



# FORESIGHT

## Strategic Foresight in the Western Balkans: Recovery on the Horizon



*Research and  
Innovation*

## Strategic Foresight in the Western Balkans: Recovery on the Horizon

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# **Strategic Foresight in the Western Balkans:**

*Recovery on the Horizon*

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## Table of Content

|  |    |
|--|----|
| Editorial .....  | 6  |
| Foreword.....  | 7  |
| 1. Acknowledgements.....   | 8  |
| 2. Executive Summary.....  | 9  |
| 3. Introducing the main tenets of the Strategic Foresight project in the WB.....                               | 10 |
| 3.1. What is the study about? .....  | 10 |
| 3.2. Methodology.....  | 10 |
| 4. The benefits of adopting Strategic Foresight as part of the culture of governance in the WB ...             | 13 |
| 4.1. What are the benefits of thinking about the future? .....   | 13 |
| 4.2. How can the WB contemplate the future and what are the benefits of Strategic Foresight?..                 | 14 |
| 4.3. How can the WB use scenarios? .....   | 15 |
| 4.4. How can Strategic Foresight and the WB Smart Specialisation Strategies reinforce each other? .....        | 17 |
| 5. What does the future hold for the WB? – Introducing three possible scenarios for R&I policies in 2035 ..... | 20 |
| 5.1. Scenario 1: Joining the Common Market .....   | 21 |
| 5.2. Scenario 2: Looking beyond EU borders .....   | 24 |
| 5.3. Scenario 3: Putting Business First .....  | 29 |
| 6. Paving the way to the desired future: Roadmaps for the Western Balkans .....                                | 32 |
| 6.1. Roadmap Albania .....   | 34 |
| 6.2. Roadmap Bosnia and Herzegovina.....   | 37 |
| 6.3. Roadmap Kosovo*.....  | 41 |
| 6.4. Roadmap Montenegro.....   | 44 |
| 6.5. Roadmap North Macedonia.....  | 48 |
| 6.6. Roadmap Serbia .....  | 51 |
| 7. Conclusion.....   | 54 |
| 8. ANNEX.....  | 55 |
| 8.1. Factsheet: The scenarios at a glance .....  | 55 |
| 9. Bibliography .....  | 57 |

\* 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.

**List of Figures**

Figure 1. Co-creating the scenarios and roadmaps through an inclusive process..... 11  
Figure 2. Who are the experts that contributed to shaping the scenarios?..... 12  
Figure 3. The benefits of Strategic Foresight ..... 14  
Figure 4. The nexus between Strategic Foresight and Smart Specialisation Strategies..... 18  
Figure 5. A multifaceted European Green Deal ..... 33  
Figure 6. Initial R&I Roadmap for Albania ..... 36  
Figure 7. Initial R&I Roadmap for Bosnia and Herzegovina..... 40  
Figure 8. Initial R&I Roadmap for Kosovo ..... 43  
Figure 9. Initial R&I Roadmap for Montenegro..... 47  
Figure 10. Initial R&I Roadmap for North Macedonia ..... 50  
Figure 11. Initial R&I Roadmap for Serbia..... 53

## Editorial



The European Union's cooperation with the Western Balkans offers unparalleled opportunities for the future. Jointly with the Western Balkans, we elaborated the Western Balkans Agenda on Innovation, Research, Education, Culture, Youth and Sport. This Agenda constitutes our joint vision for future cooperation and provides a new narrative for the Western Balkans. This long-term strategy will enhance human capital development, unlock the local potential, and foster the transition to a sustainable and

knowledge-based economy.

The COVID-19 pandemic has demonstrated that we can expect the future to become more disruptive. Yet, the crisis has also shown that research and innovation have paved the way for the recovery of Europe, including the Western Balkans, and beyond. It moreover underlined the importance to equip ourselves with the means to anticipate and respond to future challenges. This is what Strategic Foresight is about – anticipating, exploring and eventually acting in a collaborative manner.

While it is impossible to predict the future, we all need to contemplate how research and innovation policies can unfold its potential and bring added value to all our citizens. How will the Western Balkans address the dual green and digital transition? Which role can the youth play in these processes? What contribution can future European Framework Programmes make in supporting our close partners in the Western Balkans?

The Report *Strategic Foresight in the Western Balkans: Recovery on the Horizon* offers scenarios in which answers to these questions are outlined; which of these presented futures will be closest to reality in 2035 remains up to today's and future decision-makers in the Western Balkans. I am looking forward to the joint implementation of the Western Balkans Agenda on Innovation, Research, Education, Culture, Youth and Sport and to advance on the way towards the most desirable, shared future.

A handwritten signature in blue ink, which appears to be 'Mariya Gabriel'.

Mariya Gabriel, European Commissioner for Innovation, Research, Culture, Education and Youth

## Foreword

This is an exciting time for the Western Balkans because our common history meets our common future. We have different languages, cultures and religions, but we share a common vision and hope for the region. We still have a long way to go but we have made considerable progress. Jointly with our 46 participants, the Regional Cooperation Council (RCC) is working towards increased mobility, better governance, transparency, improved functioning of the rule of law, and enhanced security – both personal and regional – in South East Europe.



The RCC helps contribute to economic prosperity and growth of the Western Balkans through regional cooperation, while keeping focused on advancing European and Euro-Atlantic integration. We see our region as a place of dialogue, freedom and mobility, rich in cultural heritage, where each person feels safe and protected by the rule of law.

Six economies alone, working independently, cannot achieve these ambitious goals, neither in the short-term or long-term. A Common Regional Market is the most elaborate blueprint for comprehensive regional socio-economic development. It introduces EU policy standards and harmonizes policies to create a larger, more competitive market. Our Balkan Barometer 2021 found that 77% of citizens in the region support regional cooperation and its role in improving the political and economic situation in their home economies. The elimination of barriers and tariffs for mobile phone roaming this year is just one example of how such regional cooperation can make a tangible difference in lives of our citizens.

Our vision of establishing a Common Regional Market and implementing the Green Agenda in the Western Balkans require future-oriented policies. Strategic foresight is critical to our future and can provide the evidence base for such policies that pave the way to successfully tackle the challenges in the Western Balkans.

I am thus happy to announce that the RCC will build on the rich findings of the *Strategic Foresight in the Western Balkans: Recovery on the Horizon* Report and seek to complement it through an additional focus on competitiveness in the marketplace. While most developments remain impossible to predict, it is certain that the Western Balkans share a joint future as a region. The RCC stands ready as a committed partner to work towards the future for all citizens in the Western Balkans.

Majlinda Bregu, Secretary General of the Regional Cooperation Council

# 1. Acknowledgements

The International Service Facility (ISF) wishes to express its gratitude to the representatives from the Western Balkans and the various experts, whose input made this study possible. The following representatives were instrumental in defining the principal trends and drivers for Research & Innovation (R&I) in the region: Slavo Radosevic, Domen Bole, Maja Bucar, Benedikt Herrmann, Ralf König, Viktor Nedovic, Lazar Zivkovic, George Bonas, Radmil Polenakovic, Djuro Kutlaca, Sinisa Marcic, Attilio di Battista and Nikos Zaharis. Throughout the preparation of the scenarios and the study, Miroslav Veskovic and Lucia Vesnic-Alujevic from the Joint Research Centre provided their valuable insights into Strategic Foresight and the region's R&I agenda. The team would like to thank Nikelina Naska, Sinisa Marcic and Lucia Vesnic-Alujevic for their comments on the draft version of this study. This study was generously funded by the European Commission in the framework of the ISF contract.

The ISF would like to thank the respondents to the two online surveys, which provided the evidence base for the elaboration of the scenarios for the Western Balkans' (WB) R&I agendas in 2035. Overall, 708 experts from the governmental sector, civil society, private sector, international organisations, and research organisations submitted their responses to the first round of the online survey. The second round of the online survey gathered input from 363 participants. The team moreover expresses its appreciation to the more than 100 participants of the nine virtual workshops that were conducted in the course of the study with special thanks to Nenad Celarevic, who co-organised two of the online workshops. The members of the Regional Cooperation Council / World Economic Forum's *Western Balkans Competitiveness and Innovation Accelerator* kindly provided their inputs and viewpoints on the current trends and drivers in the region.

This study was conducted under the Framework Contract of the International Service Facility in the Strategic Development of International Cooperation in Research and Innovation of the European Commission. The executing partners are DLR Projektträger (Project Management Agency/ DLR-PT), the Centre for Social Innovation (ZSI) and Technopolis Group (TG). The project was led by and benefited from the strategic guidance of Simone Weske and was coordinated by Simon Schmitz (both DLR-PT). The following authors jointly drafted and contributed to the report: Simone Weske, Maria Josten, and Simon Schmitz (all DLR-PT), Klaus Schuch and Dietmar Lampert (both ZSI), Andreas Ligtoet, Kleitia Zeqo, Chiel Scholten (all TG). Tatjana Guznajeva (TG) contributed to the background research and identification of trends and drivers for R&I policies in the WB. Elke Stewering and Ulrike Kunze provided quality assurance of the study.



## 2. Executive Summary

In July 2020, representatives from the Western Balkans (Albania, Bosnia and Herzegovina, Kosovo, Montenegro, North Macedonia and Serbia) and the European Commission jointly decided to commission a study on the possible futures of Research and Innovation (R&I) policies in the region in 2035. Using a Strategic Foresight approach, the study supports policy-makers in creating an enabling environment for R&I policies to thrive and decide on priorities for strategic investments for the future. The report relies on two interlinked online surveys with stakeholders from the region, various expert interviews and nine extensive virtual workshops to harness experts' views about the possible futures. Throughout this process, three plausible scenarios on how R&I policies could evolve in the Western Balkans in 2035 were co-created. None of them intends to adequately describe (let alone predict) the actual and full environment for R&I policies in 2035. Instead, the scenarios aim to sensitise policy-makers in the Western Balkans for different possible futures and for actions they can take today to shape the future they want.

Scenario 1, entitled "**Joining the Common Market**" outlines a potential future in which Albania, Montenegro, North Macedonia and Serbia have become members of the European Union (EU) by the year 2035. While access to the common market has boosted cooperation in R&I beyond borders, talented youngsters use the free movement to pursue their careers in the "old EU member states".

Scenario 2, "**Looking beyond EU borders**", constitutes a scenario in which accession negotiations have come to a standstill. The premise is a cooling relationship between an EU which is increasingly preoccupied with itself due to internal and external shocks and the WB for whom the integration perspective has lost its original appeal. On the one hand, this opens up a partial geopolitical vacuum; while on the other, it is accompanied by a change of perspective and new scope for action.

In the third scenario, a pro-business attitude facilitates exchanges and cooperation between various R&I actors in the Western Balkans. The new dogma "**Putting Business First**" – as this scenario is called – trumps previous political divides and has strengthened free trade through the Open Balkan agreement and created spill-over effects among the Western Balkans.

The report concludes with initial roadmaps tailored for each of the WB that shall inspire decision-makers with goals and actions needed to further develop their R&I systems. The goals and measures described in the roadmap can be applied to any of the potential future developments outlined in the scenarios. The findings from the roadmaps provide key lessons that were identified and implications that may support decision makers to design and implement forward-looking policies in R&I. Eventually, the study provides a future outlook and contextualises the endeavour in the ongoing and future initiatives of the European Commission and the Regional Cooperation Council (RCC).

## 3. Introducing the main tenets of the Strategic Foresight project in the WB

### 3.1. What is the study about?

Any attempt to accurately predict the future is set up for failure in a world that is characterised by a high degree of uncertainty. The history of the Western Balkans demonstrates that long-term visioning might be especially challenging in a region that has been experiencing ethnical conflicts. In addition, COVID-19 has caused major disruptions to the Western Balkans and the immediate consequences are evident in all parts of society. Not only in the Western Balkans, small and medium-sized enterprises (SMEs) are struggling and are looking for ways to respond to the still unfolding effects of the global pandemic. In addition to dealing with the pandemic, a number of other major challenges, as well as external and internal crises, can be expected. The challenges posed by climate change, demographic developments, migration, biodiversity loss, as well as the pressure to catch up with an increasingly accelerating technological development will influence the Western Balkans' future development. Strategic Foresight can help to cope with such uncertainties and help understand wider implications for the long-term future primarily - yet not exclusively - to policy-makers. Lessons learned in today's pandemic could be used to inform tomorrow's policy actions. Furthermore, Strategic Foresight can support the next generation of the WB's Smart Specialisation Strategies<sup>1</sup> as it combines participatory approaches with the systematic exploration of a sustainable future that goes beyond the strategies' medium-term focus.

### 3.2. Methodology

The scenarios of the future presented in this report are rooted in extensive consultations and in-depth exchanges with a wide range of stakeholders from the Western Balkans. Based on an extensive literature review and interviews with other regional experts for the WB, the ISF team identified around 100 signals of change, trends, and drivers in the areas of R&I. The team discussed and complemented them during in-depth interviews with more than a dozen experts from the Western Balkans. Based on a problem-centred prioritisation, the most relevant and pressing signals of change, trends, and drivers, the ISF team developed three draft scenarios.

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<sup>1</sup> According to Regulation (EU) 1301/2013 of the European Parliament and of the Council of 17 December 2013, "Smart specialisation strategy means the national or regional innovation strategies which set priorities in order to build competitive advantage by developing and matching research and innovation own strengths to business needs in order to address emerging opportunities and market developments in a coherent manner, while avoiding duplication and fragmentation of efforts." (European Commission, 2014).

The draft scenarios were subsequently extensively tested and adapted based on exchanges with representatives from the Western Balkans. Two rounds of online surveys that were inspired by the Delphi method with 708 participants further shaped the scenarios. The respondents represented the academic sector, civil society, international organisations, the private sector as well as national and subnational governments (see Figure 1). Additionally, the ISF team convened around 60 experts from the region in three multinational online workshops to discuss and adapt the regional scenarios in March, April and May 2021. To analyse the implications of the three scenarios on each of the Western Balkans, the ISF organised six online national workshops which were tailored to the respective economy. Herein, the ISF team co-created roadmaps and discussed policy implications and possible recommendations with the attendees.

