfpfihpd/cost-western-balkans-focus/?frame=c446d2e6a1f87898dfdc052a16ba9987522a3da0>; accessed on 14 July 2021

<sup>54</sup> COST (2020b). Country Fact Sheet. Statistical data refers to 2018; <https://www.cost.eu/wp-content/uploads/2020/07/COST-Country-Fact-Sheets-2018.pdf>; accessed on 31 July 2020.

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bearing fruit. The number of individual researchers from the Western Balkans active in COST has doubled during 2014 and 2019.<sup>55</sup>

**Figure 5: Development of WB6 representation in % of COST actions from 2014-2018 (except Kosovo)**



Source: COST Country Fact Sheet; <https://www.cost.eu/wp-content/uploads/2020/07/COST-Country-Fact-Sheets-2018.pdf>

However, as regards the number of chairs and vice-chairs, which is a proxy for recognition for scientific leadership, all the WB6 are scoring comparatively very low. Chairs of COST actions are still to a very large extent from the 'old' EU Member States (i.e., the so-called EU-15), in particular Italy, Spain, UK, Germany, France and the Netherlands (COST 2020a).<sup>56</sup> The same is true for the vice-chairs, who come from institutions located in UK, Italy, Spain, France, Germany, but also from the ITC country Portugal.<sup>57</sup> It needs to be mentioned, however, that also the total number of all leadership positions (action chair, action vice chair, working group leader, STSM coordinator, science communication manager) held by researchers based within the Western Balkans increased remarkably above average, although from a rather low level.<sup>58</sup>

<sup>55</sup> <https://prezi.com/p/wqxxjwfpfihpd/cost-western-balkans-focus/?frame=0d6d05e0bb1280ae8e12df5d736386337a01eeefe>; accessed on 14 July 2021

<sup>56</sup> COST (2020a). Annual Report 2019. <https://www.cost.eu/publications/>; accessed on 31 July 2020.

<sup>57</sup> Ibid.

<sup>58</sup> This information comes from a COST presentation about the WB6 participation: <https://www.cost.eu/about/about-cost/western-balkan-countries/>; accessed on 14 July 2021.

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As can be seen in Table 11, the participation of researchers differentiated by gender show very uneven patterns, although there is a balance with regard to the entire study region, because the high surplus of men (for Austria and Hungary) balances each other out with the surplus of women (especially for Albania; but also Bulgaria and Serbia). In general, the WB6 (except North Macedonia) show a tendency towards higher female participation in COST action initiatives in 2019. The situation in North Macedonia is statistically very balanced.

**Table 11: Individual participation in all COST action initiatives by gender in 2019**

	Women	Men	Both	Gender balance
<b>Albania</b>	<b>36</b>	<b>16</b>	<b>52</b>	<b>very unbalanced</b>
Austria	286	491	777	very unbalanced
<b>Bosnia and Herzegovina</b>	<b>194</b>	<b>170</b>	<b>364</b>	<b>balanced</b>
Bulgaria	289	221	510	slightly skewed
Croatia	469	412	881	balanced
Greece	467	604	1071	slightly skewed
Hungary	243	444	687	very unbalanced
<b>Montenegro</b>	<b>73</b>	<b>61</b>	<b>134</b>	<b>balanced</b>
<b>North Macedonia</b>	<b>283</b>	<b>285</b>	<b>568</b>	<b>balanced</b>
Romania	386	336	722	balanced
<b>Serbia</b>	<b>676</b>	<b>483</b>	<b>1159</b>	<b>slightly skewed</b>
Slovenia	308	350	658	balanced
<b>Region under scrutiny</b>	<b>3710</b>	<b>3873</b>	<b>7583</b>	<b>balanced</b>

Source: Data from COST (2020) Annual Report 2019; own calculations

Table 12 shows that, in relation to the available research capacity (approximated by the number of R&D personnel in full-time equivalents), COST is comparatively most intensively used by North Macedonia, Bosnia and Herzegovina and Montenegro, followed with considerable distance by a second cluster consisting of Croatia, Serbia and Slovenia. Although data for Albania and Kosovo are not available we dare to draw the conclusion that COST is a popular networking programme for the WB6 (even if data for Albania and Kosovo are not available).

**Table 12: Relative usage of COST by researchers in 2019**

Individual participations in all COST action initiatives 2019		R&D personnel (in FTE) (2018; except Bosnia and Herzegovina: 2014)	Individual participation by 1000 R&D personnel
<b>Albania</b>	52,00	<b>N/A</b>	<b>N/A</b>
Austria	777,00	81.534	3,03
<b>Bosnia and Herzegovina</b>	<b>364,00</b>	<b>1.767</b>	206,00
Bulgaria	510,00	25.809	19,76
Croatia	881,00	13.029	67,62
Greece	1.071,00	51.092	20,96
Hungary	687,00	45.566	15,08
<b>Montenegro</b>	134,00	703	190,61
<b>North Macedonia</b>	568,00	1.995	284,71
Romania	722,00	31.933	22,61
<b>Serbia</b>	<b>1.159,00</b>	<b>20.868</b>	55,54
Slovenia	658,00	15.698	41,92
<b>Region under scrutiny (except Albania)</b>	<b>7.531,00</b>	<b>289.994</b>	<b>25,97</b>

Source: Data from COST (2019) Annual Report 2018. FTE of researchers (2018 unless differently indicated) are taken from EUROSTAT.<sup>59</sup> There are no data for Kosovo.

## 6.5. Conclusions and Reflections on Geographical Mobility in the WB6

The above analysis suggests that the mainstreaming of the integration of researchers from the WB6 in the structured regional and European mobility and training support programmes CEEPUS, ERASMUS+ and COST was successful. These programmes are still highly on demand and serve the integration of the research communities from the WB6 at regional and European level. Exceptions to this are MSCA mobility schemes, which – not at least caused by their high competitiveness – are still marginally used by most WB6 in absolute numbers (in relation to their limited research capacities). Thus, a specific additional support scheme to enable a broader research-excellence based involvement and training of researchers from the WB6 can be well argued. As a consequence, a specific use case of the MSCA scheme for the Western Balkans will be suggested in section 0. Such a scheme would probably also contribute to an increasing recognition of the quality and expertise of WB6 researchers in the long run within international networks. Probably this would also have an influence on other programmes, because by now, most senior positions in CEEPUS (e.g., network coordinator) or COST (e.g., COST action chair or vice-chair) are still very seldom occupied by researchers from the WB6.

<sup>59</sup> [https://ec.europa.eu/eurostat/web/products-datasets/product?code=rd\\_p\\_perssci](https://ec.europa.eu/eurostat/web/products-datasets/product?code=rd_p_perssci); accessed on 31 July 2020.

We also see a gradient in terms of the incoming-outgoing balance. The WB6 are mostly still 'senders' of researchers abroad and less 'receivers' of researchers from abroad. The participation of foreign researchers in local research organisations remains overall limited, demonstrating the difficulties that the region faces in attracting foreign researchers. This comparatively lower income attractiveness can probably only be solved in the long run by considerably more investments in R&I infrastructures and increasing salaries.

Concerns that structural problems negatively impede the participation of female researchers from the WB6 cannot be confirmed. Female researchers from the WB6 usually outbalance their male colleagues in terms of researchers' mobility, and this pattern corresponds overall with the gender structure in research in the WB6.

Finally, our data also showed that the overall claim raised by some politicians that the European Framework Programme for RTD is made for those ('old' or Western) EU countries, which have stronger R&I systems in place, needs to be relativized. They show quite individual patterns which are overall in line with their available research capacities, and blanket generalisations and assignments of guilt do not picture the reality (as already argued by a number of other studies<sup>60 61 62 63 64 65 66 67 68</sup>).

### 6.6. Encouraging Researchers' Mobility in the Area of Geographical Mobility-Based Training: Some Initial Ideas and Recommendations

It must be emphasised that – besides to the points mentioned in the previous chapter - there are regulatory barriers in the WB6 that make it difficult for researchers to go abroad for an extended period of time before returning. These include, among others, the fact that some universities do not accept leaves of absence beyond one year, which not only greatly reduces the presumptive MSCA Fellow's prospects of returning, but also confronts him or her overall with a medium-term precariat perspective. Such adverse arrangements should therefore be stopped by the WB6 as soon as possible. However, regulatory barriers also exist on the part of the EU Member States, e.g., with regard to the rapid issuance of visas.

Given also the facts,

- that most senior positions in CEEPUS (e.g., network coordinator) or COST (e.g., COST action chair or vice-chair) are still seldomly occupied by researchers from the WB6, and
- that the WB6 are mostly 'senders' of researchers and less 'receivers' of researchers from abroad,

more efforts should be undertaken to enable a broader excellence-based involvement and training of researchers from the WB6 to close the gap to the more successful countries, respectively their organisations and via this way to support in general the integration of the WB6 R&I systems into the ERA.

