



R&D and Innovation in Western Balkans Moving Towards 2020

Ines Marinkovic and Elke Dall, Editors

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Moving Towards 2020

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Ines Marinkovic and Elke Dall

Notes of the Editors:

The designations employed and the presentation of material throughout this publication do not imply the expression of any opinion whatsoever on the part of the editors concerning the legal status of any country, territory, city or area or its authorities, or concerning the delimitation of its frontiers or boundaries.

Kosovo*

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

For best readability, in this publication footnote is included only when Kosovo* is first time mentioned. We accept that some authors use Kosovo without Footnote instead of Kosovo* with Footnote.

FYROM – FYR of Macedonia – Republic of Macedonia

We accept that some of the authors use “Republic of Macedonia” or “FYR of Macedonia” instead of the international provisional name “The former Yugoslav Republic of Macedonia“ meaning the same state entity.

History and Outlook on the Cooperation in Higher Education and Research with the Western Balkans – A View from Austria

Foreword to the WBC-INCO.NET Final Publication

Heribert Buchbauer and Christian Gollubits
Austrian Federal Ministry of Science, Research and Economy

Neighbouring countries and regions are always important partners. This also holds true for Austria and her neighbours in Central, Eastern and South-Eastern Europe, especially in the fields of science, research and innovation. Following the political transformation in the region after 1989, Austria has taken every effort in supporting the dynamic development within the region. Apart from signing bilateral agreements on S&T cooperation with most of the countries in Central, Eastern and South Eastern Europe, Austria has implemented numerous unilateral research related initiatives and programmes. One of the first initiatives was the establishment of the “ASO”s – the Austrian Science and Research Liaisons Offices in Budapest, Brno, Bratislava, Košice, Ljubljana and Sofia in the 1990s. These offices promoted bilateral cooperation in S&T inter alia through programmes, partnering initiatives as well as information events from 1990 through to 2010. In 2010 the ASO-scheme was discontinued due to the introduction of the European ERA- and INCO.NET-schemes. Following 2010, intensive use of these new instruments was made to create European network projects such as the “Southeast European ERA.Net”, the “Southeast European ERA.Net PLUS” and the “Western Balkan Countries INCO.NET”, Austria always being a dedicated supporter of the full integration of the region into the European Higher Education and Research Areas.

Towards the European Higher Education Area

During her first EU Council Presidency Austria organized a large conference on “European Educational Cooperation for Peace, Stability and Democracy” in Graz. The major outcome of the conference is referred to as the “Graz Process”, which led to the establishment of a Task Force encompassing all players in the field such as the European Commission, the Council of Europe, the OECD, the

World Bank, the UNESCO/CEPES, George Soros' Open Society Institute, the European Rectors' Conference, interested EU and non-EU countries and many others, including the respective EU TROIKA Member States.

In 1999, during the German EU Council Presidency, the Stability Pact for South Eastern Europe was concluded. As a result of joint lobbying efforts of the partners of the "Graz Process", the Task Force Education and Youth was accepted as part of the Stability Pact's Working Table 1 on Democratisation and Human Rights. The Working Table was chaired by Austria and co-chaired by Romania. It has since facilitated and supported reforms in all areas of education in South Eastern Europe, mainly through regional cooperation, international networking and transfer of knowledge, expertise and policy advice.

While the first phase was characterized by fundraising and donor coordination efforts as well as by a large number of mostly small regional projects in various fields of education, the second phase led to more strategic approach to improve the necessary reform measures both at a system and institutional levels. In order to provide a better basis for this, the OECD carried out country reviews analyzing the regional educational systems and offered policy advice. This led to the development of the systematic online presentation of educational systems referred to as the "SEE Educational Co-operations Network".

The six working groups of the Task Force Education and Youth, amongst them a working group on higher education chaired by the European Rectors' Conference, also decided on a more strategic approach (i.e. the formulation of recommendations for political lobbying). In the field of higher education, the main political issues were the full inclusion of the Western Balkan Countries into the Bologna follow-up activities aimed at establishing a European Higher Education Area and the adaptation of EU programs in higher education making them more accessible for higher education institutions from the region, as well as adjusting them so they better meet the needs of the region.

Lobbying in the European Bologna Follow Up Group was successful, and in the course of two Bologna Follow Up Ministerial Conferences in Prague in 2001 and in Berlin in 2003 all Western Balkan Countries became full members of the Bologna Process.

With support of the European Commission, the priorities of the TEMPUS Program were amended as well, leading to increased regional cooperation and stronger support of the implementation of higher education reforms in the region, especially regarding the Bologna objectives (such as curriculum reform, the introduction of ECTS, quality assurance etc.). In addition, a large scale multi-annual project focusing on governance, financial management and quality

assurance (with concrete manuals for each sector), implemented by UNESCO/CEPES, brought together higher education authorities and institutions from Albania, BiH, Croatia, FYR of Macedonia via training sessions and study visits. This setting is referred to as “Regional University Network in Governance and Management of Higher Education”, and was co-funded by the European Commission.