*Figure 1. Co-creating the scenarios and roadmaps through an inclusive process*

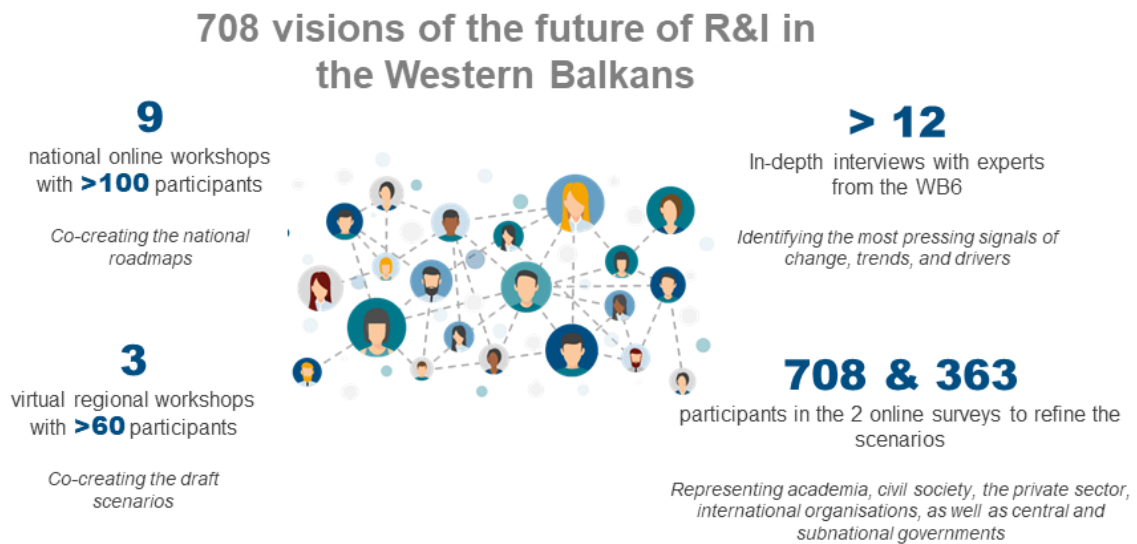
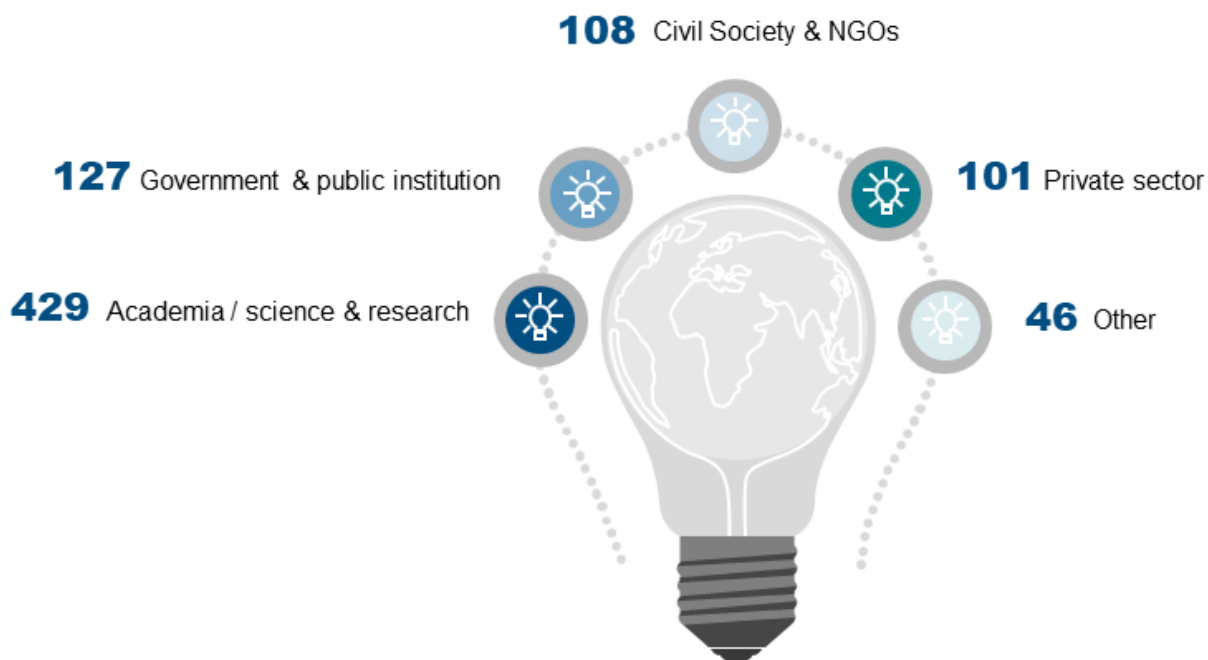


Figure 2. Who are the experts that contributed to shaping the scenarios?



*Note:* Results from the first round of the online survey. Participants had the possibility to indicate multiple answers to the question regarding their professional background. Overall, 708 people participated in the first round of the survey.

## 4. The benefits of adopting Strategic Foresight as part of the culture of governance in the WB

This section makes the case for using Strategic Foresight in policy-making in the Western Balkans and beyond. Dealing with possible futures is not a purely intellectual matter. What future our societies consider desirable and worthwhile needs to have an influence on current political action. Meanwhile, it should be noted that there are more or less “known-unknowns” that will have a major impact on the future. Trying to anticipate and preparing for them will lay the foundation for an effective policy response in the future.

### 4.1. What are the benefits of thinking about the future?

Even before the COVID-19 crisis, policy-makers in the Western Balkans were confronted with multiple, pressing challenges including comparatively frequent changes in governments, declining trust in governments in four<sup>2</sup> of the Western Balkans (OECD, 2020a), high levels of jobs in the informal sector, and unemployment rates three times higher than in OECD countries (ibid). According to OECD data, citizens from the Western Balkans express a comparatively lower level of satisfaction with public services than the OECD average and only around half (57%) were content with the education system and schools (ibid.).

The multitude of grand challenges and the pressure of electoral cycles nudge decision-makers to focus on quick-wins rather than take the time to contemplate possible futures for their countries. Future challenges, such as addressing climate change, bridging the digital divide and dealing with political uncertainty, make it even more important to equip decision-makers with tools that help in the preparation. Yet, how can governments become fit for the future?

While any attempt of accurately predicting the future is doomed to fail, governments could identify possible futures for their countries and regions, analyse the implications of such developments and eventually determine the implications for policies which they could enact today. Hereby, it is crucial to work across policy-silos and acknowledge the cross-cutting initiatives that the future developments might require.

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<sup>2</sup> Trust in Bosnia and Herzegovina, Kosovo, Montenegro and North-Macedonia declined in comparison to data gathered in 2007 by Gallup.

## 4.2. How can the WB contemplate the future and what are the benefits of Strategic Foresight?

Strategic Foresight offers governments (as well as NGOs, private companies, or other stakeholders) a range of tools to prepare for possible future developments. In its 2020 Strategic Foresight Report “Charting the Course Towards a more Resilient Europe, the European Commission defines Foresight as *“the discipline of exploring, anticipating and shaping the future”* [which] *helps build and use collective intelligence in a structured and systematic way to anticipate developments and better prepare for change*” (European Commission, 2020a, p.4). Accordingly, Strategic Foresight is not used to predict the future, yet to analyse different plausible futures which could emerge and the implications for policy-making. The collection of trends and newly emerging issues rather helps to develop a joint vision on how to respond to these developments. Strategic Foresight can thus support decision-making and initiate change in order to work towards the most desired future (European Commission, 2020b; Šucha & Sienkiewicz, 2020).

Figure 3. The benefits of Strategic Foresight



Source: Elaborated by the authors

### **4.3. How can the WB use scenarios?**

*Using the process to develop scenarios to lay the foundation for its effective use*

Strategic Foresight entails a variety of tools to develop and discuss possible future developments. One of the most commonly used tools is the elaboration of scenarios. According to the Institute for the Future, a non-profit corporation, scenarios "(...) describe a world to come, making a systematic set of assumptions about the drivers shaping that world. They may be brief and descriptive, or they may include story-like narratives that represent the point of view of personas [sic.] in the future. They may include a "history of the future" – how we get from here to there. Scenarios may come in sets that represent alternative sets of assumptions" (Institute for the Future, n.d.). Usually, scenarios bring together developments in different fields and contextualise them in a potential future that provides an outlook to the macro developments. If created in an inclusive manner, scenarios have the potential to shape a joint understanding within an administration, organisation or company and ensure buy-in (OECD, 2020b).

In a Strategic Foresight process, scenarios might be the end product of the endeavour, though the process to develop the scenarios together with other stakeholders concerned is an equally crucial part. Developing plausible futures challenges internal biases and assumptions if questioned by other experts that are involved in the process. Since everybody knows that one cannot predict the "correct future", the elaboration of scenarios moreover offers a space in which the stakeholders can express their viewpoints without being proven wrong. During such exchanges, it is therefore vital to create a room for discussion independent of hierarchical structures in order to enable the expression of creative, innovative viewpoints that can even challenge the status quo.

Prevailing challenges in the Western Balkans demonstrate that orthodox approaches of the past to preparing for the future have not always led to the desired outcomes. Turning the ambitious policy agendas and goals into concrete results thus requires new, innovative tools. Scenarios can offer such tool to ideate, shape and help to realise crucial elements of the ambitions that policy-makers in the Western Balkans have formulated. Using the outlined scenarios can moreover leverage emerging opportunities and minimise risk that might impede the successful implementation of policies. In sum, scenarios offer a tool for the Western Balkans to detect new ways of thinking and talking about strategic plans for the future. The process to develop scenarios offers a forum to contemplate approaches to implement strategic priorities that will benefit all citizens in the Western Balkans.

*Leveraging the possibilities that scenarios can offer*

Once developed, there are several possibilities for governments and other stakeholders to make use of the scenarios. Scenarios allow policy-makers to assess the strategic options against the circumstances outlined in these fictional futures. Strategic plans often tend to be formulated on the basis of desired outcomes and do not always reflect other realities (Government of UK, 2014). The scenarios can provide a 'counterweight' by underlining the potential risks or challenging developments that might occur in the future. Strategic priorities can thus be examined in each of the scenarios in order to test their robustness or strategic im-

portance in each of the scenarios (a process termed as ‘wind-tunnelling’ in strategic foresight) (ibid.).

*Scenarios can be used to formulate risk-mitigation plans and detect unconscious biases.*

As aforementioned, scenarios do not aim to be correct. Instead, they could be wrong, though provide a constructive, creative and innovative different perspective. Unorthodox potentials and risks can thereby be uncovered by scenarios and lead to risk-mitigation plans that can respond to a wider range of challenges of the future (ibid.). Strategic plans, such as Smart Specialisation Strategies, can be tested against the backdrop of the scenarios’ developments in order to test their (in)effectiveness in such circumstances. In the best case, governments could equip the scenarios with indicators or a traffic light system. This would help to detect early developments towards one of the scenarios and adjust the reforms in case the implications are not desired. Eventually, scenarios should be updated especially in dynamic and volatile contexts (as the R&I sector) in order to take the latest trends and signals of change into account (ibid).

***Guiding the process to create and use scenarios: The Joint Research Centre’s Scenario Exploration System***

The Joint Research Centre (JRC) has used gamification methods to facilitate hands-on-futures thinking and make use of scenarios through its Scenarios Exploration System (SES). The System is designed to engage participants in systemic long-term thinking in order to explore alternative futures.

Based on an interactive board-game approach, the SES helps to widen one’s perspective, e.g. on the implications of future developments on different actors of society. Given its focus on practical solutions to respond to future developments, the tool provides an excellent resource to facilitate the uptake of strategic foresight for policy-making. Since the SES can be performed within a few hours, even time-pressed high-level decision makers can participate. Ever since its creation in 2015, the SES has been used with national policy makers, academics, students, people from business and industry, consultants, teachers, museum staff, children, people from NGOs and associations of many sorts as well as by the public. In addition, the JRC engaged high-level decision makers from businesses (CEOs), research institutions and policy-making circles (Directors General at EU and national level). The tool is available in ten languages and in Creative Commons.

For more information on the SES and other Foresight tools, see the European Commission’s Competence Centre on Foresight, European Commission (n.d.a.).



#### **4.4. How can Strategic Foresight and the WB Smart Specialisation Strategies reinforce each other?**

A forward-looking, central planning tool in the Western Balkans are Smart Specialisation Strategies (S3). The Strategic Foresight approach and the Western Balkans' S3 have distinct conceptual and methodological complementarities. Since their inception, S3 have been conceptualized as territorial economic transformation agendas. As pinpointed by the European Commission, "Smart Specialisation strategies are an expression of sound innovation policies and as such are of interest not only to EU member states, but also to non-EU countries willing to improve their innovation ecosystems" (n.d.b). The EU regulation which establishes the Instrument for Pre-accession Assistance (IPA II) moreover notes the potential of S3 as a thematic priority for assistance to economies that aspire to become EU-members (Radosevic et al., 2017).

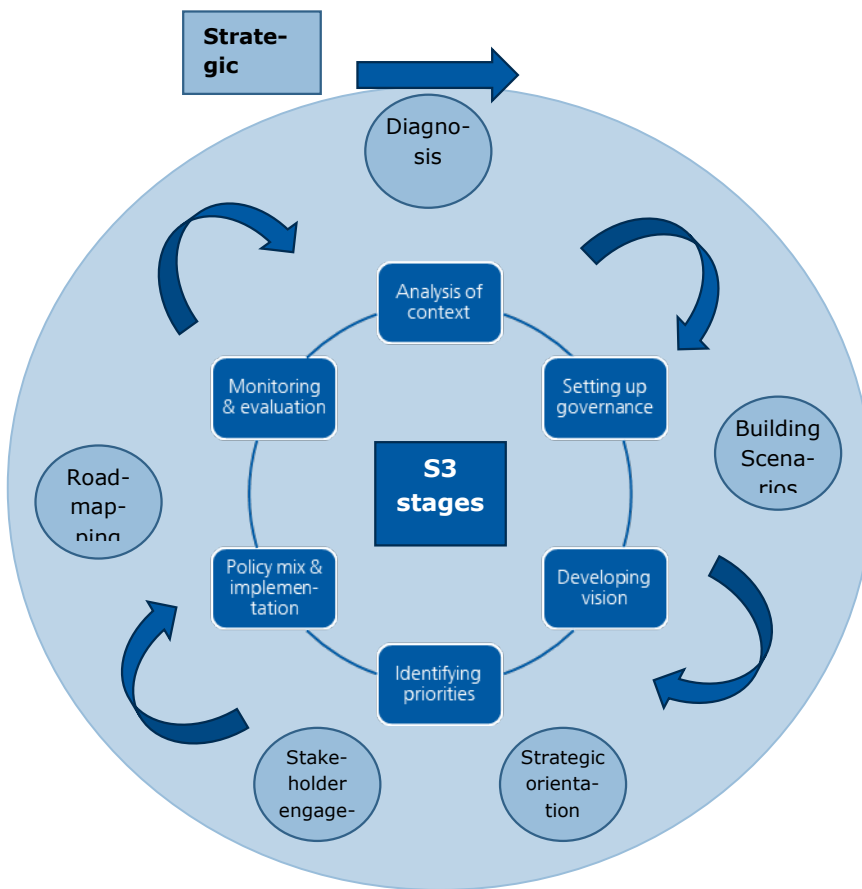
To date, all the Western Balkans are either preparing their S3 or have started implementing the strategic document. While each of the economies develop their respective S3, Smart Specialisation could however also be considered an important tool for transnational cooperation (ISF, 2021). Several clusters, such as in the ICT sector, are pioneering cooperation beyond national borders. Nevertheless, to date, cross-border cooperation is mostly financed by external sources. While S3 are by definition region-specific, the WB could thus use the S3 processes to exchange good practices on the process to elaborate the strategies and eventually success factors for an effective implementation.