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<sup>60</sup> Quaglio, G., Millar, S., Pazour, M., Albrecht, V., Vondrak, T., Kwiek, M. and Schuch, K. (2020). Exploring the performance gap in EU Framework Programmes between EU13 and EU15 Member States. Brussels: European Union. doi: 10.2861/654637

<sup>61</sup> Pazour, M., Albrecht, V., Frank, D., Ruzicka, V., Vanecek, J., Pecha, O. and Kucera, Z. (2018). Overcoming innovation gaps in the EU-13 Member States' European Parliament, Directorate for Impact Assessment and European Added Value. Directorate-General for Parliamentary Research Services (EPRS).

<sup>62</sup> Ukrainski, K., Kirs, M., Karo, E., Kanep, H., Hirv, T. and Shin, Y. (2018a). Estonian Potential in Framework Programmes: Analysis and Policy Options.

<sup>63</sup> Ukrainski, K., Kanep, H., Kirs, M. and Karo, E. (2018b). Segregation of EU13 countries in EU Framework Programmes illuminates important challenges for cohesion policy. CESifo Forum, 19, 16-23.

<sup>64</sup> Harrap, N. and Doussineau, M. (2017). Collaboration and networks: EU13 participation in international science, Stairway to Excellence Brief Series, Issue 2.

<sup>65</sup> Makkonen, T., Mitze, T. (2016). Scientific collaboration between 'old' and 'new' Member States: Did joining the European Union make a difference? *Scientometrics* 106, 1193–1215. <https://doi.org/10.1007/s11192-015-1824-y>

<sup>66</sup> MIRRIIS. (2016) Mobilizing institutional reforms for better R&I systems/institutions in Europe. Final Report Summary.

<sup>67</sup> Schuch, K. (2014). Participation of the new EU Member States in the European research programmes-A long way to go, *Foresight-Russia*, 8, 6-17.

<sup>68</sup> Schuch, K. (2005). The Integration of Central Europe into the European System of Research. Wien and Müllheim a. d. Ruhr: Guthmann-Peterson.



Our recommendations are based against the backdrop of the following four emerging potential changes

### *1. Extension of WB6 membership in ERASMUS+*

At the Ministerial Meeting of the Western Balkans Platforms on Education and Training & Research and Innovation, held on 2 December 2020<sup>69</sup>, the WB6 expressed their firm backing for the proposed EU 'Western Balkans Agenda on Innovation, Research, Education, Culture, Youth and Sport'<sup>70</sup>. In this Agenda, the target of a full association of the Western Balkans partners to the new ERASMUS+ Programme is explicitly mentioned. The EC confirmed to assist the full association by supporting the implementation of preparatory measures, while the Western Balkan ERASMUS+ Partner countries ensured their firm commitment and investment to set up the required management structures and compliance measures, which is a pre-condition for this process. It needs to be mentioned, however, that the preparatory process for a partner normally lasts at least four years if everything runs smoothly.

### *2. A possible reorientation of CEEPUS*

The future of CEEPUS is uncertain for the time being. It is possible that the programme will continue to run essentially unchanged (possibly in a different membership configuration), that its scope will be modified, but it cannot be totally excluded for the time being that it will be phased out in the next few years. In case of a possible phasing out of CEEPUS, no huge financial resources will be released, because the cost compensation of CEEPUS is significantly lower than that of MSCA for instance, but CEEPUS has a high mobilisation effect in the WB6 and the question arises what gap this could create. We suspect that while a significant share would be absorbed by ERASMUS+, it must be assumed that there will also be a not-met potential for excellent research collaboration. Only part of it will translate into increased demand for the MSCA programme. This can be assumed in particular because the attractiveness of CEEPUS for teachers has remarkably increased in the last decade.

### *3. Reflections in the Berlin Process<sup>71</sup> on Excellence-Based Research Mobility*

As regards the Berlin Process (Joint Science Conference of the Western Balkans Process), the idea to support science in the WB6 is conceptualised and based on supporting outstanding young scientists within five to seven years to build excellence-led R&D structures in the WB6. Fellows should also have the opportunity to receive training in leading R&D organisations in the EU and to establish international cooperation networks. The long-term desired goal is to create a critical mass of excellent R&D structures in the WB6, which would serve as nuclei for positive changes in the national WB6 research systems, especially through spill-over effects. The European Research Council serves as a blueprint, with corresponding adaptations for the WB6. Funding should come from Horizon Europe in a pilot phase and subsequently tap other sources, e.g., IPA funds (Instrument for Pre-Accession Assistance). Other options have been outlined by the Leopoldina, the National Academy of Science from Germany coordinating the Joint Science Conference of the Berlin Process. Since there is little transparency regarding the progress of this initiative, nothing can be said about its likelihood of realisation. Moreover, since there are to be no country quotas, it does not seem unlikely that existing disparities within the region will be perpetuated or even exacerbated in such an approach.

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<sup>69</sup> <https://www.eac-events.eu/website/3471/#home>, accessed on 1 April 2021

<sup>70</sup> <https://wbc-rti.info/theme/62>; accessed on 1 April 2021

<sup>71</sup> <https://berlinprocess.info/>; <https://www.leopoldina.org/en/events/event/event/2719/>

### 4. Specific actions in the Horizon Europe 2021-2022 Work Programme of "Widening participation and strengthening the European Research Area"

The Work Programme 2021–2022 of Horizon Europe's 'Widening participation and strengthening the European Research Area' foresees specific support for the so called 'Widening Countries', to which also the WB6 are counted. In particular, ERA fellowship that should take place in a Widening Country to foster balanced brain circulation are called for. In general, the conditions for the MSCA Postdoctoral Fellowships should be applied with only a few exceptions. We can assume that this specific measure is intended to reduce the participation gap in MSCA in the ERA, because specifically more opportunities will be earmarked for host organisations in the so-called 'Widening Countries' to absorb external researchers. This would also help to address the very low incoming participation rates in MSCA in WB6. Here, too, it can be assumed that the disparities within the WB6 region will not decrease. On the other hand, if the offer provided by this programme is accepted, positive structural spill-over effects could take place, especially where the ERA fellowships are not only realised as isolated cases. However, it remains to be seen whether the estimated budget will be sufficient in view of the abundance of 'Widening Countries'.

The general objectives of the following initiatives (6.6.1, 6.6.2 and 6.6.3) suggested by us are

- to improve the quality of research and create better conditions for achieving research excellence in the WB6,
- to boost cooperation between WB6 researchers and researchers from EU Member States,
- to stimulate strategic human capacity building in the research organisations in the WB6 with a focus on young researchers.

#### 6.6.1 Make better use of MSCA 'Seal of Excellence' for the WB6

The average WB6 success rates in MSCA correspond more or less to those of the EU Member States, but there are striking differences between the individual WB6 in terms of success rates and participation numbers. The analysis showed that the take-up of MSCA in relation to the existing research capacities in the WB6 (expressed as R&D personnel in FTE; EUROSTAT) reveals no particular conspicuousness when compared with neighbouring countries from the EU. Accordingly, at first glance, one could conclude that the situation of the WB6 with regard to MSCA does not give rise to any particular affirmative regional action. Unfortunately, however, the absolute numbers are so low (with the exception of Serbia) that structural improvement effects could suffer from a lack of critical mass, especially because the incoming numbers are so significantly low too.

As the problem with low incoming numbers is specifically addressed by the ERA Fellowships under the 'Widening participation and strengthening the European Research Area' programme, we propose **a general support measure based on the 'Seal of Excellence' for post-doctoral researchers** (see also Table 13).

The Seal of Excellence is a quality label awarded to high-quality proposals for Individual Fellowships, which were not funded due to budget constraints. Its goal is to help researchers awarded with the Seal of Excellence finding alternative funding. More than 6,000 researchers have received the Seal of Excellence so far. Funders in nine countries have created schemes to fund MSCA Seal of Excellence recipients.<sup>72</sup>

The authors are convinced that the establishment of national funding measures to support those researchers who have submitted highly ranked MSCA applications from the WB6 not being funded by the EC for budgetary reasons, would be a useful tool for the sustainable integration of the WB6 into the European Higher Education and Research

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<sup>72</sup> The cut-off-date for data was August 2019. See EC (2019): MARIE SKŁODOWSKA-CURIE ACTIONS – Driving innovation, supporting researchers' mobility and cultivating excellence in doctoral and postdoctoral training: Facts & Figures.

Area. Of course, care must be taken to ensure that the MSCA fellows supported by this measure actually return home after the fellowship expires, in the spirit of brain circulation.

Our proposal is addressed to the research-intensive EU Member States (i.e., not explicitly to the so-called 'Widening Countries'), and here specifically to the countries that are active in the Berlin Process. Even a few such incoming fellowships supported by these countries would noticeably increase the total number of MSCA-fellows from the WB6. Thus, granting five Seal of Excellence applications per year for a mid-sized incoming country such as Austria would cost about €350,000 per year (depending on the living costs). If 10 countries would participate, then 50 MSCA-fellows from the WB6 who received a Seal of Excellence could be supported each year, which would be a remarkable increase in addition to the fellows from the WB6 directly supported by the EC in the framework of MSCA. However, incoming-countries would not only have costs, but also access to proven research talent from the WB6 and their research accomplishments, which they conduct in the host laboratories. Further, the incoming-countries would not need to make their own project evaluation arrangements because they have direct benefit from MSCA's proven international peer review process. Another advantage is that such a support measure can easily be limited in time (e.g., for the first five years of Horizon Europe).