Austria has always played a very active role in both the Higher Education Working Group and in the UNESCO/CEPES project, as well as in all lobbying efforts pertaining to the new orientation of the TEMPUS programme and the Bologna Follow Up Process. Moreover, Austria has always been one of the main donors for higher education in the region, WUS Austria (World University Service) being one of the major implementing agencies on project level. Currently, WUS Austria is in the course of implementing the project “Higher KOS - Promoting Institutional Development in Higher Education and Research in Kosovo*” together with the ZSI and the OeAD GmbH. The overall objective of the project which is financed by the Austrian Development Agency (ADA) is to contribute to the well-functioning of public higher education institutions in Kosovo* along the lines of European values and standards, thus supporting European integration as well as democratisation and sustainable economic growth.

In June 2003, the “EU-Western Balkans Summit”, held in Thessaloniki, confirmed the EU’s support for the European perspective of the Western Balkan countries. The Summit gave an important signal to the region and provided a strong incentive for political and economic reform as well as encouraging reconciliation among the peoples of the region. It was also in 2003 that the Ministers of Education and Higher Education in the region committed themselves to regional cooperation and to the European dimension of educational reforms in a “Memorandum of Understanding” facilitated by the Task Force of Education and Youth chaired by Austria. The “Education Reform Initiative of South Eastern Europe (ERI SEE)”, a regional platform for cooperation in the field of education, was set up as an interface between ongoing national trends and reforms in the education sector in South Eastern Europe and those at EU level. “ERI SEE” has thus supported capacity building in key areas of educational reform focusing on EU integration processes with respect especially to the shared goals and objectives of “Education and Training 2010”.

During the Austrian EU Council Presidency in 2006, the Western Balkan Countries were one of the priority areas across various policies including education and research. As far as the general policy towards the Western Balkan Countries was concerned, it was decided in 2006 that – due to the profound

changes which had already taken place in the region – the time was ripe to move towards full local ownership of regional co-operation activities through a gradual transition. An increased role for the “South-East Europe Cooperation Process (SEECP)” as the voice of the region was envisaged. At the same time, education, science and research, as well as the development of human resources, was agreed to be one of the core objectives within the Stability Pact under the joint name of “Fostering and Building Human Capital”. In May 2007 in Zagreb, at the regional table of the Stability Pact, the transformation of the Stability Pact for South Eastern Europe into the “Regional Cooperation Council” of the SEECP was officially adopted. In order to take account of this development, a memorandum of understanding between the ministers responsible for education, science and research in South Eastern Europe – once again facilitated by Austria as the chair of the Task Force - was drafted and signed in May 2007, preparing the transfer of the leadership of the Task Force Education and Youth from Austria to the region.

Science and research as driving forces for economic stabilization and growth

In 2000 the European Union committed herself to the ambitious Lisbon goals. In the area of Science and Research this means working towards a “European Research Area”. The overall aim is closer coordination of national and European policies, the organisation of increased joint efforts including funding mechanisms and greater European cohesion in research. Austria has always seen the Balkan region as a part of Europe and hence as a part of the European Research Area. A “Shared Vision on EU-Balkan Countries Cooperation in Science and Technology” and an “Action Plan on Research and Technological Development” were developed among Member States, EU-candidate countries and Western Balkan Countries from 2000 to 2003. They were finally adopted at a ministerial conference in Thessaloniki in 2003 during the Greek EU Council Presidency. Austria was strongly involved in the preparation of the “Action Plan” which became instrumental in integrating the Western Balkans into the European Research Area, promoting their significant research potential. ”The Action Plan” defined priorities for research cooperation for the following three years and examined all possible sources of funding apart from the EU-Framework Programme for Research. The above mentioned “Shared Vision” referred to science, research and technological development as essential driving forces for economic stabilization and growth, and called for full participation of the

Balkan region in the European Research Area. The improvement of research infrastructures and human potential, institution building, the promotion of joint RTD activities for mutual benefit as well as for regional impact were defined as the main issues.

In 2004, the dedicated networking project “Southeast European ERA.NET – SEE-ERA.NET” was launched in support of the integration of Southeast European countries into the European Research Area by reconnecting with EU member states and associated countries and linking research activities within existing national, bilateral and regional RTD programs. SEE-ERA.NET was financed through the EU’s ERA-NET scheme and was an important step towards stronger cooperation and coordination of research activities, and especially of research programs, across Europe.

SEE-ERA.NET was based on a systematic exchange of information and best practices on bilateral RTD programmes and activities, on creating an understanding of the state-of-art of systems of research in the Western Balkan Countries and a comprehensive needs analysis from the viewpoint of internationally and regionally collaborating researchers, especially those from the Western Balkan Countries. The scope of activities ranged from awareness raising initiatives on challenges and opportunities, the identification of joint strategic activities, the development of policy recommendations and the implementation of a regional RTD program including a pilot call for research proposals open to researchers from SEE-ERA.NET partner countries.