S3 aim to identify strategic areas for medium-term intervention based both on the analysis of the strengths and potential of the economy, as well as on a so-called Entrepreneurial Discovery Process (EDP) with wide stakeholder involvement. According to the European Commission "[The EDF] is an interactive and inclusive process in which the relevant actors identify new and potential activities and inform the government. The government assess this information and empowers those actors most capable of realising the potential. This process is what mainly distinguishes Smart Specialisation from traditional industrial and innovation policies." (European Commission, n.d.c.). S3 focus and align policy support and investments by addressing challenges and needs on key national or regional priorities (ISF, 2021). The EDP can benefit from information on scenarios of the future to decide on priorities for strategic investments that would lead to "desired futures".

Decision-making bodies, however, often miss the medium to long-term perspective on processes of change in the economy beyond political cycles (or legislative terms) (ibid.). Strategic Foresight can thus be used as a diagnostic tool to develop a shared vision for future specialisations and to identify actionable opportunities for innovation. Strategic Foresight also provides a set of methods and approaches that enable governments to facilitate the EDP early on and to reach consensus on long-term priority areas for action. Strategic Foresight can inform S3 priority-setting by providing evidence on the dynamics of the R&I system and information about trends and possible futures, as well as facilitating a dialogue between stakeholders on how to shape the future to achieve the desired outcome. Strategic Foresight is thus a suitable approach for supporting S3 as it combines participatory process elements with systematic future exploration that goes beyond the medium-term focus of the S3. It can broaden perspectives in S3 decision-making and encourage outside-the-box thinking, resulting in outcomes not defined upfront.

The inclusive nature of the foresight process can lay the ground for future collective action. Strategic Foresight draws on a variety of participatory methods for mobilising relevant actors, exploring possible futures, and creating a common vision, e.g., through Delphi approaches<sup>3</sup>, scenario planning, visioning, etc. Additionally, Strategic Foresight sets the scene by providing a sound information base in the form of different future scenarios while S3 operationalise policy recommendations by formulating and guiding the implementing measures. The action-oriented feature of Foresight activities helps to develop transformative activities in action plans. Roadmapping is a useful tool in this respect as it allows collaborative planning of future action. The outputs in the form of roadmaps identify the critical system requirements, performance targets, and milestones for meeting those targets (see the chapter on roadmaps in this Report for more information).

*Figure 4. The nexus between Strategic Foresight and Smart Specialisation Strategies*



Source: Authors' own elaboration

<sup>3</sup> According to Dinges, Wang and Schuch (2020), the Delphi method "(...) sets out a process, in which the various opinions of several experts on a particular issue are combined into a single combined position." Traditionally, the Delphi method relies on two or more rounds of questionnaires, whose results are shared among the experts after each round to invite the experts to reconsider their previous answers. For more information on the method see Dinges, Wang and Schuch (2020).

Already today, changes in economic, environmental and social policy are needed to promote smart, sustainable and inclusive growth in the Western Balkans. These goals are set out by the new EU policy context of the “Green Deal”, which gives new impetus for S3 to evolve conceptually. The mitigation of climate change and the protection of natural resources have moved to the centre of political action and constitute the core of the transformative “Green Deal” agenda.

*S4+, or Smart Specialisation Strategies for Sustainability and Inclusiveness*, need to expand the conceptual “silo” of S3 beyond (too) narrow economic and innovation domains. Therefore, S4+ provide a framework for designing more sustainable and future-aware measures aiming at gradual structural evolution of the economy and wider societal goods (European Commission, n.d.). The Western Balkans may consider to be early adopters of S4+. They can benefit from a forward-looking transformative approach which helps contain the risk of path dependencies and reflects the long-term perspective inherent in the sustainability dimension of an enhanced approach to Smart Specialisation that is fit for the future.

## 5. What does the future hold for the WB? – Introducing three possible scenarios for R&I policies in 2035

„*Haunted by the inertia of the past*“ wrote the *Balkan Insight* in the headline of a multilateral report about the economic and scientific situation of the Western Balkans in May 2035. The news site thereby alluded to the missed opportunities in terms of structural change and competitiveness in the region in the last 15 years. This bleak status quo in the WB can mainly be traced back to the longstanding standstill in the accession talks with the EU, caused by a predominant limited political will and determination of the WB leaders to initiate sustainable reforms in the most important economy sectors, and to improve their national R&I systems.

This is one of many possible futures of how the Western Balkans could evolve in the coming 14 years in case no bold reforms are enacted. Given that a scenario that describes an (R&I) ecosystem which is very similar to the current one is not very inspiring, the report outlines three scenarios in which impactful changes will have occurred in the Western Balkans until the year 2035. These scenarios cover similar aspects, though carve-out nuances on *how* these aspects might be impacted, for example through the accession to the EU (see the factsheet in the Annex for a more detailed overview of these nuances). As described in more detail in the methodology section, these scenarios are the product of various co-creative processes with more than 700 experts on R&I from the WB. All of the quoted reports or statements are purely fictional and serve to illustrate potential developments that the stakeholders together with the ISF have worked out during the workshops, expert interviews, or online surveys.

### **What are wildcards and what are their roles in strategic foresight?**

The concept of wildcards was introduced in the 1990s in order to include unforeseen developments in studies on the future. Believed to be the first scholar to introduce the concept, Rockfellow and his colleagues define a wildcard as an “*event having a low probability of occurrence, but an inordinately high impact if it does*” (1994). Petersen (1997) complemented the definition as “*low probability, high impact events that happen quickly*”.

Complementing the three scenarios, the ISF has developed wildcards, which shall provide additional inspiration for potential developments with a strong impact on the R&I sectors in the Western Balkans. They were added in order to provide a stronger focus on more extreme, exogenous developments, which could occur in the future. Throughout the development of the scenarios for the future of R&I in the Western Balkans, the ISF prioritised the plausibility of the scenarios over potential, though highly unlikely developments. Wildcards shall thus extend these perspectives and serve as reminder that sudden developments can alter the expected development to an unexpected degree.

## 5.1. Scenario 1: Joining the Common Market

"The Western Balkans are part of Europe and not just a stopover on the Silk Road", said former President of the European Commission Ursula von der Leyen 15 years ago in her first State of the Union address. Today, in 2035, her quote can be seen as the starting point for the WB accession into the EU and a period of rapid and transformative change for the Western Balkans. **Eventually, Albania, Montenegro, North Macedonia and Serbia gradually became members of the EU until 2035 although with some transitional provisions.** Bosnia and Herzegovina and Kosovo have also taken a great leap forward towards the EU, but there are still some political barriers which hold back the EU accession. In terms of socio-economic implications, the influence of the EU in the region has increased significantly and it has slowed down the economic presence exerted by third countries (e.g. China) in comparison to the 2020s. The free trade among the four new EU members with the rest of the Union has been further developed on various levels, and the Union as a whole remains the most important trading partner for the entire WB region.

The implementation of the Copenhagen Criteria<sup>4</sup> has significantly improved the openness and transparency of the WB's governance and thereby led to increasingly effective public administrations. The domestic, regional political and ethnic conflicts from the past, which were predominantly perceived as origins of stagnation and an encrusted political system, have been jointly swept under the carpet. In its latest Western Balkans report, the international NGO *Transparency International* (TI) highlighted the ongoing and, in some areas, successful fight against corruption – one of the biggest challenges in the region in the last 50 years. These reforms have also affected the R&I sector: Education, R&I have been anchored (to varying degrees) in the political agenda of the WB by planning and implementing systemic changes towards building knowledge-based societies and evidence-informed policy making.

One example of the increased impetus for reforms is the handling of Open Science and Open Access: Research publications and data as well as (newly built) R&I infrastructures are openly accessible for domestic and foreign partners. The majority of the publicly funded WB initiatives and projects within national, regional and international R&I competitions have been evaluated in a transparent manner by international, independent peer reviewers in 2035. Moreover, in the last 15 years, the WB have taken a number of anti-corruption steps, such as adapting legislation and establishing dedicated anti-corruption institutions with both preventative and effective law-enforcement competences. These efforts as well as the increased national public R&I investments have contributed to decreasing the level of corruption in research and higher education, according to TI's *Corruption Perceptions Index*. Media outlets and civil society especially have promoted and supported the anti-corruption developments in these fields and have contributed to a renewed trust in the academic system in the region.

Improvements can also be noted in the research infrastructure and the cooperation between academia and the private sector. The development in both areas was significantly supported by a better exploitation of the European Framework Programmes and the innovation support

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<sup>4</sup> The Copenhagen Criteria are the rules that define whether a country is eligible to join the European Union. The criteria require that a state has the institutions to preserve democratic governance and human rights, has a functioning market economy, and accepts the obligations and intent of the EU.

measures offered by the EU. The number of R&I projects, international publications and innovation clusters initiatives have doubled in the last decade. University reforms and the additionally gained research openness have significantly improved the impact and relevance of WB researchers in the global scientific arena during the last 15 years. The anti-corruption measures as well as the stronger focus on applied research activities in the universities and the public research sector have positively affected the international reputation and social acceptance of scientific work in the WB. Nonetheless, the application of the academic curricula of leading universities in accordance to the market and entrepreneurship needs is still an ongoing process.

Propelled by the increased collaboration within the EU in the field of innovation, special attention is nowadays devoted to entrepreneurship and SMEs. This has resulted in an advanced entrepreneurial culture in the WB. The change in attitudes towards entrepreneurship has likewise ameliorated the status of Research, Development & Innovation (RD&I) in general and thereby helped to improve the cooperation between universities and SMEs in the WB. The national governments have increased their attention devoted to support programmes for SMEs and have considered a public investment in strengthening SME development. As a consequence, a substantial number of spin-offs have taken place in the WB. SMEs also benefited from the internationalisation and closer connection with the diaspora and business communities in Europe. Especially the cooperation with some national and European Centres of Excellence in the field of ICT, health and green technologies have led to the development of concrete products, as called for by some foreign investors.

The collaboration with the business sector has stimulated the private financing of R&D conducted at public universities and research organisations. Nevertheless, according to the *Eurostat R&D Financial Report 2034*, the business enterprise investments in the new EU members Albania, Montenegro, North Macedonia and Serbia were on average still significantly lower than the R&D funding from entrepreneurship in the EU27 countries. Furthermore, the World Economic Forum's "*Regional Risk of Doing Business*" 2034 edition still cites concerns about prevailing corruption in the business sector – despite some recent positive trends. Nowadays, major companies exert great pressure and influence on political parties and found legal loopholes to avoid public scrutiny and accountability mechanisms. A representative survey conducted by the Regional Cooperation Council (RCC) in 2032 found that "the prevailing nepotism" and "clientelism" were cited as the most important reasons for youngsters to pursue a job in a different country than their home-country.

The adoption, implementation and enforcement of the EU *Acquis Communautaire* on Environment was an obligation for aspiring member countries in the framework of the stabilisation and association process. Upgrading infrastructure and developing a much bigger and more competitive industrial base in this field were (to a various extent) political priorities especially in the EU member countries of the Western Balkans in the last decade. In terms of economic reforms, the WB radically adjusted their stance vis-à-vis renewable energy. The potential of biomass, hydropower, wind, and solar was supported through improved cooperation and exchange with European enterprises, research institutions and state actors, as well as significant funding through the European Commission's *Green Deal Just Transition Mechanism*. The European Commission's *Energy Cluster Initiative*, established in 2023, further supported this change in attitude. Due to the high investments in green technologies, the British weekly newspaper *The Economist* praised the Commission's support mechanisms for renewable resources "[...] as yet the green transition's most effective instruments of the last decade".

The increased R&I public investment, especially through the support of several EU initiatives and programmes, has radically changed the energy sector in the WB. The newly built infrastructures have created new job opportunities, and the educational and vocational sector with the support of EU funding was able to improve the quality of education and digitalisation in terms of acquiring specialisations in the fields related to the green transition. In this context, the swift towards knowledge-intensive services, especially in the field of green technologies, has progressed. Nevertheless, the technology penetration, even in prioritised industries sectors, lags behind the global average. During the latest *Western Balkans Summit "EU Green Future"* in 2033, the Commissioner for Energy and Environment welcomed the joint initiative *"Together for our society"*. Brought together by a common cause, the WB had agreed on transnational standards by adopting specific technical innovation related to the everyday life of individuals in the region.

Due to the increased scientific research excellence and the improved infrastructures, the competitiveness and productivity of the WB's economies have significantly risen as it was stated in the latest edition of the World Economic Forum's *Global Competitiveness Report*. All of the WB have entered the top 70 of the ranking. The digitalisation of important sectors such as public administration, health and education improved significantly the value added. Nevertheless, some challenges prevail. Starting from a relatively similar economic structure, regional economic specialisation was comparatively slow over the last 30 years. However, the specialisation of the four WB which had become members of the EU for certain product markets have been accelerated by the European commitment to become the world's first climate-neutral continent by 2050.

The EU company law rules cover issues such as the formation, capital and disclosure requirements, as well as operations (mergers, divisions) of companies. These regulations are relevant for all member states – respectively also for Albania, Montenegro, North Macedonia and Serbia. The aim is to enable businesses to be set up and to carry out operations anywhere in the EU. Indeed, many traditional WB companies, especially medium-sized family companies, were forced to shut down as they were unable to meet these EU regulations and compete with EU peers.

As stated in the WB Prime Ministers' Joint Declaration at the latest WB summit in July 2034, the freedom of movement in the EU has contributed to change the brain-drain of well-educated professionals into a brain circulation even if plenty of expatriates have not returned to the Western Balkans yet. Generally, the academic freedom is increasingly seen as a positive sign for the scientific immigration to the region. The implementation of sustainable science-industry cooperation and knowledge transfer have offered new perspectives for career development. This applies especially to scientific areas in which the WB are specialised in.

A positive side effect of this evolution is the region's R&D improved attractiveness to incoming researchers. However, a sustainable strategy for brain gain of R&I foreign experts is still missing in the majority of the WB. There are still WB researchers who are intrigued by the opportunity to emigrate and continue their research in better-paid jobs and more prestigious institutions in the "old" EU countries. Thus, the Prime Ministers acknowledged during the WB summit in July 2034 that concrete incentives for the return of highly skilled workers are still required as the business sector laments shortages of an adequately skilled labour force. For now, companies retreat to recruiting employees from Ukraine, Belarus, and Turkey.

**Wildcard: The College of Western Balkans**

After her successful International Initial Offering (IPO) of her second start-up, Sofija Popović decided to found a political party that would seek to reform the public sector and reduce administrative burdens to set up a company in Montenegro. Following her landslide win and elevation to power, Popović introduced sweeping public administration reforms and promised “a new generation of civil servants for Montenegro”. Aided by an unnamed philanthropist, Montenegro set up the first National School of Administration in the region in 2031. Inspired by the prestigious French *École nationale d'administration* (ENA) or the College of Europe, the School attracted motivated talents from across the country, whose majority nowadays predominantly work for the government. The School’s approach of organising classes only remotely, moreover played into the hands of the younger generation of the diaspora, who returned to Podgorica upon completion of their degrees.

Whereas advocates of the new School praise the more effective public administration, critics allege nepotism in the choice of students and a perpetuation of influential families in public decision-making roles. Whether the School can serve as a model and create spill-over effects in the Western Balkans will depend on the degree of interference from politics in the curriculum. Popović’s main opponent for the forthcoming election in Montenegro already hinted at the fact that he has a different idea on what the mindset and skills of the future for a new generation of civil servants would be.