Conversely, with regard to outgoing fellows, (i.e., those who look for a training-based stay in the WB6 and who scored very positively in the MSCA project evaluation but did not receive any EC funding as part of the MSCA for budgetary reasons), a regional funding pot should be established through other sources. IPA funds might come into question, but also funds from bilateral or unilateral international research or development cooperation. A proposal for this is not detailed here because the results of the ERA fellowships supported under the Work Programme 2021-2022 of Horizon Europe's 'Widening participation and strengthening the European Research Area' programme should be evaluated first.

**Table 13: MSCA Seal of Excellence Scheme for the WB6 at a Glance**

MSCA Seal of Excellence Scheme for the Western Balkans	
<b>Key data</b>	
<b>Scheme title</b>	2 <sup>nd</sup> Chance Seal of Excellence Fellowships
<b>Region</b>	WB6: Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia
<b>Potential good practice</b>	A few EU Member States do already use national funds for supporting MSCA fellowships, which were not directly funded, but received a Seal of Excellence
<b>Organisations involved in implementing scheme</b>	
	<p>a) <i>Outgoing from the WB6</i> National Research Funding Agencies and MSCA host organisations. The target is to engage another 5 to 10 National Research Funding Agencies from the non-widening countries (especially those active in the Berlin Process), which provide national funds for those MSCA applicants from the WB6 who received a Seal of Excellence status by the EC and want to receive mobility-based training in an EU Member State advanced in R&amp;I.</p> <p>b) <i>Incoming to the WB6</i> Establishment of a regional fund that supports those researchers from non-WB6 countries who received a Seal of Excellence status by the EC and want to receive mobility-based training in the WB6.</p>
<b>Funding arrangements</b>	
<b>Total budget</b>	€3.5m for around 50 MSCA Seal of Excellence Fellowships for WB6 researchers per year (outgoing) and other €1.45m for around 20 MSCA Seal of Excellence Fellowships per year for researchers who want to receive mobility-based training in the WB6 (incoming).

<b>Funding type</b>	Fellowship along the MSCA regulation; evaluation is done by EC via MSCA; the Seal of Excellence awarded by MSCA shall apply
<b>Funding organisation</b>	a) outgoing Ministries/National Research Funding Agencies from EU Member States b) incoming A joint regional pot (e.g. supplied by IPA).
<b>Funding mechanism and incentives</b>	Automatic selection of applicants from the WB6 according to the MSCA's proven peer review system, who received a "Seal of Excellence" for their MSCA projects on the basis of the ranking list but are not being EU-funded
<b>Description of Scheme</b>	
<b>Target groups</b>	a) outgoing Post-doc researchers from the WB6 who were awarded with a "Seal of Excellence", but did not receive direct funding from the EC due to budget constraints. b) incoming Post-doc researchers from the non-WB6 who were awarded with a "Seal of Excellence", but did not receive direct funding from the EC due to budget constraints.
<b>Main institutions involved</b>	MSCA fellows from the WB6 and their presumable host organisations in EU Member States. MSCA fellows from the non-WB6 and their presumable host organisations in WB6 economies.
<b>Duration</b>	This scheme should run at least the first five years of Horizon Europe. The individual fellowships duration corresponds to MSCA practices.
<b>Research areas</b>	Bottom-up
<b>Eligibility requirements to participate</b>	Applicants only who received a "Seal of Excellence" for their non-funded MSCA individual post-doc fellowship project
<b>Potential obstacles in scheme implementation</b>	A return home to the WB6 has to be contractually agreed. An organisation to manage a joint regional pot needs to be appointed (only for incoming to WB6).

### 6.6.2 Enable better access to large-scale research infrastructures for researchers from the WB6

Access to mid- and large-scale European research infrastructures is of enormous importance for some science sectors. While individual support offers exist, sometimes even directly provided from the research infrastructures themselves, a specific **large-scale support instrument for researchers from the WB6 to fund their access and research at mid- to large-scale European research infrastructures** is missing.

It is therefore recommended to establish a contractual agreement among operators of research infrastructure facilities based on variable geometry to implement such a support measure for excellent researchers from the WB6 (for details see Table 14). However, the budget for this should come from European funds (preferably IPA or Horizon Europe). Applicants from the WB6 have to go through a two-step application process. In the first stage, their research proposals are reviewed and the best ones are invited on-site to the research infrastructure, where they can discuss with the operators of the research infrastructure how their research proposals could be implemented. Based on these discussions, a final shortlist is drawn up by the operators of the mid- to large-scale research infrastructures and concrete plans for implementing the finally selected projects is agreed with the applicants.

The fellowship covers the travel and accommodation costs of the selected researchers (and their core teams) from the WB6 (this could also be multiple trips), with a co-financing of the additional costs for the experiments at the research infrastructure. The rate of co-financing, the Intellectual Property Rights (IPR) precautions and the specific

implementation modalities must be negotiated between the WB6 applicants and the European research infrastructure operators. We suggest a co-financing rate of up to 85% and 25% overheads for the research infrastructure operators. The remaining 15% of the additional costs are either paid by the research infrastructures or the institutions from the WB6 who send their staff abroad or by dedicated public sources (e.g. co-funding by the national governments of the WB6).

**Table 14: Research infrastructure-based training and mobility scheme**

Research infrastructure based training and mobility scheme	
<b>Key data</b>	
<b>Scheme title</b>	Research Infrastructure Fellowships
<b>Region</b>	WB6: Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia
<b>Potential good practice</b>	➤ Mobility based training schemes already provided by large scale-research infrastructures
<b>Organisations involved in implementing scheme</b>	
	A voluntary alliance of major mid- to large-scale research infrastructure providers. The target is an alliance of at least 10 major mid- to large-scale research infrastructure providers.
<b>Funding arrangements</b>	
<b>Total budget</b>	€2.25m for around 15 competitively awarded WB6 researchers per year
<b>Funding type</b>	Grants with national co-funding (15%)
<b>Funding organisation</b>	Common European funding pot (preferably IPA)
<b>Funding mechanism and incentives</b>	2-stage application procedure. Selection of the best and most feasible experiments suggested by WB6 researchers in consultation with the research infrastructure operators.
<b>Description of Scheme</b>	
<b>Target group</b>	Post-Doc researchers from the WB6 who provide a convincing experiment or research design to be implemented at a mid- to large-scale European research infrastructure.
<b>Main institutions involved</b>	European mid- to large-scale Research Infrastructure Operators
<b>Duration</b>	This scheme should run at least the first 5 years of Horizon Europe. For the preparation, implementation and analysis of the experiments a duration of one year should be foreseen.
<b>Research areas</b>	Bottom-up
<b>Eligibility requirements to participate</b>	Applicants only from the WB6 who undergo a 2-stage selection procedure for their experiments. National co-financing of 15%.
<b>Potential obstacles in scheme implementation</b>	Such an action probably also needs a preliminary familiarization phase so that presumptive applicants from the WB6 can get a realistic picture of the opportunities that prevail at the research infrastructure. For this purpose, further resources should be made available to both, the participating research infrastructures and the potential applicants (e.g. to make a roadshow of the research infrastructure in the WB6).

### 6.6.3 Networking and mentoring scheme for research teams from the WB6

This proposal is based on a concept note already prepared in 2015 by Miljenka Kuhar (MZOS), Zorana Barisic (MZOS), Ines Marinkovic (ZSI), Nenad Celarevic (PERFORM) and Martin Dietz (PERFORM), but was adapted in the present case.

It focuses on **forming international research teams** of minimum six to maximum ten young post-doc researchers from two or more WB6 research organisations from at least two WB6 economies and at least two top-researchers from two different EU Member States or a country associated to the current European Framework Programme for

Research and Innovation. This top-researcher acts as team leader, research strategy advisor and mentor to ensure strategic and operational support to the formed research team and network.

The aim of this scheme (see also Table 15) is to set up joint European and international research projects, the results of which should increase the research and innovation potential in the WB6 with special emphasis on transfer of knowledge between academia and the business sector. Jointly prepared research projects should focus on research areas of special importance for the future development of the region. Emphasis should be put on the dual transition towards green and digital transformation in the WB6. Opportunities derived from Smart Specialisation should be utilised.

The duration of a network should be around 30 months in order to provide sufficient time for joint European and international research proposals and projects and for strategic advisory. During that period, the formed research teams will be awarded with a grant to cover (i) costs for preparing joint research proposals, (ii) costs for implementing a joint self-defined excellent research project (which may not be funded from other sources), and (iii) travel and mobility costs. In addition, 50 percent of the salary of the top-researchers from the EU Member State or country associated to the current European Framework Programme for Research and Innovation will be covered by the grant to fulfil his or her mentoring, advisory and support obligations. Implementation could be addressed either via the Twinning Scheme of Horizon Europe or alternatively via a new ERA-NET.

**Table 15: Networking and mentoring scheme for WB6**

Networking and mentoring scheme for WB6	
<b>Key data</b>	
<b>Scheme title</b>	Dual Transition Network Booster
<b>Region</b>	WB6: Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia
<b>Organisations involved in implementing the scheme</b>	
	<p><u>Alternative 1 (with priority)</u>: Implementation via the Twinning Scheme of Horizon Europe through a dedicated call addressed to the WB6.</p> <p><u>Alternative 2 (more complicated)</u>: Organisation through a new ERA-NET including Member States and WB6 countries based on variable geometry. Such ERA-NET should thematically focus on green and digital transformation (the thematic orientation needs to be further detailed).</p>
<b>Funding arrangements</b>	
<b>Total budget</b>	€750,000 for each competitively selected network for a duration of 30 months. €22.5m for a total of 30 research networks.
<b>Funding type</b>	Grants
<b>Funding organisation</b>	Alternative 1: Horizon Europe (through the Twinning Scheme) Alternative 2: Countries/agencies participating in a new ERA-NET
<b>Funding mechanism and incentives</b>	Call for proposals This scheme strengthens cooperation within the WB6 region and with the EU in general.
<b>Description of Scheme</b>	
<b>Target group</b>	Young post-doc researchers from the WB6 research institutions. A research network should consist of a minimum of six to maximum 10 WB6 young post-doc researchers from at least 2 WB6 under the guidance of two top-level research institutions providing experienced senior researchers from two different EU Member States or one EU MS and one country associated to Horizon Europe (except WB6)
<b>Main institutions involved</b>	Research teams located in research organisations in WB6 plus at least two research organisations from two different EU MS or minimum one EU MS and one associated country (other than WB6)

## Researchers' Mobility in the Western Balkans

<b>Duration</b>	Each network should run for around 30 months in order to allow enough time to implement the competitively selected joint research projects in the field of the dual transition, to jointly prepare a minimum of 4 European or international research proposals and to provide mentoring and strategic advice.
<b>Research areas</b>	Research in the field of the green and digital transformation
<b>Eligibility requirements to participate</b>	Bottom-up formation of young researcher networks from the WB6 (max. 5 years after their PhD) in specific thematic areas related to the dual transition.

## 7. Researchers on the Move in the WB6: Exploring Intersectoral Mobility



Having dealt with the topic of geographical mobility in the previous chapter, this chapter now turns to intersectoral mobility, and especially to the motives and drivers for intersectoral mobility as well as barriers and obstacles towards intersectoral mobility. Moves between the academic and private business sector appear to be difficult in light of different cultures in the two sectors and, linked to this, different emphases in training and skill development (Millard, 2014). What is meant by this will be explained below. Moreover, this chapter provides some empirical evidence on the availability of intersectoral mobility policies in the Western Balkans. This chapter concludes with ideas for setting up an intersectoral mobility scheme in the WB region as an adaptation of the Knowledge Transfer Partnerships Programme of United Kingdom origin.

### 7.1. Motives and Drivers for Intersectoral Mobility

There are incentives as well as disincentives to engage in intersectoral mobility, both from academia's side and from the private sector's side. One of the reasons for higher education institutions (HEI) to develop closer relationships with the private sector through intersectoral mobility is to make their research more relevant and to gain access to private funds and resources. Furthermore, the HEIs are expected to pursue their "third mission" more intensely, which can be achieved by cooperating more with businesses. On the other hand, intersectoral mobility might appear irrelevant to HEIs in the sense that research in the private sector may be of a more applicable character and oriented towards meeting market demands.<sup>73</sup> Therefore, scepticism has been voiced from academia regarding the scientific quality of research in intersectoral research projects.

The companies' rationale for getting involved in university collaborations is that it enables them to co-develop knowledge that addresses the specific problems that they are facing. Collaboration also provides access to data, skills, technology and human capital, which are all critical resources for improving economic performance and innovation capability.<sup>74</sup> The companies are not always interested in getting their research published in scientific journals, but instead want the research to have applicable and market-oriented outcomes.

When interviewing R&D managers for 50 companies collaborating with two universities in Stockholm, Broström (2012)<sup>75</sup> identified four main drivers and motives for the industry to collaborate with academia:

- Collaboration for process or product development
- Access to academic networks; the possibility of connecting with prominent researchers could sometimes be a stronger incentive than just the networks furthering the research within a particular research area
- Competence development/supply; to be able to recruit competent researchers as well as to retain personnel, securing research capacity and future human capital supply
- Business opportunities involving business models such as distributing academic research results and the use of academic experts in product evaluations, or when academia often is a substantial part of the customer base.

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<sup>73</sup> Salimi, N., Bekkers, R. & Frenken, K. (2015). Does working with industry come at a price? A study of doctoral candidates' performance in collaborative vs. non-collaborative Ph.D. projects. *Technovation*, 2015, volumes 41–42, pages 51–61

<sup>74</sup> *Ibid*

<sup>75</sup> Broström, A. (2012). Firms' rationales for interaction with research universities and the principles for public co-funding. *The Journal of Technology Transfer*, 2012, volume 37, Issue 3, pages 313–329



These four drivers were also touched upon when companies, in collaboration with three Swedish industrial PhD schools, expressed their reasons for their involvement.<sup>76</sup> Some of the reasons mentioned were access to new knowledge and state-of-the-art research, and to develop internal R&D activities as a base for competence development and personnel recruitment. For the participating PhD schools in that study, their incentives were to develop their doctoral education, reinforcing ties with industry, and to strengthen their university's position within certain research areas.

On a Europe-wide level, the MORE3 study<sup>77</sup> investigated what the top three motives for intersectoral mobility were, taking the researchers' current sectors of employment into account. Through surveys, it was found that for researchers working within the public sector, networking, contributing to society and progressing their career were the main motives behind their choice to undertake an intersectoral move. Networking was also one of the main motives for researchers from the private sector, and specifically researchers from SMEs and start-ups, who wanted to change sector to be able to research their ideas further and finally making them marketable.

Another finding in the MORE3 study is that the longer the researchers had advanced in their careers, the likelier they were to undergo an intersectoral move. These results are not analysed further in the study, but a likely cause to this is that the longer a researcher has worked within academia, the more secure and confident he or she is as well as more open to face other challenges than those present at HEIs. When only analysing to which sector the mobile researchers from different levels of academia chose to move to, PhD holders or equivalent who are not yet fully independent, were more likely to move to SMEs and start-ups, while established researchers were more likely to move to the not-for-profit sector.

## 7.2. Barriers and Obstacles towards Intersectoral Mobility

The organisations that are involved in intersectoral mobility – higher education institutions, research performing organisations, and industry – are in many countries subject to different regulations, which severely hamper the mobility of researchers between them. Examples by which mobility can be restricted are labour laws, including wages, social security and pension rights.<sup>78</sup>

In a Dutch study, the conflicting interests and goals between companies and HEIs are brought to light.<sup>79</sup> Making research outcomes public is one of the most challenging issues between industry and academia. Researchers from academia are in general oriented towards producing publications and spreading their results as widely as possible. Additionally, they have incentives to publish their results promptly to maximise citation impact. The companies' aim is, in most cases, to commercialise the knowledge. In other words, the industry has an incentive to surreptitiously appropriate and develop research outcomes, rather than disclose them through academic publications. This divergence of interests can cause the results from a collaboration not to be published at all, or that only parts of the findings will be publicly disclosed. Alternatively, the publication of results may be delayed until the company has had time to apply for a patent or commercialise the knowledge. It is not certain how frequent or serious this problem actually is, but we have previously come across such issues that were serious, for example, a young postdoctoral researcher who did her research at a company was denied to publish the results as the company perceived them to

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<sup>76</sup> Gustavsson, L., Nuur, C. & Söderlind, I (2016). An Impact Analysis of Regional Industry-University Interactions: The Case of Industrial PhD Schools", *Industry and Higher Education*, volume 30, issue 1, pages 41-51

<sup>77</sup> Janger, J. et al. (2017). MORE3 – Support Data Collection and Analysis Concerning Mobility Patterns and Career Paths of Researchers. EU Higher Education Survey Results, " WIFO Studies, WIFO, number 60982, 12-2020.

<sup>78</sup> ERA-SGHRM working group on the intersectoral mobility of researchers, their conditions and their competences. Available at [https://cdn2.euraxess.org/sites/default/files/policy\\_library/final\\_report\\_sghrm\\_intersectoral\\_mobility\\_final\\_report\\_0.pdf](https://cdn2.euraxess.org/sites/default/files/policy_library/final_report_sghrm_intersectoral_mobility_final_report_0.pdf), p. 14.

<sup>79</sup> Salimi, N., Bekkers, R. & Frenken, K., "Does working with industry come at a price? A study of doctoral candidates' performance in collaborative vs. non-collaborative Ph.D. projects", *Technovation*, 2015, volumes 41–42, pages 51-61

be negative to the company. To complete a postdoc period without any publications is obviously catastrophic. Her research career unfortunately ended then and there.<sup>80</sup>

Another report, also from Sweden, called the KLOSS report,<sup>81</sup> identified a range of challenges constituting obstacles for intersectoral mobility. Some of these challenges stem from personal incentives (or the lack thereof) as well as differing views on merits in the two sectors. Other challenges are of a more practical nature, where obstacles arise from a lack of understanding the regulatory framework and the difficulties in trying to accommodate the different demands from two different employers. The report also addressed the differences between HEIs with regard to what type of research is being conducted (mostly applied or basic), to the degree of organisational support, to the geographical location and to the set-up of the regional economy, for example, which could all be factors promoting or hindering this type of mobility for researchers and teachers.