**5.2. Scenario 2: Looking beyond EU borders**

By 2035 the EU has become increasingly fragmented and economically under pressure due to overall low economic growth rates aggravated by a rise in regional and social disparities. In addition, external shocks have occurred, such as a new influx of immigrants, alarming debt crises in a few of its member states, caused by the bursting of the real estate sector bubble in 2032. Correspondingly, resources were diverted to policy areas such as economic stabilisation and health but also to homeland security, defence as a response to geo-political tensions. Enlargement policy has lost priority, and the budgets for European R&I policy have stagnated at the same nominal level as Horizon Europe, the 9<sup>th</sup> European Framework Programme for R&I (2021-2027) that ended eight years ago. **In 2035, the enlargement fatigue at the EU side is met by an accession fatigue by the WB, which have grown tired of ever-continuing accession talks.** A perceived double standard between current member states and accession states in terms of good governance requirements did not contribute to pacify EU-sceptics in the WB.

Disintegration tendencies in the region, however, had already existed for several decades, and even the unifying perspective of EU accession began to show clear signs of erosion more than 15 years ago. Many citizens from the WB region grew weary of the prevailing domestic and regional political and ethnic conflicts, which were predominantly perceived as signs of stagnation of an encrusted political system. At the same time, the yearning for change at any price increased. A political scientist from Belgrade expressed the situation as follows in a European television report in fall 2034: “In the last five years, it has become increasingly



secondary *what* happened, as long as at least *something* happened that could change the negatively perceived status quo”.

Since 2025, the lack of perspective for EU accession in the near future and the resulting geopolitical vacuum has been taken advantage of by Russia, China, Turkey, and the Arab countries and has expanded the United States’ influence in the region. All of these governments signed a variety of treaties that removed tariffs for a selection of Balkan goods and boosted trade with the WB. In addition, strategic geopolitical military interests have been brought into play. New military agreements of distinct WB with Russia, the USA and Turkey continue to undermine regional stability and cooperation.

Although free trade with the EU has continued and the EU as a whole has remained the most important trading partner for the WB region, some of the WB firms have been able to diversify their markets and enter niches in global markets. Wine from the region has become an appreciated product among China’s vast number of consumers. Initiated by new military agreements, a few Western Balkan companies could profit from subcontracts in military production and related R&D. However, most of the firms did not succeed in integrating into global value chains (at least not at higher-tier levels) and severely struggle with the growing internationalisation pressure. Imports from China have become cheaper and have replaced domestic production to an even greater extent, especially in the field of machinery and sophisticated chemical products.

The 2034 World Bank Report *Accelerating sustainable productivity growth* notes that a structural shift in the economy towards medium- and high-tech production in the region has been comparatively slow for the past seven years. The shift towards knowledge-intensive services has only been slowly progressing too. This has had implications for a deceleration of the diffusion and mainstreaming of radical technologies in the business. A good example of the low technology penetration that has a growth-inhibiting effect is the green industries sector, whose growth in the WB region lags well behind the global average, despite investments from Chinese companies in selected strategic business areas (renewable energies, material recycling and re-use).

Due to the volatile political situation, foreign direct investments (FDIs) from the EU have declined. They have partially been replaced by FDIs from China, Russia, the Arab countries and Turkey. These investments were mainly made in strategic areas and concerned basic industries (mining, chemicals), the agricultural sector, transportation, infrastructure and construction. European companies have also increasingly sold their shares to overseas investors. This has led the tourism sector, the energy and the telecom utilities sectors to gradually change property to investors from oversea.

Wandering the streets of Sarajevo these days in 2035, one can hear occasional chats not only in Bosnian, but also in Russian and Mandarin. According to data published by the Confucius Institute, the number of students in the Western Balkans that have taken Mandarin language classes have risen steadily since 2026. This trend is representative for isolated additional FDI in education, especially from China, Turkey and the Arab countries. Firstly, these investments concerned extracurricular institutions, such as the aforementioned Confucius Institute. Secondly, further privatisation of the higher education sector was particularly affected. This has led to massive student protests and “sit-ins” in spring 2033, which were generally received by the media as the “Hot Spring”. These protests have soon spread throughout the region,

prompting the education ministers of Northern Macedonia, Albania and Kosovo to announce measures to curb further privatisation of the higher education sector and the hollowing out of state universities, respectively. The "Hot Spring" has created spill-over effects to civil society, which took to the streets and expressed their fear that primary and secondary education would also be privatised gradually.

In relative terms, the ICT sector shows the biggest economic success with the greatest growth potential in the region in recent years (until today). Many start-ups have also emerged in this area, which have provided employment for young, creative people – particular in large cities. ICT services have particularly been demanded by the mining and material sector, the energy and the tourism sector. In terms of growth during the last 15 years until 2035, the energy and sustainable tourism sectors have followed the ICT sector at a distance, while the healthcare sector and green industries have even had only marginal growth rates. The provision of digital infrastructure and digital services was primarily driven by private actors, which has led to increasing geographical disparities. While beneficial for urban areas, this has further widened the connectivity gap between rural and urban areas with several negative political, economic, social and demographic consequences. The 2034 UN-Habitat's Report *Fostering rural development* found that only 13% of youngsters (defined as people younger than 30 years) in the Western Balkans wish to move to the countryside in the next five years.

Starting from a relatively similar structure, regional economic specialisation and Smart Specialisation Strategy processes have developed slowly over the last 30 years, both within individual regions and between the WB. The specialisation dynamics were slowed down by repeatedly introduced protective self-sufficiency measures of individual WB for certain product markets due to swelling political tensions. Consequently, this has triggered temporary bilateral trade restrictions within the region.

The European Commission's *Status Report on ERA-Integration of the WB Region*, which was published last month in September 2034, confirms that R&I policies are not integrated in the overall national strategic priorities of the WB. This low priority is also reflected in mediocre public budget allocations for R&I, which remain overall at a low level. Investments in domestic medium to larger-scale R&I infrastructure are particularly negatively affected. The precarious budgetary frameworks has had a clear negative impact on domestic scientific and technological excellence. Even new collaborations with China and Russia in the field of science could not outbalance the lack of basic material and immaterial domestic resources in the WB.

Due to budget pressures, researchers, especially from some selected technical disciplines, are seeking increased third-party funding, which is why knowledge and technology transfer continues to play an important role. R&D spending by domestic companies and their limited absorption capacities for external R&D supply have, however, increased only slightly. Overall, corporate financing of R&D conducted at public universities and research organisations can neither provide a significant push nor meet the existing demand for financial means by the academic sector.

The association of the WB to the 11<sup>th</sup> European Framework Programme (EFP) for Research and Innovation, whose first calls were launched in January 2035, is being delayed and there are doubts whether the association will still be successfully concluded at all. Critical voices note that almost the entire WB region has been associated to the FPs for 30 years, but continues to have high subsidy needs. The Innovation Institute, an association of the leading

European RTI policy consulting institutes, noted in their yearly report on *Innovation Policy in Europe* that, “the R&I policy reform agenda that has been repeatedly invoked by the European Research Area (ERA) so far had little concrete impact - beyond political lip service - in the WB. Instead of hearty reforms in line with the ERA agenda, too often only single aspects have been reformed or sometimes only cosmetically embellished”. In essence, the report insinuates that the ERA has been equated with the Research Framework Programme, which has been primarily regarded as a potentially accessible source of income during the last 30 years, but not as a reform agenda.

One example of the insufficient impetus for reform is the handling of Open Science. Despite past remarkable efforts by policy-makers and researchers in the WB to implement the Open Access agenda in line with the European vision, a sluggishness has taken hold in the course of further implementation. This was partly caused by a lack of financial incentives (e.g. from the Framework Programme). The same development applies to the disclosure of data from publicly funded research projects. After an initial phase of political declarations of intent and, above all, externally funded pilot projects, there was a rapid cooling-off phase. This can partly be explained by the insufficient provision of national funds, which were made available to cover the economies’ implementation of the long-term strategic Open Science agenda.

Despite the noticeable disintegration tendencies, cooperation in the field of research with the EU has remained important for the WB due to the existing ties, the ongoing attraction of the EU in R&I and the geographical proximity. National statistical R&D surveys show that the extent of scientific and technological cooperation with the USA and China is only about half of the S&T cooperation with the EU. Russia and Turkey follow at some distance.

China and Russia in particular are also investing in R&D in the Western Balkans, and a few EU countries such as Hungary continue to show a willingness to invest in foreign R&D in the region. These investments sometimes serve soft diplomacy interests and are used for financing specific professorships but also for the establishment of private universities or colleges. Strategic R&D investments are made in certain industries (mining, agriculture, defence industries) in an attempt to gain economic control. In such areas, pockets of R&I excellence with strong ties to partner institutes in China, Russia or elsewhere could be established.

According to the *New Global Innovation Index* published in Autumn 2034, the region's R&D attractiveness to incoming researchers has stagnated, while brain drain from the WB has severely increased. Some well-qualified workers have taken advantage of the new opportunities for cooperation with China, Turkey, the Arab region and Russia and have migrated to these countries for work. Brain gain, on the other hand, has almost come to a standstill due to the less than favourable job prospects, strong cultural differences and unattractive salary. Experts in the field relate the absence of brain gain in the research sector to decreasing levels of academic freedom in the region. According to the European University Association (EUA), corruption in the higher education sector has worsened in the WB region in recent years. This, in turn, has negatively affected the international reputation and social acceptance of research in and from the WB. Especially NGOs are alerted about this development, but also the huge majority of the academic community feels repelled and increasingly frustrated by such developments. The 2033 OECD's Government at a Glance-indicators for public administration reforms underline that in comparison to the 41 OECD countries, the WB score rather poorly in terms of transparency, efficiency, and accountability. Although levels of corruption remain difficult to pinpoint, pressure groups such as Transparency International or CIVICUS lament the comparatively high figures, calling it "endemic for the region".

***Wildcard: Introducing the WesternBalcoin***

Disenchanted by the stalling EU accession process, the Government of Serbia joined forces with Bulgaria and Hungary and introduced the region's first digital currency, the *Western-Balcoin*. The currency is administrated by a consortium of the respective national central banks. The joint digital currency shall further improve economic stability and growth, facilitate the trade in goods and services among the participating countries and reduce cross-border administrative burdens for businesses. Eventually, the countries hope to exert greater influence in the global economy.

In order to counter economic volatilities and exchange rate fluctuations, the Heads of States decided to peg the *WesternBalcoin* to the Chinese e-Yuan, which the People's Republic of China had introduced as early as 2021. Officially, the e-currency does not intend to counter the EU's digital Euro, though economic analysts interpret it as an attempt by the participating countries to further move towards economic and fiscal autonomy from the EU. To date, an official statement let alone a recognition of the e-currency by the European Central Bank is pending.

### 5.3. Scenario 3: Putting Business First

Looking back from 2035, it becomes clear that the “business first”-credo to settle conflicts in the Western Balkans by boosting economic recovery has become the main pathway for multilateral cooperation in the last 15 years. During the 2028 EU-Western Balkan Summit, the WB concluded that institutional reform and regional development is the only way to consolidate their influence in Europe. Economic cooperation was significantly supported by the implementation of the 2022 regional “Open Balkan” agreement and its several follow-ups, which has facilitated free trade and business spill-overs between the Western Balkans.

Although the political disputes at national and regional level continue, the WB governments’ “pro-business attitude” facilitates exchanges and cooperation between various actors in these economies. **The WB continue their efforts to implement the Copenhagen Criteria, but joining the common market is no longer the main political priority in most economies. Lengthy EU-accession negotiations are ongoing with all the WB, though without a political breakthrough on the horizon.** This is also reflected in the absorption fatigue by the WB with respect to the EU’s Instrument for Pre-accession Assistance (IPA). A recent study conducted by the European Commission found that on average around 51% of available IPA funds have been used by the WB. Consequently, the EU member states’ allocation to this instrument was reduced significantly.

Nowadays, the administrative burden on the business sector is low, corporate taxes are minimal, labour unions have limited impact, and digital solutions are supported by the government. Private business interests significantly influence states’ decision-making processes to their own advantage. Despite improvements in the fight against corruption, an oligarchic culture continues to prevail, which negatively affects the research and higher education sectors among others.

Foreign direct investments (FDI), especially in the areas of digital infrastructure, products and services, predominantly comes from EU and European companies. Since 2025, they increasingly originate in the USA, India, Russia and China. The overall size of FDI in R&I has increased in the WB region as well as the R&D expenditures of domestic companies. SMEs have entered international business relations and got involved in higher tiers of international value chains. The way forward is a selective modernisation of some economic sectors (such as energy; ICT; food; construction; healthcare) and specialisation towards key sectors for the regional economy.

Economic modernisation and public sector innovation are supported by EU institutions as well as by the European Investment Bank. Consequently, the region’s start-up scene is prospering. Capital cities such as Belgrade, Tirana and Sarajevo have become regional hubs for pioneering technology. Overall, the WB have seen a sectoral shift towards regional medium-high and high technology products and an increased adoption of more radical technologies in business and consumer applications. The attractive new labour market opportunities in some cities further propel domestic and increasingly also intra-regional mobility and trade.

Despite these positive trends, prevailing corruption in the business sector impedes the WB to achieve their full growth potential. Influential businesses secure their monopolies in the market and use their political leverage to avoid accountability and public scrutiny. As a consequence, the WB are lagging behind their European neighbours according to the World Banks

*Facilitating Business Index*. An article by *Balkan Insight* entitled *The growing wealth gap between Western and Eastern Europe* highlights that the WB are struggling to transform their economic growth to the benefit of their societies at large.

One priority area for public and private investment is digitalisation. The education and vocational training sector reacted to this demand and trains talented youngsters through courses related to ICT, data and other areas demanded by the economy (such as engineering). Although structured top-down reforms of the higher education sector are pending, some faculties (especially from private universities) start to offer tailor-made courses for companies. All administrations from the WB are setting-up R&I agendas that are integrated into overall national priorities. These R&I agendas are implemented through innovation support measures via projects and infrastructures. Science-industry collaboration is promoted through these measures, resulting in more sustainable collaborations between universities and businesses. Additionally, the *Western Balkans Six Chamber Investment Forum*, a joint initiative of chambers of commerce from Albania, Bosnia and Herzegovina, Kosovo, North Macedonia, Montenegro, and Serbia, established a regional innovation mechanism that successfully facilitates the advancement of tech-sectors.

The number of subsidiaries of international technology companies opening offices in Belgrade, Tirana and Sarajevo has been growing, which has positively impacted private R&I budgets and infrastructures. This, in turn, has created a more competitive market for private R&I. Universities and research organisations increasingly receive private financing for R&I, especially in the areas of applied research in the Natural Sciences, Technology, Engineering and Mathematics (STEM) domains.

Public R&I budgets have not been increased and as a result basic, fundamental and public research has collapsed. This continues to affect traditionally operating universities most negatively. Scientific research excellence has increased due to private investments, although only in domains relevant for business R&D and for addressing human capital needs. Researchers from the WB take part in EU R&I initiatives and programmes more frequently, often with co-funding from businesses. This has strengthened the networks of researchers and resulted in additional funding for research activities. Through these networks, a limited number of agile universities and research organisations were able to attract strong foreign researchers for domains relevant to businesses thanks to investments in domestic medium to large-scale R&I infrastructures that are open to or shared with businesses. Despite the growing number of private R&I companies, opportunities for researchers remain limited and brain drain continues to be a major challenge in all WB. Engineering-focused universities experience a great loss of expertise because their researchers increasingly move to the flourishing private high-tech or ICT sectors to pursue a career there.

Effects of the desperately needed reforms in the science system are starting to take hold. Driven by international trends in the science system and EU goals, many publicly funded R&D project results and publications are published with open access (although not all), public research data is more widely shared and open peer review is predominantly applied. Due to more openness, and increased frequency in science-business collaboration, scientific work has gained an overall positive reputation in society. Although corruption in research and education continues to exist, it has diminished considerably due to the frameworks imposed by internationally operating businesses. Simultaneously, the increase in private R&D and the lack of funding for basic and fundamental research has implicitly affected academic freedom in

research and teaching. Businesses who sponsor positions, institutes and research programmes have gained influence on research and education programming and strategies, limiting individual academic freedom and causing occasional conflicts of interests.

While successfully supporting business development and promoting exploitation of natural resources, most of the WB countries have not implemented reforms in areas such as rule of law, education, and social policy. Demand from the EU as well as from civil society on green investments has grown and the local population demands environmentally friendly practices. Massive protests in Serbia in 2030 put a stop to the plan to open a new coal mine. However, ambitious transformative reforms regarding climate mitigation and the transformation towards a green economy have been largely absent. Climate change, air pollution and resource exploitation severely impact all economic sectors equally. Only those industries, where a clear market opportunity was available and quick wins could be attained (e.g. renewable energies; waste water/recycling industries), read the signs of the time and adapted to these challenges. Today, these opportunity-driven sectors are technologically proficient and are early adopters to serve the needs of the local and regional market. Even though businesses still exploit natural resources, recent years have also seen increased investments in the development of green technology, as world-wide there is a clear demand for more sustainable products. For regional impact, it is however important to have successful green technology adopted by industry, government and citizens in the WB – requiring investments that businesses see not reflected in short-term revenues and many citizens cannot afford.

The absence of long-term investments in social and public infrastructures has led to increased tensions, especially between urban and rural regions in terms of supply of public services and labour market opportunities. Serbia and Montenegro have invested in technological parks outside of urban areas boosting developments, but capacity of such facilities is limited by the lack of infrastructure and human capital in these areas. Social unrest is present in several WB, and policy-makers do not offer solutions to address these issues. EU accession negotiations are therefore not progressing as foreseen.

## 6. Paving the way to the desired future: Roadmaps for the Western Balkans

### *The added value of roadmaps for the WB*

One tool which is closely related to Strategic Foresight is roadmapping. According to the International Energy Agency (IEA), “a roadmap is a strategic plan that describes the steps an organisation needs to take to achieve stated outcomes and goals. It clearly outlines links among tasks and priorities for action in the near, medium and long-term” (IEA, 2014). Roadmaps do not follow a strict form and can be adjusted to their specific purpose and context.

Once scenarios have been developed, policy-makers are confronted with the question about the implications of the scenarios or the inquiry “so what?”. To this end, the elaboration of scenarios could be followed by the development of a roadmap that outlines the goals and required initiatives to work towards the most desired future. In the case of this study, there is not a single scenario which contains solely positive potential future developments. Therefore, the initial roadmaps that have been jointly developed with experts from the WB seek to pick the most positive aspects of each of the three scenarios and propose measures to make these aspects reality in the short, medium and long term.

Like the collective development of scenarios in Strategic Foresight, the *process* to develop a joint roadmap for a specific sector or country is as beneficial as the final roadmap itself. To prepare the roadmap, experts with diverse backgrounds are convened and define common goals, measures, and actions to achieve the shared most desired future. Any roadmap starts with an assessment of the status quo, followed by the definition of common goals and concrete measures to work towards these goals. Typically, roadmaps are reviewed and updated periodically to adjust to changing circumstances.

The tailored roadmaps complement the scenarios for the Western Balkans in 2035 as both tools underline the necessity to enact policies today to work towards the most desired future.

The roadmaps presented in the following have been developed by experts from the WB in dedicated national three-hour workshops, which the ISF organised virtually in May and June 2021. The workshops brought together representatives from the government, the private sector, the civil society, NGOs and EU Delegations.



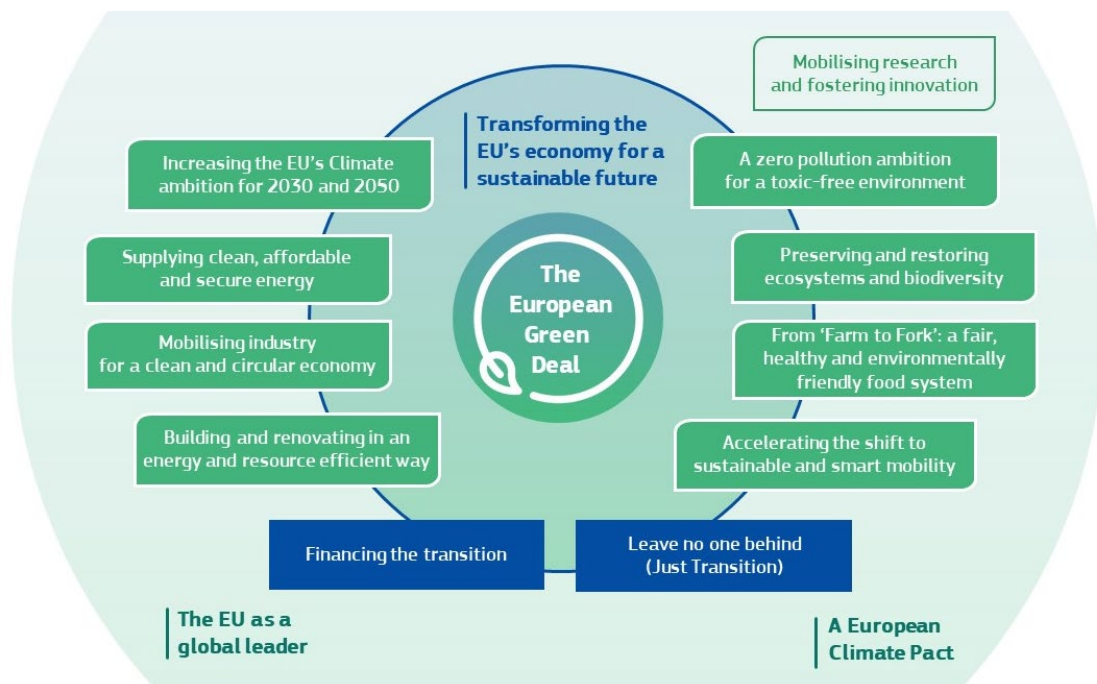
**Methodology, limitations & focus of the roadmaps**

The roadmaps presented in this report are intended to serve as inspirations and basis for a more extensive co-creation process of fully fletched roadmaps. Given the limited number of selected experts from each of the WB involved, the roadmaps in this report do not claim to represent the variety of perspectives that are prevalent in the private sector, the government, civil society and NGOs. While the ISF convened the stakeholders to provide a forum for discussion, the recommendations in the roadmaps do not reflect the viewpoints or recommendations by the ISF. In order to strengthen the legitimacy and ownership, the administrations could thus use these roadmaps as inspiration to develop more detailed roadmaps that do justice to the complexity of each of the aspects of R&I covered in the workshops.

Following the first workshop in Albania, it was decided to put additional focus on the green transition when conducting the workshops. The roadmap for Albania thus does not make explicit reference to the green transition, though focuses on the most important aspects of R&I in the country.

The Green Agenda constitutes one of the biggest challenges and opportunities for the EU as well as the Western Balkans for the upcoming decades. Given its multi-faceted and transversal nature (Figure 5), it has the potential to constitute a paradigm shift in policy-making. Strategic documents such as the European Commission’s *Guidelines for the Implementation of the Green Agenda for the Western Balkans* (European Commission, 2020c) or the (draft) *Western Balkans Agenda on Innovation, Research, Education, Culture, Youth and Sport reference to Green Agenda* (European Commission, unpublished) underline the importance of the Green Agenda for the region. The following roadmaps shall provide a modest contribution to the process to translate the ambitious policy-goals formulated in the Green Agenda into tangible initiatives.

Figure 5. A multifaceted European Green Deal



Source: EurLex (2019), Communication from the European Commission- The European Green Deal, COM(2019)640 final, <https://eur-lex.europa.eu/legal-con->

## **6.1. Roadmap Albania**

### **Human capital**

During the workshop in Albania on 18 May 2021, human capital was noted as one of the most influential factors on the R&I system. In that respect, Albanian experts have identified several short-term and long-term goals and actions to strengthen human capital, covering aspects such as brain circulation, coordination between job market and Higher Education Institutes (HEIs) and vocational training, alignment of national strategies with the R&I agenda, as well as building attractive framework conditions for researchers and companies.

An important action to be taken now is to analyse market needs for jobs and skills and have these reflected in the education and training curricula in Albania. This is considered a prerequisite for a reformed higher education system that is better prepared to educate the workforce on both current and expected future skills. The participants formulated the goal to create a roadmap in the short-term to foster reforms in the education system.

In the short run, it is important that actions are taken to finalise the Smart Specialisation Strategy (S3) as well as the upcoming R&I strategy. The current R&I strategy (2017-2022) should be evaluated in terms of its impact and lead to new actions that better serve the local needs for talent, skills and investments. The S3 and the upcoming national strategy will identify key areas for economic growth in Albania and will establish new strategic priorities. Once finalised, the goal is to then have these strategies incorporated in the educational system.

Steps have been taken to connect the local workforce with experts from the diaspora through the Regional Cooperation Council (RCC). The diaspora has the potential to play a key role in connecting Albanian universities to other research organisations in the region and beyond and help build joint programmes to foster collaboration. In addition, the diaspora could be mobilised to provide expertise and knowledge for the Albanian R&I system and train young professionals. Therefore, a concrete goal for the coming years is the mapping of- and connection with the diaspora's expertise and establish a regional and European network of R&I experts. In addition, vocational education programmes should be developed in dialogue with industry to produce skills that best support the identified key economic areas. Albania has joined EU-REKA, the public network for international cooperation in R&D and innovation, and is now full member. This will facilitate knowledge transfer and networking for the local researchers.

In the medium-term, the goal is to attain a higher education system that is relevant for the local economy and produces the needed skills and training. To do that, a series of actions are foreseen. Albania currently lacks knowledge transfer centres at the universities as well as a legal basis for university spin-offs. Therefore, the creation of these centres and the legal basis are important actions to allow for industry and academic collaboration. Once this is done, joint collaboration should be enhanced by providing funding opportunities for universities and industry to come together and develop solutions for local challenges. This in turn will lead to an increased number of university spin-offs that will create new jobs and skills in Albania. Prioritisation should be given to joint collaborations in sectors that had been identified of strategic importance during the S3 strategy (such as ICT, water, energy etc.).

In the long-term, Albania aims at creating attractive framework conditions for researchers

and innovative companies and being home to an increasing number of R&I intensive companies. To achieve that, Albania could create tax incentives for local R&I companies as well as for international subsidiaries. Formulating a value proposition that advertises Albania's strengths as location for innovation, could also help to attract foreign companies and investors. In the long run, a regionally competitive and dynamic R&I system would ensure that talent is created and kept in the country.

### **Participation in the ERA and EU programmes**

Albanian participation in the ERA and EU programmes was considered by the experts to be the second most important factor impacting the R&I system. When it comes to actions to be taken now, experts identified the need to improve the utilisation of current R&I infrastructure – regardless of the question whether it is public or private. An efficient R&I infrastructure is needed to facilitate collaboration with European peers. Experts cited the need to invest in R&I infrastructure in order to improve facilities and to bring them closer to European standards.

Although an infrastructure mapping is done periodically in Albania, local researchers remain mostly unaware of its results. Efforts should be put to raise awareness of researchers and local SMEs towards available infrastructure to maximise utilisation. Cooperation across the Western Balkans was considered during the Workshop to be beneficial.

Albanian participation in Horizon 2020 has almost doubled when compared to the previous Framework Programme (FP). However, Albania should continue its efforts in raising awareness regarding the European FP and in training researchers to apply for projects. The National Agency for Scientific Research and Innovation has already taken numerous steps towards this goal and frequently organises events to inform local researchers on collaborative opportunities. Working alongside leading researchers in Europe will help HEIs in Albania develop new research standards as well as increase regional connections. A connected long-term goal is to increase participation and improve success rates of Albanian researchers in EU R&I projects.

To achieve that, support in strengthening EU R&I networks of researchers is considered an important step. In order to increase participation in EU funding programmes, a specific Horizon Europe fund should be launched to provide grants for Albanian organisations to join Horizon Europe projects as observers. This would facilitate peer learning and raise awareness for project practices.

In line with efforts to connect to the diaspora, Albania should identify those diaspora members participating in Horizon Europe projects and link them to the local research networks. This would encourage exchanges between them and could facilitate the uptake of Albanian partners in European consortia.

In the long-term, the goal is to connect Albanian researchers to experts in the region and across the EU as well as increase success rates of Horizon Europe projects. Access to Horizon Europe, one of the biggest R&I funding programmes in the world, offers a unique opportunity for Albanian researchers and SMEs to receive funding and cooperate with leading organisations in Europe.

Figure 6. Initial R&I Roadmap for Albania

# Albania

| Albania                                |         | Today (2021)   |  |  | Short term (2025)   |   |   | Medium term (2030)                                   |  |  | Future (2035)   |  |  |
|--|---------|--|--|--|---|---|---|--|--|--|---|--|--|
| Human Capital                          | Goals   | AL to become full EUREKA member  | Create joint programmes between AL and leading EU universities | Evidence-driven policy-making  | Prepare roadmap to reform the HEIs                                  | Education curricula to reflect new skills                     | Foster regional R&I cooperation                                       | Established foreign universities open local branched | Joint programmes to foster science-industry collaborat | Increased number of university spin-offs                 | HEIs to match market needs                                    | Albania specialises in ICT, water and Energy sector) | Attractive framework conditions for highly educated people |
|  | Actions | Increase public investment in HEI  | Finalise S3 strategy and align it with key sectors             | Evaluate the R&I strategy (2017-2021) and create follow up action plan | Launch & Implement the S3 roadmap                                   | Invest in new skills  | Joint projects between industry and academia                          | Create knowledge transfer centres at universities    | Tax incentive for R%I subsidiaries                     | Elevated links between academia and industry             | Presence of Numerous ICT companies                            |  |  |
|  | Actions | Better connect with experts from the diaspora through RCC approved platform    | Analyse job market needs and coordinate with HEI & VET         |  | Understand job market needs   | Create vocational education programmes                        | Link university strategy to national science policy for shared vision | Create legal basis for university spin-offs          |  | Trust in local institutions Build                        |   |  |  |
| Participation in ERA and EU programmes | Goals   | Encourage exchanges between diaspora participating in HE and local researchers | Improve support for FP participation                           |  | Develop standards of research within HEIs                           | Researchers & SMEs better utilize existing R&I infrastructure |   | Increased Regional R&I cooperation                   |  | Increased participation & success rate in Horizon Europe | Researcher better connected with experts in the region and EU |  |  |
|  | Actions | Evaluate the R&I strategy (2017-2021) and create follow up action plan         | Train researchers on FP applications                           |  | Update and utilize existing R&I infrastructure (public and private) | Fund participation in Horizon Europe as observers             |   |  |  |  |   |  |  |

Where are we?