Single individuals often constitute the necessary bridge for initiating cooperation between different organisations. The KLOSS report stated that there is a need for both academia and their partners to find solutions that facilitate and stimulate individuals to be more mobile between the organisations. Today, the incentives for researchers to undertake such mobility are rather weak and even inverted, the report stated, as there is no clear mode of measuring the academic merits of non-academic collaborations. Moreover, there are no requirements from academia for researchers to collaborate with other sectors within their discipline. As a result, collaboration with sectors outside of academia are not prioritised or particularly rewarded. Education, research and collaboration are today relatively separated at many HEIs and there may be need for a move towards making intersectoral mobility part of both research and education.<sup>82</sup> This would require changes in the merit system and creating incentives regarding collaboration.

With respect to the compatibility (or lack thereof) regarding research activities in non-academic sectors and the academic merit system, two major obstacles concerning intersectoral researchers' mobility can be observed, which make it difficult for those who once left academia to return. The first is the difference in valuing merits, where essentially only publications are valued in academia. Naturally, scientific merits should weigh heavily when recruiting to positions in HEIs, but scientific knowledge can be acquired through other means than publications in scientific journals. Furthermore, it is not certain that the university lecturer with the highest publication count makes the best teacher. Secondly, the comparatively better working conditions, job security, salary and possibility for career advancement in industry constitute major obstacles towards returning to academia. The economic rewards for conducting research in industry are much stronger than that academia can offer.

### 7.3. Previous Research on Intersectoral Mobility in the Western Balkans

Two projects have dealt with intersectoral mobility in the Western Balkans, namely the WEB MOB project<sup>83</sup> from 2007 and the I-SEEMob project<sup>84</sup> from 2012.

The WEB MOB<sup>85</sup> project was conducted between 2005–2007 with the aim of developing and enhancing mobility policy guidelines for the Western Balkans. The common goal of the project partners<sup>86</sup> was to prevent brain-drain of

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<sup>80</sup> Åström, T. et al (2013). *Evaluation of Swedish National Research Programmes for the Pharmaceutical, Biotechnology and Medical Technology Industries*, Faugert & Co Utvärdering

<sup>81</sup> Broström, A. et al. (2015). *Strategisk samverkan – möjligheter och modeller som stärker lärosätet som utbildningsinstitution, forskningsmiljö och samhällsaktör*, KLOSS

<sup>82</sup> Benner, M. & Sörlin, S. (2015): *Samverkansuppgiften i ett historiskt och institutionellt perspektiv*, Vinnova

<sup>83</sup> Information on this project is available on <https://cordis.europa.eu/project/id/515923/de>.

<sup>84</sup> See <https://cordis.europa.eu/project/id/234629/de> for further information

<sup>85</sup> Development of researchers' mobility policy guidelines for the region of Western Balkans

<sup>86</sup> University of Nis, Mechanical engineering faculty (Serbia); The regional environmental center for central and eastern Europe, country office (Serbia); Research center for energy, information and materials, Macedonian Academy of Sciences and Arts (North Macedonia); Hydro-engineering institute Sarajevo (Bosnia and Herzegovina); Geographic studies center (Albania) and Faculty of mechanical engineering and naval architecture, University of Zagreb (Croatia)

researchers, attract researchers back and improve the management of human resources within the region<sup>87</sup>. The project was one of 387<sup>88</sup> projects which were granted funding from the EC programme FP6-INCO. The project started with a review of the existing legislation within the Western Balkan region with respect to mobility obstacles. This review resulted in five national legislation evaluations, one for each of the WB economies participating. The project was then followed by (i) identifying academic organisations capable of attracting researchers, (ii) a more extensive identification of each WB6' mobility issues (i.e., entry conditions, visa requirements etc.) and (iii) collection of information from governments and private organisations on barriers to mobility.<sup>89</sup>

The project ended with a report which would serve as a tool for national governments and policy makers in the legislative process. When the project was completed, it was believed that the results would have a great impact on mobility policy in the Western Balkans. The results of the research were also believed to promote the integration of Western Balkans towards the ERA and further enhance the relations between the region and the EU. Although many steps have been taken in the right direction, the research has shown that the issue of mobility barriers needs to be further prioritised in both national and international settings.

Between 2009 and 2012, the project I-SEEMob<sup>90</sup> begun as a bottom-up initiative by eight Partner countries.<sup>91</sup> The aim of the research was to enhance the intersectoral mobility of R&D personnel within SEE<sup>92</sup> with the help of policy recommendations for the removal of existing legal and policy obstacles which inhibit researchers' mobility. Similar to the WEB-MOB project, the I-SEEMob was, when completed, expected to influence policy within countries to enhance intersectoral mobility for researchers. The I-SEEMob was also expected to enhance collaboration between industry and academia for the SEE-countries and thereby strengthen the economy within Europe. This in turn would help the industry to increase its competitiveness and would give researchers better career prospects.<sup>93</sup>

### 7.4. Insights from the Western Balkans Intersectoral Mobility Survey

Intersectoral mobility (ISM) policies constitute a blind spot in the WB6. To the authors' knowledge, no information is available on the main developments and trends in intersectoral mobility regarding ISM taking place at national level. This circumstance explains why it was considered necessary to conduct a specific ISM survey among representatives of education and research ministries in the region to learn about the availability of national ISM schemes, how they work and how well they are accepted (e.g., in terms of participation rates). The related questionnaire and study results can be found in the appendix of this report.

All WB6 participated in the survey. Whereas all economies indicated that intersectoral mobility is something worthwhile to be pursued, only two economies indicated that ISM has already the status of an official policy objective in their national legislation. Albania explained to have built in a reference to the ISM in its national legislation (see also Table 17 in the appendix for details). Serbia was the first in the region to adopt the Law on Dual Education in its secondary education system. It regulates the rights and obligations of all participants and entrusts the employer with the responsibility and role in educating students and acquiring the competencies necessary to work in the target occupation. Based on good experience with vocational training in secondary education, the Serbian Government is currently preparing activities to apply the dual model of study in Higher Education as well.

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<sup>87</sup> Cordis <https://cordis.europa.eu/project/id/515923/reporting>

<sup>88</sup> Evaluation of FP6 INCO Programme (2008) Ramböll Management.

<sup>89</sup> Cordis <https://cordis.europa.eu/project/id/515923/reporting>

<sup>90</sup> Intersectoral mobility of researchers in South-Eastern Europe

<sup>91</sup> Greece, Turkey, Bulgaria, Serbia, Croatia, North Macedonia, Bosnia and Herzegovina, Romania

<sup>92</sup> SEE stands for South-Eastern Europe

<sup>93</sup> Cordis <https://cordis.europa.eu/article/id/90635-moving-more-easily-from-lab-to-market>

Regardless of the question on whether the encouragement of ISM is an explicit policy goal in national legislation, it is interesting to observe that all WB economies participating in the survey have undertaken various efforts to increase collaboration between academia and industry. To name only some of them:

- In **Albania**, the Ministry of Education, Sports and Youth (MESY) recently introduced in its secondary legislation the requirement (conditional) for collaboration between academia and industry in the context of doctoral studies (e.g., by means of doing an internship in industry).<sup>94</sup>
- In **Bosnia and Herzegovina**, the “Sinergy”-project was launched in 2019 with a view to connect the economy and academia. So far, five joint projects were co-financed by the Ministry amounting to 50.000 BAM<sup>95</sup> each. According to the survey respondents, this is the first programme in the Republika Srpska that brings partners from the economy and the scientific research community together.
- **Kosovo** is about to launch a support voucher scheme. The latter aims at supporting enterprises and industrial organisations in receiving support and knowledge transfer from academia. The schemes will be short term, focused on delivering concrete innovation ideas and products, as well as to deliver specific tailored training for enterprises.
- In **Montenegro**, mobility within scholarships for PhD students is mandatory for at least three months in a scientific institution outside Montenegro or a business entity based in Montenegro or abroad. However, participation numbers are still rather low: From 2018 to 2020, only up to three scholarships were granted each year to PhD students doing an internship in industry.
- In **North Macedonia**, the new Law on Higher Education allows experts and researchers from the private sector to be elected by the scientific councils of the academic institutions into scientific titles, while keeping their occupation in the private sector. Moreover, research projects in industry sometimes consist of “mixed” project teams including both representatives from the private sector and from academia.
- **Serbia** undertook various efforts to stimulate ISM. For instance, the Action Plan for the Implementation of the Smart Specialization Strategy of the Republic of Serbia includes two support measures for the encouragement of industrial PhDs. The first one deals with providing legal support for the establishment of industrial PhDs and the second one develops models for internships in companies within programs of basic and higher levels of studies.

An overview on the results of the Intersectoral Mobility Survey can be found in Table 17 in the appendix.