How do we get there?

Where do we want to go?

Green colored goals/actions are related to the green transition

Blue colored goals/actions are related to Research & Innovation in general

Red colored goals/actions are related to the dual transition (green & digital transformations)

## 6.2. Roadmap Bosnia and Herzegovina

The experts of the foresight workshop that took place on 20 May 2021 agreed that climate change and the Green Agenda should receive the utmost priority in Research & Innovation (R&I) policy-making in Bosnia and Herzegovina (BiH). Overall, participants called on the government to increase initiatives on educating students and public officials on the effects of climate change and enforcement of decarbonisation mechanisms. According to the experts, the Green Agenda aspects of climate action, decarbonisation, energy and mobility provide the biggest opportunities for the country, followed by circular economy, recycling, sustainable production, efficient use of resources, as well as sustainable food systems. Especially for the latter, automation and sustainable agriculture play a central role. The neglected railway network was mentioned as the biggest perceived threat, as it is was regarded as mismanaged and expensive, thereby increasing the burden on road traffic that causes severe air pollution.

### Human capital

The Green Agenda and the green transition in general require human capital strategies to develop a workforce with skills that match market needs in the medium and long-term. Currently, there is a need to raise the awareness of the Green Agenda and its implications for the country, and to provide support for the diffusion of already existing research results and innovative solutions. The assessment of a legislative process to boost the Green Agenda ought to be started as soon as possible, according to the experts. In addition, fostering science-industry relations should receive increased attention.

As an extension of the above-mentioned diffusion of R&I results, policies to promote Open Access of research data should be implemented in the short-term. An additional noted measure included the creation of knowledge transfer centres at universities. By 2025, a Green Agenda Action Plan ought to be kicked off that prioritises, among others, the creation and integration of curricula in education and vocational training that are necessary to implement the Green Agenda.

In the medium-term, the roadmap calls for the establishment of a legal framework for Open Science and for formal education to build Green Agenda-related skills that go hand in hand with a combination of creating a new workforce with a new set of green skills<sup>5</sup> and additional capacity building on the subject of the current workforce. To improve global environmental standards, the collaboration with international partners needs to be reinforced.

By 2035, the workforce should be fully equipped with skills required to implement the Green Agenda and that match the increased market needs due the application of new technologies. The enforcement of global environmental standards will provide additional external pressure

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<sup>5</sup> In the EU's European Climate Pact, green skills are the types of jobs required to meet the goals of the green transition. To this end, the Pact encourages businesses and organisations to help up- and re-skill workers through the Pact for Skills and use the European Social Fund to find appropriate training for five million people in green jobs and the green recovery (European Union, n.d.).

and ensure that BiH exploits new possibilities while contributing to Europe's common goal to become environmentally sustainable.

### **R&I infrastructure**

R&I infrastructure in BiH needs to cater to new demands resulting from the implementation of the Green Agenda. At the same time, the digital transition offers unprecedented opportunities for the R&I infrastructure in BiH. To lead the efforts in developing R&I infrastructure, there are actions that would need to be realised today, such as making researchers and companies aware of existing services and facilities. A mapping of R&I needs could start the policy strategy planning. Another example is raising awareness of the need for digitalisation strategies, in order to support measures against climate change and to work towards the energy transition.

R&I infrastructure is an important enabler of Open Access to and re-use of research data. In the short-term, better coordination of the regulatory process involving R&I infrastructures is required, including defining clear roles and accountability mechanisms. It should be paramount that R&I institutions share their resources effectively. As part of an ongoing process, awareness on R&I capacities and availabilities should be raised and missing digital infrastructure should be developed strategically.

By 2030, public administrations should be equipped to put R&I regulations in place. To this end, civil servants' skills could be strengthened to enable them to coordinate R&I infrastructure planning efforts, to offer a proper framework for R&I infrastructure providers, and to make sure that R&I infrastructures are strategically aligned. As part of the ongoing effort to increase the re-use of available data, governmental support for civil initiatives needs to be provided. EU institutions could accelerate the process by taking on an active role in incentivising the government to simplify bureaucratic processes.

The experts prioritised the goal to achieve tangible progress in battling corruption by 2035. Strategies and transparent processes are key in this battle, along with strict enforcement rules. Long-term infrastructure investment must be secured to guarantee an alignment with strategic interests of R&I policy and the country's green and digital transition efforts.

### **Knowledge transfer**

A vibrant knowledge transfer between science and industry (and even within the sciences) can provide many socio-economic benefits. To limit climate change and to focus on the green energy transformation, this knowledge transfer is essential. The green transition demands the attention of and support from today's political forces. Two possible actions that policy-makers could take today include harnessing the Western Balkans' potential in renewable energy resources. Additionally, they could promote pioneering concepts such as Smart Cities to boost sustainable market activities, technology use, and labour demand.

In the short-term, a country-wide *Mission for the Green Transition* ought to be elaborated whose implementation should be started without delay. This makes it necessary for governing institutions to jointly engage in strategic planning and coordination and use the synergies between academic institutions and the private sector. This could further be supported by an acceleration of regional cooperation among the WB.

In the medium-term, human capital capacity necessary for the green transition must be increased as it is a vital element a successful transition. To gauge the progress of green transition initiatives, an adequate monitoring system needs to be put in place that informs strategic decisions and allows for corrective measures.

In the long-term, the strategic development of knowledge transfer should be common practice. One of the measures to reach this goal is the shift from creating ad-hoc initiatives to a formal and integrated legislative planning. A priority area should be the establishment of sustainable food systems and rural areas.

### **Foreign R&I investments**

Foreign R&I investments heavily depend on the trust and confidence in BiH markets. This long-term endeavour requires a concerted effort by policy makers as well as strategic investments upfront to boost the country's capacities and to create opportunities for foreign investments. The BiH government would moreover need to increase its financial support for key areas such as open access to data and publications or green transition technologies.

In the short-term, attracting foreign investors requires incentives for companies to provide them with risk mitigation plans. In the medium-term, several structural measures will become necessary to build trust, such as improving current innovation parks to pool capacities of relevant sectors. This may also be accompanied by an increase of public-private investments in BiH – and even at regional level by initiating a WB partnership fund to pool resources to enhance regional cooperation and competitiveness.



Figure 7. Initial R&I Roadmap for Bosnia and Herzegovina

# Bosnia and Herzegovina

| Bosnia and Herzegovina  |         | Today (2021)   |  |   | Short term (2025)   |  |   | Medium term (2030)  |  | Future (2035)  |   |  |
|-------------------------|---------|--|--|---|---|--|---|---|--|--|---|--|
| Human Capital           | Goals   |  |  |   | Legislative processes to boost green agenda assessed                  | Public policy to promote open access to data                                     | Strategy for Green Agenda and action plan developed         | Legal framework for Open Science created                                    | Formal education to build Green Agenda-related skills  | Global environmental standards enforced  | Workforce with updated skills matching market needs |  |
|                         | Actions | Foster science-industry relations                              | Raise awareness of the Green Agenda  | Provide support for the diffusion of research results | Create knowledge transfer centres at universities                     | Develop absorption capacities in the industry                                    | Create / integrate curricula for the Green Agenda           | Work with international partners to improve global environmental standards  | Create / re-train workforce with a new set of (green) skills   |  |   |  |
| R&I Infrastructure      | Goals   | Researchers and companies aware of existing R&I infrastructure |  |   | R&I institutions share resources effectively                          | Overall, clear accountability and stronger coordination                          | Better coordination of regulatory processes                 | New strategies and more capacities for public administration                | Regulation for strategic alignment of R&I infrastructures  | Fair digital transition milestone reached  | Longterm infrastructure investment secured          | Substantial progress battling corruption |
|                         | Actions | Raise awareness to create digitalisation strategies            | Map R&I infrastructure needs   | Focus on climate change & energy transformation       | Promote re-use of available data                                      |  | Strategically develop digital infrastructure                | Provide governmental support for civil initiatives                          | EU-institutions speed up the process by taking a more active role in bureaucratic processes          |  |   |  |
| Knowledge Transfer      | Goals   |  |  |   | Mission for the green transition elaborated                           |  | Synergies between the academic and private sector harnessed | Human capital capacity for green transition increased                       |  | Strategic development of knowledge transfer                                      | Sustainable food systems and rural areas created    |  |
|                         | Actions | Political attention to and support for the green transition    | Increase awareness of pioneering concepts such as Smart Cities   | Harness WB potential in renewables energy resources   | Implementation of initiatives for the green transition                | Governing institutions engage in strategic planning and coordination             | Accelerate regional co-operation                            | Implementation monitoring of initiatives for the green transition           | Move from ad-hoc initiatives to a formal and integrated legislative planning                         |  |   |  |
| Foreign R&I Investments | Goals   |  |  |   | Governing bodies produce evidence-based decision-making               | Governing bodies increase knowledge-generation capacities                        |   | Trust of foreign investors in the BiH market built                          | Increase private and public investments in BiH   | Overcome the problem of competitiveness of WB R&I infrastructures and businesses | Strong confidence in BiH markets                    |  |
|                         | Actions | Train HE staff in WB to correctly finance projects             | BiH government invests in supporting key areas such as open data, open access, green transition technologies |   | Incentivise companies to provide investors with risk mitigation plans | Create tools that will provide investors with guarantee of returns on investment |   | Improve current innovation parks to pool capacities of the relevant sectors | Initiate WB partnership funds, pooling resources to enhance regional cooperation and competitiveness |  |   |  |

Where are we?

How do we get there?

Where do we want to go?

Green colored goals/actions are related to the green transition

Blue colored goals/actions are related to Research & Innovation in general

Red colored goals/actions are related to the dual transition (green & digital transformations)



### **6.3. Roadmap Kosovo**

The roadmap was initiated by experts from Kosovo during a workshop which took place on 21 May 2021. The discussed and suggested initiatives and goals focus on human capital, R&I infrastructures, knowledge transfer, and foreign R&I investments, as the experts perceived those aspects as most essential for the R&I system.

#### **Human capital**

Kosovo has a high share of young people and experiences a high degree of brain drain. In terms of R&I policy, the attractiveness of Kosovo for highly educated people should thus be increased to reverse the trend into a process of brain circulation. Today's reforms should include introducing research on energy policies in public organisations, creating vocational education programmes and starting to plan how significantly increased funds can be provided for R&I activities. Investing in and harnessing the potential of the young labour force should therefore be of utmost priority.

In the short-term, setting up a joint steering and agenda-setting process between government and universities promises more targeted R&I policies and coherence of planned activities. A clearly defined R&I budget allocation would hereby allow for a strategic approach in pursuing research priorities related to the Green Agenda. Enabled by these processes, universities and other public institutions have the potential to become an integral part of the green transition.

In the medium-term, the experts formulated the goal to ensure the strategic development of human capital. Part of these efforts are to create incentives for brain circulation and fostering cross-sectoral innovation. In order to effectively implement the Green Agenda, civil servants need to be designated for its planning and implementation. To achieve the long-term vision of making Kosovo attractive for highly educated people and of successfully transitioning to a green, sustainable economy, a continuous alignment of the development of skills and knowledge with market needs is required.

#### **R&I infrastructures**

Although the development and strengthening of research infrastructure had been a key objective of the 2010 National Research Programme, room for improvement in these areas prevails. Consequently, the limited R&I infrastructure remains one of the biggest barriers to further improve the effectiveness of Kosovo's R&I system. The experts that participated in the workshop were not aware of ongoing efforts to develop strategies regarding R&I infrastructures. The roadmap thus proposes to start with awareness-raising initiatives and capacity building to use R&I in order to eventually develop such strategies. Developing new as well as existing R&I infrastructure ought to go hand in hand with better access to data.

#### **Knowledge transfer**

Knowledge transfer between science and industry is essential in order to improve the competitiveness in the regional market and to increase Kosovo's capacity to formulate and reach its goals related to the Green Agenda. It is moreover a crucial aspect to establish a collaboration between university, industry, government and the public ("quadruple helix") to enable

meaningful policy-planning. To this end, present day efforts should include the approximation of R&I, as well as developing the innovation capacity of the industry to make use of international opportunities. In the short-term, co-operation links between government, industry/business, academia, and civil society should be established and boosted. Experts underlined the potential that strengthened intergovernmental networks can yield to implement the Green Agenda.

### **Foreign R&I investments**

As regards foreign R&I investments, the long-term vision formulated by the experts is to decrease the perceived dependence of donations from foreign powers to generating partnering opportunities in R&I. Monitoring of good R&I practices in EU countries can help to learn from peers and improve strategic R&I planning. Being able to rely on increased trust of foreign investors in the government, in institutions and in economic prospects, an increased foreign investment could partly be achieved by intensifying the fight against corruption. EU institutions can support this process by exerting pressure when adequate and necessary. To make better use of funding opportunities by the European Commission, Kosovo should promote its R&I institutions as a reliable partner in Horizon Europe. Eventually, experts hope that these measures help to further increase the reputation of Kosovo's R&I institutions.

Figure 8. Initial R&I Roadmap for Kosovo

# Kosovo

| Kosovo                  |         | Today (2021)   |  |  | Short term (2025)   |   | Medium term (2030)   |  |   | Future (2035)                 |  |  |  |   |  |  |  |                                  |  |   |
|-------------------------|---------|--|--|--|---|---|--|--|---|-------------------------------|--|--|--|---|--|--|--|----------------------------------|--|---|
| Human Capital           | Goals   | Invest in and make use of young generation                         |  |  | Joint steering and agenda-setting between government & universities established |   | Universities and other public institutions are an essential part of the green transition |  |   | Evidence-driven policy-making |  | Support from the government for strategic development of human capital ensured |  | Attractiveness of Kosovo for highly educated people increased |  | Research pillar strengthened, with a focus on applied research |  |                                  |  |   |
|                         | Actions | Start planning of significant increase of funds for R&I activities |  | Bring research on energy to public organisations           |   | Create vocational education programmes  |  | Clearly define R&I and budget allocation according to strategic priorities |   |                               | Properly map all national issues to create a roadmap with concrete and realistic goals |  |  | Create incentives for brain circulation                       |  | Designate civil servants at ministries to Green Agenda         |  | Foster cross-sectoral innovation |  | Continue to align development of skills and knowledge with market needs |
| R&I Infrastructure      | Goals   |  |  |  |   |   |  |  |   |                               |  | Investing in R&I goes hand in hand with better access to data                  |  |   |  |  |  |                                  |  |   |
|                         | Actions |  |  |  |   |   |  |  |   |                               |  | Raise awareness and skills to use infrastructures                              |  | Ensure that existing infrastructure is used                   |  |  |  |                                  |  |   |
| Knowledge Transfer      | Goals   |  |  |  | Common regional market committed to Green Agenda                                |   |  | Increased capacity to formulate & reach GA goals                           |   |                               | Quadruple-helix co-operation has enabled meaningful policy-planning                    |  |  |   |  |  |  |                                  |  |   |
|                         | Actions | Start connecting R & I   |  | Develop industry to create international R&I opportunities |   | Establish and boost co-operation links between government, industry/business, academia, and civil society |  |  | Strengthen inter-governmental networks to reach the goals of the Green Agenda |                               |  |  |  |   |  |  |  |                                  |  |   |
| Foreign R&I Investments | Goals   |  |  |  | Monitor best R&I practices in other EU countries to improve strategic planning  |   |  | Increased trust and foreign investments                                    |   |                               | Changed co-operation structure of EU programmes  |  | Transitioned from relying on donations to generating partnering opportunities in R&I |   |  |  |  |                                  |  |   |
|                         | Actions |  |  |  | Promote Kosovo in Horizon Europe  |   | Combat corruption  |  | Increase institutional commitment from EU                                     |                               |  | Better use of opportunities provided by EU                                     |  |   |  |  |  |                                  |  |   |

Where are we?

How do we get there?

Where do we want to go?

Green colored goals/actions are related to the green transition  
 Blue colored goals/actions are related to Research & Innovation in general  
 Red colored goals/actions are related to the dual transition (green & digital transformations)

## 6.4. Roadmap Montenegro

During the workshop on 20 May 2021, R&I experts underlined the factors of human capital, R&I infrastructure, knowledge transfer, as well as R&I investments as being crucial to further improving the country's R&I ecosystem in the light of the ambitious Green Agenda.

### Human capital

Several aspects of human capital have been raised during the national workshop, including brain drain/gain, matching skills and needs, political allocation of jobs, and the attractiveness of research careers. Based on the discussion of these topics, several actions and goals were defined for the short-term up to the long-term future in the year 2035.

An important action to be taken now is to raise more awareness for multifaceted topics related to the green transition. This should increase the interest in these topics within academia and among students. Current programmes at universities and other institutions for the green economy can be instrumental. In the short-term, HEIs in Montenegro should educate not only for current but also for expected future needs of the workforce. When education is needs-based, young professionals are better placed for the regional job market and bring in relevant skills and knowledge to further drive the economy. The green transition specifically will pose new requirements to the future workforce and should this be addressed in all curricula. Actions for the short-term would thus be to develop needs-based curricula in dialogue with industry and to identify training/skills needs for the green transition. Bringing in relevant external knowledge into the Montenegrin R&I system also contributes to better trained young professionals. Therefore, a concrete goal for the short-term should also be to establish international R&I networks on the green transition.

In the medium-term, positions for high-quality researchers and teachers for studies relevant for the green transition should be established at HEIs. It is important to train students for future green transition challenges. Experts added that, on a more general basis, the attractiveness of research careers in Montenegro should be improved to have top candidates consider an academic career at a university in the country. This relates to current brain drain issues: ambitious and strong candidates prefer academic careers abroad or move to industry. Furthermore, assigning jobs in R&I should be based on performance and quality, irrespective of politics.

The experts also recognised that the green transition is not just a process that requires one specific set of skills or domain knowledge, as it is interdisciplinary and thus requires collaboration across domains. A medium-term goal is therefore that interdisciplinary R&I and (higher) education programmes should be strengthened/established to foster the green transition. This requires action in terms of investment programmes to reform higher education, not just for the green transition, but more widely as multidisciplinary is considered more widely as generally beneficial for R&I and education.

In the long-term, the goals should indeed be wider than the green transition. A mission-based R&I and higher education policy should be established as R&I and higher education should

contribute to the economic and societal needs of Montenegro. In addition, the R&I system should be more attractive in order to keep talents in the country.

## **R&I infrastructure**

The R&I infrastructure in Montenegro is an enabler for a strong R&I and contributes to well-trained students in higher education. Improvement of the general R&I infrastructure in Montenegro can also contribute to the green transition. During the workshop, experts proposed to develop a joint vision or plan for R&I infrastructure in Montenegro and the Western Balkans at large. Such joint vision should be developed together with all R&I stakeholders, including research institutions, universities, businesses and government representatives.

For the short-term, the goal should be to make research a priority and integral part of HEIs. Currently, their focus is more on education than research. This would require the establishment of more research groups, research communities and research institutes. This also entails funds to establish groups, perform research and appoint researchers – such as from EU R&I programmes or national (co-)funding. Participation in Horizon Europe was considered as an important source of funding. Other sources would be national funding and co-funding to participate in European R&I programmes. A formulated goal is therefore to have a 25% increase in participation in EU R&I projects by 2025. To be successful, networks and quality are prerequisites. Support in strengthening EU R&I networks of researchers is thus considered a priority. This, in turn, should help researchers to be part of R&I consortia for EU funding programmes.

In the medium-term, Montenegro should further strengthen its R&I infrastructures. The goal by 2030 is to establish at least two international collaborative R&I infrastructures in the country. These can be related to R&I topics relevant to the green transition. The international collaboration is foreseen through branches of European R&I institutions in collaboration with local research organisation. Developing this is considered an important action, requiring networks and negotiations with European (national/regional) R&I institutions (e.g. the model of Fraunhofer centres across Europe). This would also require (co-)funding for such R&I infrastructures based on a business case.

In the long-term, experts set out the goal to establish sustainable R&I infrastructures established in Montenegro. Concretely, this means infrastructures that can sustain their activities for longer periods of time, providing continuity and ideally expansion of activities. This should include also R&I infrastructures relevant to the green transition.

## **Knowledge transfer**

The factor knowledge transfer is important to bring knowledge from research organisations to business and policy-makers. Such knowledge transfer can contribute to better policy making and the development of new products and improved processes for the green transition – i.e. innovation. Lessons learned and good practices on knowledge transfer could be shared across the WB and beyond. Regulatory policies are also important to foster knowledge transfer to business. Therefore, participants of the workshop indicated that legal protection of intellectual property (IP) and IP rights should be further strengthened and enforced.

In the short-term, two goals were considered most pressing. The first goal is that by 2025, public R&I institutions are opened for external parties. This should enable better access to knowledge at these institutions, on-site R&I collaborations and knowledge transfer. This would require regulation or guidelines for opening up R&I institutions for cooperation. Secondly, experts set the goal that the entrepreneurial R&I culture is strengthened by 2025. This relates to doing research that is relevant to society/business, working together with businesses and establishing relations and developing R&I projects together with the industry. An action that can be linked to the green transition would be to launch (green) projects with businesses to gather experience and inspire others through sharing success stories.

In the medium-term, a support infrastructure for (green) business R&D should be established. This provides the right support to businesses to use the (public) R&I organisations in Montenegro and to further develop their R&D ambitions/agendas. The goal set for 2030 is to have 20% of all R&I projects consisting of university-business collaborations. This would be a significant increase of knowledge transfer and cooperation with the industry sector in comparison to today. To this end, R&I funding that stimulates public-private collaboration should be made available. These collaborations – and the required funding – could be at national level, regional level, but also at European level as EU R&I programmes often support public-private collaboration.

In the long-term, knowledge transfer should contribute to enhanced competitiveness and Montenegro's Smart Specialisation Strategy. Eventually, knowledge transfer should also contribute to innovative products of Montenegrin business in EU or global value chains.

### **R&I investments**

During the national workshops, the factor foreign R&I investments – mainly public investments – was repeatedly mentioned when discussing crucial factors for an enabling R&I ecosystem. Public investments were considered as enabler for improved human capital, R&I infrastructure and knowledge transfer. For R&I investments, the short-term goal should be to have improved conditions for foreign R&I established. This includes transparency, responsible business conduct, IP protection, a certain degree of stability in policies, and limited excessive regulations ("red tape"). Such conditions should favour foreign R&I investments in Montenegro. To realise this, initiatives such as creating a favourable legal framework for foreign R&I investments and identifying needs of investors are required.

Promotion of the Montenegrin R&I system and investment opportunities could contribute to more foreign investments. In the medium-term, Montenegro could promote investment opportunities through networks by the EU and the Smart Specialisation Strategies as well as through the diaspora. This could create spill-over effects for investments that support the implementation of the green transition as well. In the long-term, experts formulated the goal that R&I investors should diversify and have invested in R&I infrastructures that support the green transition.

Figure 9. Initial R&I Roadmap for Montenegro

# Montenegro

| Montenegro              |         | Today (2021)  | Short term (2025)  |  |   | Medium term (2030)   |  | Future (2035)   |  |
|-------------------------|---------|---|--|--|---|--|--|---|--|
| Human Capital           | Goals   |   | HE educates for (future/ green) work force needs in economy  |  | Intern. R&I networks on green transition established            | High-quality researchers and teachers for 'green' studies in HE                | Multi-disciplinary R&I and HE for green transition         | Mission-based R&I and HE policy established                     | Attractive R&I system that better attracts and keeps talent                        |
|                         | Actions | Raising awareness for green transition topics         | Developing need-based curricula (workforce needs economy)    | Identifying training and skills need for green transition              |   | Assigning jobs in R&I based on performance and quality                         | Enhancing attractiveness of research careers               | Investment programme for multi-disciplinary HE reform           |  |
| R&I Infrastructure      | Goals   |   | Research is priority and integral part of HE / universities  |  | 25% increase in participation in EU R&I projects                | Mont. has at least 2 (green) international collaborative R&I infrastructures   |  | Sustainable R&I infrastructures established (also for green)    |  |
|                         | Actions | Developing joint vision/ plan for R&I infrastructure  | Establishing research groups, community & institutes         | Funding and co-funding research and Horizon participation              | Supporting strengthening EU R&I networks of researchers         | Developing relations and negotiate branches with European R&I institutes       | (Co)funding for R&I infrastructures based on business case |   |  |
| Knowledge Transfer      | Goals   |   | Public R&I institutions are opened for external parties      |  | Entrepreneurial R&I culture strengthened                        | Support infrastructure for (green) business R&D established                    | 20% of R&I projects are university-business collaborations | Enhanced competitiveness of S3 sectors in Montenegro through KT | Innovative products of Montenegrin businesses in EU/ global value chain through KT |
|                         | Actions | Sharing experiences on knowledge transfer between WB6 | Legally protecting IP rights and knowledge                   | Regulation or guidelines for openness and R&I cooperation              | Launching (green) projects with businesses to gather experience | Inspiring through sharing success stories                                      | R&I funding stimulating public-private collaboration       |   |  |
| Foreign R&I Investments | Goals   |   | Improved conditions for foreign R&I investors established    |  |   | Montenegro known as interesting for foreign R&I investments                    |  | Variety of green (R&I) investors have invested in Montenegro    |  |
|                         | Actions |   | Creating legal framework for (green) foreign R&I investments | Identifying needs of investors and address these in policy & promotion |   | Promoting (green) R&I investments in Mont. through EU/S3 networks and diaspora |  |   |  |

Where are we?

How do we get there?

Where do we want to go?

Green colored goals/actions are related to the green transition  
 Blue colored goals/actions are related to Research & Innovation in general  
 Red colored goals/actions are related to the dual transition (green & digital transformations)

## **6.5. Roadmap North Macedonia**

During the workshop that took place on 2 June 2021, R&I experts discussed goals and actions to implement the green transition in North Macedonia. Participants agreed that in order to effectively work towards the implementation of the green transition in North Macedonia, policy-makers will need to consider the added value that the workforce and talents in the country can play. Yet, given the magnitude of this challenge for the decades to come, no single entity will be able to reach the targets that the green transition entails. HEIs and the private sector will need to work closely together and ensure an effective knowledge transfer on topics related to the green transition and beyond.

### **Human capital**

The participants jointly formulated the goal that by 2035, an active, dynamic, and buzzing community of educators is created who collaborate with international researchers and peers from the EU. In order to counter the brain-drain by youngsters, participants aim to keep (young) talents in the country, among others by supporting them to setting up start-ups in North Macedonia. Today's strategic documents such as the Smart Specialisation Strategy or guiding documents on ICT-policies could be used to accelerate the digital and green transition. In the short-term (by 2025), the Law on Research and Science can provide a key reference to reform these sectors, once it is passed and implemented. RCC's mapping of research infrastructures can complement the evidence base to identify institutions to support the green transition.

In the medium-term (2030), participants formulated the goal to further harness the potential of SMEs and start-ups that work on topics related to climate change and the green transition. Moreover, centres of excellence related to these topics should be created by 2030. Participants moreover called for the creation of a fund or agency for research (as an independent body) with a starting budget of not less than 10 million euro.

### **Knowledge transfer**

During the workshop, the experts formulated the following first goal to be met by 2035: "We have created five to six hubs for the green transformation (one for each region) and want to align them with the six priority areas of the Smart Specialisation Strategy". As a second aim, participants called for a paradigm shift which will be required to make better use of the cooperation between the actors of the quadruple helix (science, government, industry, and society). In terms of concrete actions required to tackle the goal, the experts noted that the government could avoid creating separate centres of excellence for each policy area and employ a multidisciplinary approach.

As a basic requirement to achieve the abovementioned goals, the awareness of not only the variety of effects of climate change but also of the pioneering initiatives that already exist in North Macedonia today shall be raised. To this end, green transition-related R&I initiatives could be mapped to avoid duplications and learn from good practices. Additionally, incentives for a closer cooperation among the research and private sector should be created. As another action, experts proposed to introduce additional instruments and measures from the national



government or EU to stimulate or nudge the private sector to invest in the green economy. Eventually, experts at the national workshop agreed that a systemic and holistic approach in the fields of education, ICT, Smart Specialisation, R&I is key to facilitate the green transition in North Macedonia by the year 2035.