## 7.5. Conclusions and Reflections on Intersectoral Mobility in the WB6

The above analysis shows that intersectoral mobility policies are still exceptional in the WB6. This observation fits into the overall picture of intersectoral mobility in Europe: Whereas there is longstanding recognition of the value of mobility-based training in strengthening researchers' careers, ISM receives only little attention due to a lack of awareness about the term itself (although the term has become more familiar since its introduction in the MSCA guidelines) and the concept. However, with ISM becoming more widespread, this picture is gradually changing.<sup>96</sup> In fact, the intersectoral mobility survey showed that there is a clear political interest by Western Balkan policy makers in establishing links between business and science and structurally promoting partnerships. And there is a lot to be gained for both sides: As for private companies, evidence from other successfully implemented ISM schemes show that

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<sup>94</sup> Albania incorporated ISM into its National Strategy on Science, Technology and Innovation 2017–2022. For details, see Strategic objective no. 4. Official Gazette Year: 2017 – No.: 215; page 11435

<sup>95</sup> Bosnia and Herzegovina convertible mark (Bosnian/Croatian/Serbian: Konvertibilna marka, Bosnian/Serbian: Конвертибилна марка); sign: KM; code: BAM) is the currency of Bosnia and Herzegovina

<sup>96</sup> European Commission (2018): Study on Fostering Industrial Talents in Research at European Level - Final Report, p. 16. Available at: <https://op.europa.eu/en/publication-detail/-/publication/eb88a755-437b-11e8-a9f4-01aa75ed71a1>

cooperation with academia is often preferable as it leads more easily to “scientific results” which means publications. Another driver is the financial one. ISM schemes open the opportunity to receive finance for research and the ISM element is just a condition to be fulfilled.<sup>97</sup> For the academic organisation involved, intersectoral mobility can deliver a wide range of benefits, including the identification of commercially-relevant research projects and the development of strategic business relationships, to mention just a few. Strengthening this industry-academia collaboration will hence have numerous advantages for both sides.

### 7.6. Encouraging Researchers' Mobility in the Area of Intersectoral Mobility: Some Initial Ideas

Having identified a political interest by national policy makers in encouraging intersectoral mobility in the WB6, the purpose of this chapter is to suggest an ISM scheme that could be implemented in the region. The scheme is an adaptation of the very successful Knowledge Transfer Partnerships-Programme (KTP) that has been operating in the UK since 1975.<sup>98</sup>

The KTP Programme was founded in 1975 (originally as the ‘Teaching Company Scheme’) as a UK wide intervention aimed at enabling businesses to improve their competitiveness, productivity and performance.<sup>99</sup> The KTP Programme develops and supports three-way partnerships between:

- Companies – Private sector businesses (of any size and operating within any sector, but with a certain focus on small and medium-sized enterprises), public bodies or non-governmental organisations.
- So-called “Knowledge Bases (KBs)” – Third level institutions such as universities or other higher education institutions, research organisations or further education colleges.
- So-called “[Knowledge Transfer] Associates” – a suitably-qualified graduate, with the capability to lead a strategic business project.

Core to the programme is a partnership agreement formed between a company and an academic or researcher within a Knowledge Base with a view to develop a collaborative project that will address a company need. Examples of research projects are: develop and introduce new e-business systems; specify and install corporate IT-systems, develop an environmental management programme. Each KTP Project is managed and delivered by one or more recently qualified Associate(s), who work(s) at the business premises and is (are) closely supported by both an academic and a business supervisor.<sup>100</sup> This scheme sponsors partnerships between academics and companies to solve problems identified by the partner organisation. The scheme can last between 12 and 36 months, depending on what the project is and the needs of the business.<sup>101</sup>

The programme is led by Innovate UK<sup>102</sup> and is currently supported at UK level by a number of other funding organisations (or sponsors). A company entering into a KTP programme contributes between 33 and 50 percent of the project costs, with the government contributing the remainder.<sup>103</sup>

In the past, KTPs have various times been subject to different kinds of evaluation including studies for the Welsh Government, Invest Northern Ireland and by Regeneris Consulting Limited for the Technology Strategy Board. A study conducted by the Centre for Innovation in Higher Education (CIHE) concluded that the KTP process builds sustainable

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<sup>97</sup> Ibid, p.28

<sup>98</sup> See <https://www.strath.ac.uk/engineering/workingwithindustry/knowledgetransferpartnerships/>.

<sup>99</sup> Cogent Management Consulting (2016): Knowledge Transfer Partnership Programme. Interim Evaluation – Final Report, p.5. Available at <https://niopa.qub.ac.uk/bitstream/NIOPA/2898/1/knowledge-transfer-partnership-interim-evaluation-report.pdf>

<sup>100</sup> Ibid, p.5.

<sup>101</sup> See <https://www.gov.uk/guidance/knowledge-transfer-partnerships-what-they-are-and-how-to-apply>

<sup>102</sup> Innovate UK is the United Kingdom's innovation agency, a non-departmental public body operating at arm's length from the Government as part of the United Kingdom Research and Innovation organisation (see [https://en.wikipedia.org/wiki/Innovate\\_UK](https://en.wikipedia.org/wiki/Innovate_UK) ).

<sup>103</sup> [https://en.wikipedia.org/wiki/Knowledge\\_Transfer\\_Partnerships#cite\\_note-4](https://en.wikipedia.org/wiki/Knowledge_Transfer_Partnerships#cite_note-4)

capacity to innovate through collaboration with the knowledge base in those businesses which do not already have the ability to engage in successful open innovation.<sup>104</sup> Another study found that perhaps one of the most convincing indicators of the positive impact of university knowledge transmitted by this route was that 62 percent of the company partners subsequently offered the Associate a permanent post, and 84 percent of the individuals offered the post accepted it.<sup>105</sup> This shows that KTPs can serve as door openers for successful integration into the job market for graduates.

It is interesting to mention that KTPs have been subject to at least one national adaptation. In the Czech Republic, a KTP operates under the same name. The scheme supports young graduates and PhD students employed by a university in becoming knowledge transfer assistants in enterprises for the period of a specific research project. Following a pilot phase, the programme has now been developed into a full national programme funded by the European Regional and Development Fund (ERDF).<sup>106</sup>

Last but not least, it is important to note that the idea behind KTPs – namely providing young researchers with a chance to work on a specific research project in an industrial context with academic supervision, is not something that solely exists in the UK, but in many countries. In Germany, for instance, doctoral students can find paid doctoral positions in industry. Doctoral posts in industry usually offer PhD students fixed-term contracts of employment on a part-time basis, industry-related and application-oriented research opportunities and favourable prospects for the period after graduation. Research-based companies – for example in the automotive and electronics sectors, as well as in the information and communication industries – are especially interested in recruiting doctoral students. Additionally, cooperative partnerships between universities and companies also exist in the field of applied research. Here, the PhD student is normally employed at the university and works on a research project in a mixed team of company and university employees.<sup>107</sup>

### 7.6.1 A KTP Scheme for the Western Balkans

The Western Balkans KTP (WB-KTP) scheme should roughly follow the UK original. The Associate should be based in the company but he or she would be employed by the sending HEI. KTP Associates would have a company and an academic supervisor who will provide guidance throughout the project. Associates should be employed fulltime by the company, but receive university supervision and consultancy throughout their project. The research project should be jointly agreed upon by all three partners (i.e., the companies, the HEIs and the junior researchers).

The target group should be PhD students. In principle, it is also conceivable to offer KTPs for master graduates. In this case, however, the project duration would have to be significantly shorter, as it is unrealistic to assume that a graduate will work up to 36 months after graduation on a research project. In this case, a project duration between three and six months seems to be more realistic.

The employment arrangement would look as follows: The PhD student is employed at his or her HEI. In addition, he or she is given a fixed-term contract of employment on a part-time basis, industry-related and application-oriented research opportunities and favourable prospects for the period after graduation. Research-based companies – for example in the automotive and electronics sectors, as well as in the information and communication industries – ought to have a keen interest in recruiting PhD students.

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<sup>104</sup> Ternouth, P. et al. (2012): Key Attributes for Successful Knowledge Transfer Partnerships, p.6. Available at: [https://www.ncub.co.uk/index.php?option=com\\_docman&view=download&alias=35-key-attributes-for-successful-knowledge-transfer-partnerships&category\\_slug=publications&Itemid=2728](https://www.ncub.co.uk/index.php?option=com_docman&view=download&alias=35-key-attributes-for-successful-knowledge-transfer-partnerships&category_slug=publications&Itemid=2728)

<sup>105</sup> Hughes, A (2015). Review of approaches to the commercialisation of university research and support for university industry collaboration in the UK. Report for Securing Australia's Future Project "Translating research for economic and social benefit".

<sup>106</sup> European Commission (2018): Study on Fostering Industrial Talents in Research at European Level - Final Report, p.23. Available at: <https://op.europa.eu/en/publication-detail/-/publication/eb88a755-437b-11e8-a9f4-01aa75ed71a1>

<sup>107</sup> See: <https://www.research-in-germany.org/en/jobs-and-careers/info-for-phd-students/financing-your-phd/paid-positions---parttime-jobs.html>

KTPs would require some seed funding particularly for paying PhD salaries and supervision expenses. In many Central, Eastern and Southern European countries, an absence of national funding sources for domestic ISM schemes was identified. Often EU-funding of ISM is the only possible source of funding to take part in formal mobility schemes.<sup>108</sup> While the identification of suitable funding sources goes beyond this paper, it should be clear that if the programme turns out to be successful, business partners employing PhD students should also contribute to the project costs.