Figure 10. Initial R&I Roadmap for North Macedonia

# North Macedonia

| North Macedonia    |         | Today (2021)  | Short term (2025)  |  | Medium term (2030)  |  |  | Future (2035)  |   |
|--------------------|---------|---|--|--|---|--|--|--|---|
| Human Capital      | Goals   |   | High quality education on entrepreneurship is ensured  | All stakeholders are aware of the benefits of the green transition   | The potential of SMEs in tackling climate change is harnessed   | MKD has become hub for start-ups related to the green transition   | An active, dynamic, and buzzing community of educators is created who collaborate with international researchers and peers from the EU |  |   |
|                    | Actions | Use strategic documents e.g. on ICT or S3 to accelerate the dual transition   | Use the know-how (and funds) that diaspora scientists can offer  | Implement the Law on Research and Science, which is currently being drafted                                    | Increase the number of young researchers at Unis  | Create the position of teaching assistants at Unis                 | Attract funds from t (& others) to support start-ups   | Create Centres of Excellence related to the green transition | Establish a Fund/ Agency for research with a starting budget not less than 10 mio € |
| Knowledge Transfer | Goals   | Mainstream dual transition in EDU sector. Educate students including on effects of climate change (knowledge, skills, competence) | Increase awareness of the effects of climate change (& pioneering efforts)   | Increase the number of women in science  | Paradigm shift: Learn from global best practices on R&I and embrace disruptive innovation, educate evaluators to be open minded | Greater share of the agricultural sector is producing organic food | We have created 5-6 number of hubs for green transformation (one for each region) (align with 6 priority areas of S3)                  |  |   |
|                    | Actions | Work with educators & curricula adjustment & for kids and teachers! (transition can be linked to all areas, incl. finances)       | Support research industry in order to assist private sector to transform into green economy & for society to change habits | Creative incentives for research & private sector to cooperate   | Increase value for money in R&I   | Use R&I to support transition towards organic agriculture          | Implement the SDG(s) on the green transition   |  |   |
|                    |         | Create unit in Ministry of Finance to assess value for money of R&I system  | Map existing initiatives on R&I in the country   | National projects from MoEDU & Science to encompass different disciplines & incentivise community to cooperate | Stimulate/nudge industry to invest in green economy: use & design additional government / EU instruments & measures             |  | Paradigm shift: Mainstreaming and using coop. of quadruple helix actors  |  |   |
|                    |         |   |  |  |   |  | Tackle fragmentation: avoid creating separate Centres for each policy area   |  |   |
|                    |         |   |  |  |   |  | Close alignment of policy in R&D, EDU & support for start-up community   |  |   |
|                    |         |   |  |  |   |  | Strategically make use of RCC mapping of research infrastructure   |  |   |
|                    |         |   |  |  |   |  | Use the potential of solar & wind power for the green transition   |  |   |
|                    |         |   |  |  |   |  | Decrease energy dependency from external powers  |  |   |
|                    |         |   |  |  |   |  | Support green sources of energy  |  |   |
|                    |         |   |  |  |   |  | Where are we?  |  |   |
|                    |         |   |  |  |   |  | How do we get there?   |  |   |
|                    |         |   |  |  |   |  | Where do we want to go?  |  |   |

Green colored goals/actions are related to the green transition  
 Blue colored goals/actions are related to Research & Innovation in general  
 Red colored goals/actions are related to the dual transition (green & digital transformations)

## **6.6. Roadmap Serbia**

On 28 May 2021 R&I experts from Serbia gathered virtually in a workshop to discuss goals and actions to make use of the benefits that the green transition can offer. They agreed that the areas human capital, knowledge transfer between science and the private sector and infrastructure (centres of excellence etc.) are key areas that determine the success of the implementation of the Green Agenda.

### **Human capital**

The development of human capital should support Serbia in the creation of lifelong learning systems that provide opportunities and incentives for people and enterprises to develop skills, competences, knowledge and attitudes. This, in turn, will contribute to prosperous, innovative and inclusive societies and economies while implementing the green transition. As a starting point for this process, an analytical assessment (survey) of the needs of the private sector should be carried out in an early development stage.

In the short- term, the goal should be to raise awareness of the defined needs for the green transition among researchers as well as the local administration. In order to ensure buy-in from all actors, the Serbian government should define and promote the green transition as a main priority in the next few years. These goals could be achieved with a series of coordinated actions: The universities could offer novel study programs for developing knowledge transfer in the field of renewable energy, depending on the needs and priorities of the Serbian private sector. Especially in the STEM fields (science, technology, engineering and mathematics), the education providers should get some incentives for "greening" their curricula. Additionally, dedicated academic platforms should serve to enhance the exchange among relevant actors and the coordination of capacity building measures in R&I.

In the medium-term, the target should be to increase the entrepreneurial spirit among students at universities. In addition, better access to education and a decline in the dropout rate of students in Serbia were formulated as goals. As a supporting measure for the implementation of these aims, a grant system for researchers could be developed for specific thematic fields of economic priorities. (Senior) researchers should receive better conditions to enable research stays abroad. Especially in the areas covered by the green transition (from waste management, green finances to circular economy), the knowledge exchange and cooperation with European partners might be crucial for the successful implementation of green technologies and actions.

In the long-term, one main priority of the Serbian R&I policy should be to offer effective incentives for national researchers to stay and work in the country. Furthermore, senior researchers, who have left the country, should be motivated to return to Serbia and engage in innovation activities. The Serbian government should offer companies and entrepreneurs tax reliefs or other benefits while establishing research centres on green transition. In order to

have sufficient human resources for such infrastructures, Serbian universities should be encouraged to establish faculties on green transition and to adopt their curricula to the needs of the private sector and of other relevant stakeholders.

## **Knowledge Transfer**

During the workshop, the R&I experts noted that Serbia needs to accelerate technology transfer and further improve its innovation ecosystem. To date, the transition process has been facilitated by establishing measures to educate and inform the industry about green transition, e.g. by offering seminars on new standards in the field of renewable energy. Results created within citizen science projects (under active participation of citizens) could be broadly shared and used as an orientation for future reforms.

In the short-term, the main aim should be that the Serbian government itself strengthens its awareness of the horizontality of the green transition. Considering different Smart Specialisation approaches, experts noted the need to increase the investment in research infrastructures. By establishing various programmes on the green transition, trainings for young researchers and innovators (e.g. Master students) should be offered regularly. An enabling tax system for start-ups could create new entrepreneurship efforts.

In the medium-term, a system of targeted investment and reward payments should be established in order to support disruptive innovations. Experts discussed the possibility to establish offices dealing with the green transition in each governmental department.

## **R&I Infrastructure**

In February 2020, the government adopted the Smart Specialisation Strategy (S3) of the Republic of Serbia for the period 2020 to 2027. The S3 processes are currently used strategically to create supportive regulations for the green transition in the country. The Serbian experts agreed on the goal that, until 2025, the participation of Serbian R&I infrastructures in pan-European large infrastructures should increase by 20%. Living labs with user-centred, iterative concepts, which integrate concurrent R&I processes within a public-private-people partnership, should be created in Serbia.

In the medium-term, one aim should be to increase the R&I collaboration within the Western Balkan region: The mobility of Serbian students across the WB should increase. Therefore, joint programmes and grants for supporting the Science & Innovation (S&I) exchange among WB students should rapidly be implemented. Also, the interaction between universities and the business community should be supported respectively: The experts noted the need to develop model concepts and flagship approaches on public-private partnerships (PPPs).

In the long-term, additional decentralised technology parks should be established. Within society, within the private sector, and within the research community, the importance and benefit of the green transition should be communicated and promoted so that all relevant

actors in the country are aware of it. For achieving all these targets, a systematic way for investment in R&I infrastructures in Serbia should be secured by using various, sustainable financial sources – public, private and foreign investments. Eventually, while creating additional R&I infrastructures, the investors should offer incentives for their climate-neutral operation in order to support the implementation of the Green Agenda in Serbia.

Figure 11. Initial R&I Roadmap for Serbia

# Serbia

| Serbia             |         | Today (2021)  | Short term (2025)   |   |   | Medium term (2030)   |   | Future (2035)   |  |
|--------------------|---------|---|---|---|---|--|---|---|--|
| Human Capital      | Goals   |   | The awareness of the benefits of the green transition among researchers & local administration is increased |   |   | The green transition is treated as government priority                           |   | Access to education is increased & drop out rate from universities is decreased           |  |
|                    | Actions | Conduct Survey on the needs of private sector to implement GT   | Introduce novel study programmes on GT  |   | Create platform on current programmes & research on GT  | Incentivise "greening of EDU" & STEM   | Senior researchers: enable (temporary) stay abroad                        | Introduce a grant system in the country for researchers                                   | Cooperation with other European partners on the green transition is strengthened |
| Knowledge transfer | Goals   |   | Awareness within government on the horizontality of the GT is raised  |   |   | NGOs implement programmes on GT with Unis, using multi-disciplinary approach     |   | Incentives to keep Serbian researchers in the country are introduced                      |  |
|                    | Actions | Educate and inform the industry about GT: Seminars to inform about new standards that seed industry will need to follow, facilitating the transition period | Use results from citizen science and make them accessible   | Increase investment in research infrastructures, taking into account the S3 | Create start-up friendly taxation system  | Create executive training (e.g. for MA students) & joint programmes on GT topics | Create offices on GT in each department of government                     | Increase payments & rewards system for disruptive innovations                             | Facilities to focus on GT and be more innovative, prepare students for industry  |
| R&I Infrastructure | Goals   |   | The S3 processes are used strategically to create supportive regulations for the GT                         |   | Participation in national infrastructures in pan-European large infrastructures has increased by 20 % in comparison to 2021 |  | "ILving labs" (as in EU) are created in Serbia                            |   |  |
|                    | Actions | Assess status quo of research community   |   | Raise awareness to further use recycling in R&I infrastructures             | Create incentives for companies for "living labs in EU", enable testing of prototypes                                       |  | Create joint measures in WB (e.g. on mobility)                            | Develop model concept and flagship approach on PPPs between unis and business communities |  |
|                    |         |   | Additional, decentralised technology parks are established  |   | The private sector is opened to researchers & awareness of importance and benefits of Research on GT is raised              |  | Mutual learning and 2-way learning between science & industry is enhanced |   |  |
|                    |         |   | Establish systematic way for financing R&I infrastructure   |   | Provide incentives to make R&I Infrastructure sustainable and climate-neutral   |  | The potential of solar energy & other green technologies is used          |   |  |

Where are we?

How do we get there?

Where do we want to go?

Green colored goals/actions are related to the green transition  
 Blue colored goals/actions are related to Research & Innovation in general  
 Red colored goals/actions are related to the dual transition (green & digital transformations)

## 7. Conclusion

Prevailing challenges in the Western Balkans demonstrate that orthodox approaches of the past to preparing for the future have not always led to the desired outcomes. Turning the ambitious policy agendas and goals into concrete results thus requires new, innovative tools. Scenarios can offer such tool to ideate, shape and help to realise crucial elements of the ambitions that policy-makers in the Western Balkans have formulated.

The study at hand outlines three scenarios on how Research & Innovation sectors could evolve in the WB by the year 2035. Equally important than the outcome was the co-creation process of defining the signals of change, the trends and drivers of the future, and drafting the scenarios as well as refining them. The final scenarios offer policy-makers a variety of potential developments. Furthermore, the process to develop scenarios offers a forum to contemplate approaches to implement strategic priorities that will benefit all citizens in the Western Balkans. Nevertheless, the most important step lies still ahead. Which of the scenarios will eventually be the closest to reality will be up to today's decision makers in the WB and their commitment to enact and implement forward-looking policies on R&I.

Initiating the drafting process of a roadmap in consultation with representatives from the private sector, civil society and NGOs is a crucial step to identify common goals and to link them with concrete measures. However, the roadmaps can unleash their potential only if they are further fleshed out by their respective Western Balkans. Viewpoints and strategic priorities of additional stakeholders from each of the WB would further enrich the roadmaps and tailor them to the needs of the future for each of the groups of stakeholders. Nevertheless, these formulated goals and actions should not remain on paper only. Eventually, the stakeholders concerned will judge the success of the R&I reforms not by the roadmaps, but by the tangible impact that they have generated for the citizens in the Western Balkans today as well as in the year 2035.

## 8. ANNEX

### 8.1. Factsheet: The scenarios at a glance

The scenarios presented in this report are the outcomes of an extensive co-creative process with more than 700 experts on R&I from the Western Balkans. The potential developments in the areas of R&I until the year 2035 are rooted in a firm evidence-base and reflect the perceptions expressed by these experts during the workshops or the two online surveys. The following factsheet illustrates the future developments expected by the participants of the online surveys.

Table 1- Perceptions of the future by the WB experts on R&I

| Scenario 's impact on...  | Joining the common market | Looking beyond EU borders | Putting business first |
|---|---------------------------|---------------------------|------------------------|
| <b>Research System</b>  |                           |                           |                        |
| Scientific research excellence  | *****                     | -0                        | **                     |
| Investment in domestic large-scale infrastructure                                 | *****                     | -0                        | 0**                    |
| Public R&I budget   | ****                      | --0                       | 00*                    |
| Private R&I investment (universities/ research organisations)                     | ****                      | --0                       | 0**                    |
| <b>R&amp;I ecosystem</b>  |                           |                           |                        |
| Sectoral shift towards knowledge intensive services                               | ****                      | 00*                       | ***                    |
| Sustainable science-industry cooperation  | *****                     | 0**                       | ***                    |
| Integration of R&I agenda into overall national strategic priorities              | ****                      | 0**                       | ***                    |
| Specialisation of regions in each WB in a concrete sector or area                 | ***                       | 00*                       | 0**                    |
| R&I collaboration among regions from each WB                                      | ****                      | 00*                       | ***                    |
| <b>Internationalisation</b>   |                           |                           |                        |
| Participation of each WB in EU-funded or co-funded R&I initiatives and programmes | *****                     | -*                        | ****                   |
| Foreign investment in R&I in the region   | *****                     | 0**                       | ****                   |
| Region's attractiveness to foreign researchers                                    | *****                     | 00*                       | ***                    |
| Brain circulation   | -00                       | ---                       | --0                    |
| <b>Openness &amp; ethics</b>  |                           |                           |                        |
| Academic freedom (research and teaching)  | *****                     | -0                        | 0**                    |
| Level of corruption in research and higher education                              | 0**                       | -00                       | 00*                    |
| Reputation of scientific work in the society                                      | ****                      | 00*                       | 0**                    |
| <b>Technology development</b>   |                           |                           |                        |
| R&D expenditures of domestic companies  | ****                      | 00*                       | ***                    |
| Mainstreaming radical technologies in business and consumer applications          | ****                      | 0**                       | ****                   |
| Investments in green technology development                                       | *****                     | 0*                        | ***                    |
| Sectoral shift towards regional medium-high and high technology products          | ****                      | 0**                       | ***                    |

**Notes:**

- \*\*\*\*\* up to 80% of all respondents expect a positive or a very positive impact in this scenario
- \*\*\*\* up to 70% of all respondents expect a positive or a very positive impact in this scenario
- \*\*\* up to 60% of all respondents expect a positive or a very positive impact in this scenario
- \*\* up to 50% of all respondents expect a positive or a very positive impact in this scenario
- 0\* up to 50% of all respondents do not expect any impact or expect a rather positive impact in this scenario
- 00\* up to 60% of all respondents do not expect any impact or expect a rather positive impact in this scenario
- 0\*\* up to 60% of all respondents expect a rather positive impact in this scenario or no impact

- 0 up to 50% of all respondents expect a rather negative or no impact in this scenario
- 0 up to 60% of all respondents expect a rather negative impact in this scenario or no impact
- \* up to 50% of all respondents expect a rather negative or a rather positive impact in this scenario
- up to 50% of all respondents expect a negative or a very negative impact in this scenario
- up to 60% of all respondents expect a negative or a very negative impact in this scenario



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The report outlines three scenarios on the possible futures of Research and Innovation (R&I) policies in the Western Balkans in 2035. Using a Strategic Foresight approach, the report supports policy-makers in creating an enabling environment for R&I policies to thrive and decide on priorities for strategic investments for the future. The scenarios in the report are rooted in an extensive co-creation process with more than 700 experts on R&I from the Western Balkans, who represent academia, civil society, the private sector, international organisations as well as central and subnational governments. In order to provide inspiration to implement future-proof policies on R&I, the report moreover entails initial roadmaps. These seek to inspire decision makers by pinpointing goals and their required actions to further develop their R&I systems for the benefits of all citizens in the Western Balkans.

*Studies and reports*