Research and education ministries in the WB would play an important role in the advertisement and overall-coordination of the scheme. They would be in charge of facilitating the partnership search, e.g., by building a contact base. Last but not least, ministries should help removing existing legal and policy obstacles which inhibit researchers' mobility.

Implementation of the KTP scheme could be addressed via the EIT Regional Innovation Scheme (EIT RIS), which was introduced in 2014 to advance the innovation performance of more countries and their regions across Europe, especially countries with moderate or modest innovation scores as defined by the European Innovation Scoreboard.<sup>109</sup> As such, the KTP scheme perfectly matches the objectives of EIS RIS: namely to contribute to the advancement of the innovation performance of the targeted countries and their regions by strengthening the capacity of their innovation enablers and actors and linkages among them.

Table 16 summarises the most important features of the WB-KTP-Scheme.

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<sup>108</sup> See Whitle, M. et al. (2018). Study on fostering industrial talents in research at European level, European Commission Directorate-General for Research and Innovation, p. 75-77 as well as p. 108.

<sup>109</sup> See <https://eit.europa.eu/our-activities/eit-regional-innovation-scheme>

Table 16: WB-KTP-Scheme at a Glance

KTP Mobility Scheme	
<b>Key data</b>	
<b>Scheme title</b>	A KTP Mobility Scheme for the WB6
<b>Region</b>	WB6: Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia
<b>Potential good practice</b>	<ul style="list-style-type: none"> <li>➤ facilitate the transfer of knowledge and the spread of technical and business skills</li> <li>➤ provide business-based training for graduates in order to enhance their commercial and specialist skills</li> <li>➤ stimulate and enhance business relevant research and teaching undertaken by the Knowledge Base (the University)</li> <li>➤ create employment opportunities for graduates</li> </ul>
<b>Organisations involved in implementing scheme</b>	
	<ul style="list-style-type: none"> <li>➤ Ministries in charge of research, education and innovation</li> <li>➤ <i>To be decided upon</i></li> </ul>
<b>Funding arrangements</b>	
<b>Total budget</b>	<i>To be decided upon</i>
<b>Funding type</b>	<i>To be decided upon</i>
<b>Funding organisation</b>	<i>To be decided upon</i>
<b>Funding mechanism and incentives</b>	<p><b>Questions to be addressed:</b></p> <ul style="list-style-type: none"> <li>➤ Have any incentives for individual researchers been put in place for the intersectoral mobility scheme?</li> <li>➤ Have any incentives for specific institutions been put in place for the intersectoral mobility scheme?</li> <li>➤ What support structures have been put in place to help researchers whilst they are undertaking a mobility period?</li> </ul>
<b>Description of Scheme</b>	
<b>Target group</b>	Recent graduates with a capability to lead a research project
<b>Main institutions involved</b>	Universities and research organisations as partners in the project Industrial companies as direct beneficiaries
<b>Duration</b>	Duration of intersectoral mobility period between three and six months, depending on the project requirements
<b>Research areas</b>	<ul style="list-style-type: none"> <li>➤ Open to all research fields</li> <li>➤ The research topics covered depend on the agreement between the HEI and the company</li> </ul>
<b>Eligibility requirements to participate</b>	Masters' degree in a relevant subject area
<b>Potential obstacles in scheme implementation</b>	<ul style="list-style-type: none"> <li>➤ Lack of suitable funding</li> <li>➤ Administrative barriers</li> <li>➤ Intellectual Property Rights (IPR) issues</li> <li>➤ Lack of commitment on behalf of the academic and/or the industrial partner</li> </ul>

There are certain difficulties to be aware of when implementing a KTP scheme. For instance, a mid-term evaluation of the Czech KTP scheme showed that HEIs are afraid of losing good PhD students to industry, hence lacking incentives to support the scheme and even making it more difficult for PhD students to apply. Another important issue to be looked at refers to putting suitable IPR agreements in place. In fact, challenges relating to IPR can also be an obstacle to industry participation in ISM schemes. Industry is often concerned with ensuring high levels of confidentiality whereas HEIs are characterised by a culture of open knowledge sharing. Furthermore, commercial sensitivities around the confidentiality of research projects can be problematic for academic researchers on a temporary position in industry, since in many countries, they are under pressure to publish scientific publications in order to advance



their academic career.<sup>110</sup> Another study mentions unclear benefits to participating firms, administrative burden on companies as well as the additional workload linked to integrating new people into the company.<sup>111</sup> Policy makers must be aware of these and other difficulties when setting up ISM schemes. A supportive policy environment lays a strong groundwork for ISM by making a clear case for its benefits and integrating it into the broader R&I framework. The better policies are backed up by concrete support measures, the more likely schemes can function effectively.

## 8. Concluding Remarks and Outlook



Mobility-based training of researchers increases the chance for knowledge transfer back and forth between a university and the rest of society, as well as between different universities. It also brings opportunities for knowledge creation through new impulses, networks, and chances to conduct specific empirical studies. Mobility-based training of researchers paves the way for more efficient collaborations between universities and companies, which also includes more harmonised agendas for research and development.

The basic point about mobility-based training of researchers is that mobile individuals 'intellectually de-couple' from the professional contexts they are used to, and in that way open themselves up for new perspectives. They also enter the new environment with a perspective that differs from common practice in that place, which can stimulate fruitful discussions and creativity. When researchers meet in person they are able to screen each other's competences and 'tune in' on each other which will make collaborations run smoother and knowledge transfer more efficient.

Mobility-based training of researchers is not only about meetings between individuals, it also concerns 'meetings' between individuals and material contexts, which open up for creativity as well. The material aspect is particularly evident in staff exchange between companies and universities, where universities typically attract companies with specific advanced equipment, while companies typically can offer environments for more large-scale testing and extensive data on 'real things'.

It is also important to keep in mind that 'knowing' is a practice. If knowledge is not put to use, or if the researcher does not get in touch with research environments and the on-going scientific discussion, the researcher will inevitably lose competence. This is an important reason to encourage intersectoral mobility; industry researchers generally find it difficult to stay updated and maintain the skills they developed during their PhD studies or their previous employment as university researcher. Similarly, support to temporary researchers' mobility can also be a way to help avoid stagnation and lock-in of research environments in universities.

In the previous chapters 6 and 7, the authors have made a few suggestions of how to support and increase researchers' mobility in the WB6, presented in a relatively open-ended way and thus described under the label 'ideas'. These ideas refer to both geographical mobility and intersectoral mobility. Without repeating the specific suggested actions in detail, in summary they relate to:

- ✓ Better access to large-scale infrastructures for WB6 researchers
- ✓ Better use of existing cooperation and mobility instruments at EU-level, not least MSCA
- ✓ Establishment of a networking and mentoring scheme for research teams from the WB6

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<sup>110</sup> See Whitle, M. et al. (2018). Study on fostering industrial talents in research at European level, European Commission Directorate-General for Research and Innovation, p. 75-77 as well as p. 103.

<sup>111</sup> Hristov, H. et al. (2016): Intersectoral mobility and knowledge transfer. Preliminary evidence of the impact of intersectoral mobility policy instruments; EUR 28027 EN; doi:10.2791/041776, p.45.

- ✓ Establishment of a specific Western Balkan ISM scheme, based on the design of the Knowledge Transfer Partnerships Programme in the UK.

Exploring these opportunities and developing strategies can of course be done by each of the WB6 without any particular coordination between the Western Balkan partners, but it could also be an advantage to join forces and investigate the respective ideas together. One additional idea would thus be for the WB6 to set up a 'mobility task force' with the mandate to propose joint actions for increased mobility including reduced/removed barriers towards mobility, both with respect to mobility towards EU and beyond, but also within and between the WB6. It would be important that such a mobility task force is action-oriented, cooperative, and given a strong mandate to propose changes and ways forward. To translate this idea into practice, the next logical step would be to hold a "researchers' mobility workshop" with local experts and other stakeholders with a view to present the study findings and to discuss implementation measures. To this end, it would be important to be able to count on the support of all WB6 partners, as they can best assess the situation "at home". It would be of great relevance for policy makers to know where possible weaknesses of the proposed schemes are, to learn more about the actors that could participate in their implementation and to identify the costs of the schemes.

Both geographical mobility and intersectoral mobility are important and result in the individual development and widened perspective that is described above. If a priority must be made, there are relatively sufficient incentives in place for geographical mobility, but new or strengthened actions should focus on intersectoral mobility to have a larger impact on the WB6 economic and societal development. This is also due to the fact that geographical mobility appears to happen a little bit more "by itself" – to some degree researchers will move to other countries regardless of the existence of support instruments. The barriers towards intersectoral mobility seem higher. There is substantial potential in better utilisation and commercialisation of academic research results in industry and society at large, and intersectoral mobility is a key activity to achieve this. What should be noted however, with respect to geographical mobility, is that WB6 are more of 'senders' than 'receivers' of researchers, as noted in the conclusions of Chapter 6. Actions for making WB6 a more attractive destination for foreign researchers by also showcasing the potential of the region as well as actions for repatriating the region's own researchers who have spent a period abroad, would be welcome.

It often poses a significant challenge to understand how researchers' mobility should be supported in practice. It is simply difficult to be specific; it is challenging as a funding organisation to act in a clever way and design instruments which target certain groups or certain parts of the system in an optimal and fully efficient manner. Narrow and specific instruments tend to miss the goal too often, are inefficient and not in line with researchers' needs. The authors' experience from previous studies indicates that researchers need support programmes with wide 'entrance gates' and considerable room for changes and adaptation once admitted to the programme, according to the pre-conditions and needs of each individual. They need flexible support programmes, where each individual's unique situation is catered and allowed for. This in turn requires funding organisations which are well-informed but not overly bureaucratic and strict, operating with a culture of flexible management and everyday handling of the funding programmes. The advice to the WB6 is therefore to design and monitor any instrument or action related to mobility-based training of researchers in a spirit of flexibility and pragmatism.

## Appendix

### Study on intersectoral mobility

Dear partners,

In our service contract for the European Commission, we are investigating whether and to what extent the Western Balkan Six have planned and/or implemented programmes that promote **intersectoral mobility** of researchers.

Sectoral mobility characterises mobility between academia and the private sector, and ultimately also the public sector outside of academia. It is defined as an event where a researcher has permanently or temporarily either left an academic institution to work for at least three consecutive months in a company or another public workplace, or left a company or another public workplace to work for at least three consecutive months in an academic institution.

Examples of these types of measures are:

- Funding and regulatory support for industrial PhDs and industrial traineeships (practical work of the doctoral students is being carried out in the private sector)
- Post-doctoral researcher placements (such as industrial Post-docs and similar measures in the private sector) stimulating the uptake of PhD students by private sector firms/SMEs
- Support measures for creating spin-offs

In order to analyse mobility patterns and to draft policy recommendations in our study, we would like to learn more about the following aspects concerning **intersectoral** mobility:

1. Does **intersectoral** mobility constitute an explicit policy priority for you? If the answer is yes, please describe how this translates into strategies, Action Plans, programmes, etc.
2. If your country has **intersectoral** mobility support measures in place, please provide a short description of them. Is there statistical evidence on how well these programmes are received and used?
3. If applicable, which national actor(s) is/are in charge of implementing policy measures in the area of intersectoral mobility?
4. If applicable, please provide examples of successful academia-industry collaboration in your country.

Table 17: Results of the Intersectoral Mobility (ISM) Survey

	Q1: ISM -> policy priority?	Q2: Availability of ISM support measures	Q3: National actors in charge of implementing ISM activities	Q4: Examples of successful industry-academia collaboration
<b>Albania</b>	Yes. For details, see the National Strategy on Science, Technology and Innovation 2017-2022. Strategic objective no. 4. Official Gazette Year: 2017 – No.: 215; page 11435.	In 2020, MESY has introduced in secondary legislation the requirement (conditional) for collaboration of academia and industry for doctoral studies. The partnerships (academia industry) formalised in this way create new roles for doctoral candidates within industry.	Ministry of Education Sport and Youth (MESY), National Agency for Scientific Research and Innovation (NASRI), HEIs	
<b>Bosnia and Herzegovina</b>	Not yet. However, ISM will be included in new governmental strategic document to be developed this year (2021).	There are no specific funding and regulatory support measures.	N/A	In Bosnia and Herzegovina, the “Sinergy”-project was launched in 2019 with a view to connect the economy and academia. So far, five joint projects were co-financed by the Federal Ministry of Education and Science (FBiH) amounting to 50.000 BAM each.
<b>Kosovo</b>	No explicit policy priority. However, in the National Strategy for Innovation and Entrepreneurship 2019-2023, it is stated that the government wishes to increase participation of private sector and academia, as well as cooperation in general investment in research and development (see Strategic objective #2).	Kosovo is about to launch a support voucher scheme. The latter aims to support enterprises and industrial organisations in receiving support and knowledge transfer from academia. The schemes will be short term, focused on delivering concrete innovation ideas and products, as well as to deliver specific tailored training for enterprises.	The Ministry of Education, Sciences, Technology and Innovation (MESTI) will be in charge of implementing the voucher scheme	The Innovation Centre Kosovo (ICK) is a centre whose aim is to connect the research and development component of a scientific field with the business sector, focusing on creating new job opportunities oriented towards the future, based on knowledge and new technology. For more details, see <a href="http://ickosovo.com">ICK – Innovation Centre Kosovo (ickosovo.com)</a>
<b>Montenegro</b>	No explicit policy priority; however: The Strategy of Scientific-Research Activities (2017-2021) pursues the goal of developing human resources and research capacities. To this end, the government	With respect to PhD scholarships, there is a mobility requirement. Mobility is mandatory for at least 3 months in a scientific institution outside Montenegro or a business entity from Montenegro or abroad. <sup>112</sup>	N/A	Yes -> HERIC Project, see <a href="#">World Bank Document</a>

<sup>112</sup> The Call is addressed primarily to young people, up to the age of 40, who wish to steer their careers towards scientific research or to improve the knowledge needed in the business sector through applied doctoral research and mobility to developed institutions abroad. Mobility during the scholarship can also be implemented in the companies, abroad or in Montenegro. In 2018: 19 doctoral scholarships approved, in the total amount of EUR 746,700 -> only 3 of them implement mobility in the business entity in Montenegro or abroad. In 2019: 17 doctoral scholarships approved, in the total amount

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	launched the Employment Support Programme for holders of doctoral degree and students of doctoral studies			
<b>North Macedonia</b>	Intersectoral mobility does not yet constitute an explicit policy priority in North Macedonia.	<p>No direct support measure is in place for intersectoral mobility. One form of intersectoral mobility is envisaged by the Law on Higher Education, which allows experts and researchers from the private sector to be elected by the scientific councils of the academic institutions in scientific titles, without temporary leaving the private sector.</p> <p>The law also envisages the possibility that these experts and researchers permanently leave the private sector, and continue with an academic carrier.</p> <p>Research projects in industry sometimes consist of "mixed" project teams consisting of both representatives from the private sector and from academia, with the possibility to promote PhD candidates.</p>	N/A	<p>The projects funded by the Fund for Innovation and Technological Development, under the instruments for support "Co-financed Grants for Technology Extension" and "Co-financed Grants for Establishment, Operations and Investment of Business-Technology Accelerators". At the time of the reporting (February 2021), the total number of supported projects in private companies is over 600, in total value of approximately 76 million EUR out of which 43 million EURO are the Fund's contribution.</p> <p>The Fund launched new measures to support academia-industry collaboration, which produce initiatives such as Innovation Vouchers and technical assistance to further support collaborative projects between the academia and the industry.</p>
<b>Serbia</b>	Serbia was first in the region to adopt the Law on Dual Education in 2017 in vocational education, whose implementation began in September 2019. The law applies to secondary education. It regulates the rights and obligations of all participants	<p>Industrial PhDs and industrial traineeships are not defined by the Law as such, but Serbia undertook various efforts to support Industrial PhDs as can be seen from the following examples:</p> <ul style="list-style-type: none"> <li>▪ The Action Plan for the Implementation of the Smart Specialization Strategy of the</li> </ul>	National actors in charge of implementing policy measures in the area of intersectoral mobility are Ministry of Education, Science and Technological Development	A good example for successful industry-academia collaboration is the master 4.0 programme. More information can be found by the following link: <a href="#">Two master programs in the field of video games created through the cooperation of universities and the economy (tekdeeps.com)</a>

of EUR 750,000 -> Only 2 of them implement mobility in the business entity in Montenegro or abroad. In 2020: 15 doctoral scholarships approved, in the total amount of EUR 680.000 -> only 3 of them implement mobility in the business entity in Montenegro or abroad.

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	<p>and entrusts the employer with the responsibility and role in educating students and acquiring the competencies necessary to work in the target occupation. Based on good experience with vocational training in secondary education, the Serbian Government is currently preparing activities to apply the dual model of study in Higher Education as well.</p>	<p>Republic of Serbia includes two support measures for the encouragement of industrial PhDs. The first one deals with providing legal support for the establishment of industrial PhDs and the second one develops models for internships in companies within programs of basic and higher levels of studies.</p> <ul style="list-style-type: none"> <li>▪ MESTD is planning to provide funding to a certain number of students who choose to study according to the new dual model in higher education. In 2019, MESTD introduced a competition to finance the development of an IT-business master study programme. As a result, 4 study programs were selected on public universities in Belgrade, Nis and Kragujevac. More than 75 companies and 300 lecturers from academia and industry participate in these programs.</li> </ul>	<p>(MESTD), the National Council for Higher Education, the National Entity for Accreditation and Quality Assurance in Higher Education (NEAQA), Conference of Universities in Serbia (KONUS).</p>	
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