SEE-ERA.NET’s follow up project “SEE-ERA.NET PLUS” commenced in 2009 and continued to implement the “Regional Programme for Cooperation with South-East Europe (ReP-SEE)”, which was developed within the SEE-ERA.NET to enhance S&T cooperation. This project aimed at enhancing the integration of the Western Balkan Countries and their research communities into the European Research Area. The project consortium launched and implemented a joint call for transnational research proposals. With a call budget of approximately € 3 Mio, 23 transnational research projects in the SEE-region have been co-funded by the partner countries and the EC and are about to be completed in the imminent future.

During the Austrian EU-Council Presidency in 2006, the Austrian Ministry of Science, Research and Economy was one of the driving forces in setting up the “EU-Steering Platform on Research for the Western Balkan Countries”. This initiative was a major factor for the stimulation and subsequent enhancement of the political dialogue on S&T cooperation and the integration of the region into the European Research Area. The Platform, comprised of the EU-member

states and associated countries, the European Commission and South Eastern Europe, continues to play a central role in stimulating, monitoring and supporting cooperation in RTD&I, serves as a forum for exchange of information and of views, and develops recommendations on the RTD&I policies of the EU in respect to the Western Balkan Countries.

As of January 2008, the “Steering Platform on Research for the Western Balkan Countries” was technically supported by the “WBC-INCO.NET”, a project carried out under the specific programme „Capacities” of the 7th EU-Framework Programme (FP7). “WBC-INCO.NET” was crucial for fostering European and regional dialogues concerning structured participation in FP7, monitoring and analysing S&T cooperation, identifying potentials in the WBC, facilitating networking and increasing participation of the WBC’s researchers in European RTD projects through structural measures.

All these issues were not only addressed by the Steering Platform’s meetings, but also through regional S&T policy meetings, including meetings with European Commission Directorates Generals, expert seminars, brokerage events and training seminars. STI newsletters and a dedicated online information portal became the major sources for STI information for the Western Balkan countries. In addition the “WBC-INCO.NET” raised awareness about research funding in FP7 and build links with scientists and researchers throughout Europe, thus successfully demonstrating the high potential for cooperation in the region.

Work Package 1 of the “WBC-INCO.NET” project called “European and Regional Dialogue” provided organisational support for the implementation of the regional and bi-regional political dialogue between the EU and the WBC and was led by the Austrian Federal Ministry of Science, Research and Economy. Within this Work Package several meetings of the Steering Platform and other high level regional dialogues were organised back-to back with meetings of the “WBC-INCO.NET” Steering Board. In addition the “WBC-INCO.NET” entered into a proactive dialogue with the European Commission’s Directorate Generals (e.g. DG Enlargement, DG Information Society, DG TREN, DG Education, etc.). WP1 initiated the exchange of information with international stakeholders (e.g. UNESCO, OECD, RCC + RCC Task Force Fostering and Building Human Capital, CEI, WBC-TEMPUS projects, World Bank, COST, relevant ERA.NETs and specific support actions targeting the region in a structural manner).

The European Commission’s communication “Europe 2020 Flagship Initiative: Innovation Union” (adopted on October 6, 2010) explicitly states that

EU-candidate and potential candidate countries are expected to contribute to the realisation of the Innovation Union. This was WBC-INCO.NET's basis for joining forces in the course of the following three years in implementing various measures enhancing innovation capacities in the region. WBC-INCO.NET developed an Action Plan for the WBC's cooperation in the field of innovation, thus improving cooperation between research and innovation stakeholders through the exchange of information as well as of best practices on innovation policies via training seminars for innovation stakeholders on technology transfer, awareness raising measures targeted at the research community concerning market demands and benefits of innovation etc.

With these success stories in mind Austria eagerly anticipated the adoption of the "EU Strategy for the Danube Region", which provides an even wider umbrella for STI cooperation with Austria's neighbouring countries. The shared cultural and historical background is the common denominator for closer trade relations, transnational scientific cooperation and mobility in the region.

The "EU Strategy for the Danube Region" calls for the identification of yet untapped potential, the improvement of the use of existing sources for cross-border activities and the joint development of instruments that have the potential to trigger and advance scientific cooperation in the Danube Region. The "EU Strategy for the Danube Region" also asks for a critical assessment of already existing instruments as well as for the continued use of successful structures and mechanisms similar to those previously developed in cooperation with the Western Balkan Countries. The Austrian Federal Ministry of Science, Research and Economy is willing to take over a leading role in the Danube region as a driving force in the Priority Area 7 "Knowledge Society" of the "EU Strategy for the Danube Region". Thus the Austrian Federal Ministry of Science, Research and Economy is an active partner in the "Danube Region INCO.NET" leading the project's Work Package for „Policy Dialogue“.

Hence we strongly hope the cooperation and the dialogue with and in the Western Balkan countries will continue to succeed in the broader context of the "EU Strategy for the Danube Region".

Messages to WBC-INCO.NET from Political Leadership

European Commission, Directorate-General for Research and Innovation

International Cooperation Directorate

“The European Commission has been involved from the very beginning in the work of the WBC-INCO.NET. Possibly it has been more involved in this project than in any other INCO.NET with other regions or group of countries and this for a very simple reason: given the pre-accession status of all Western Balkan Countries, it soon became evident that strengthening cooperation on research and innovation would also facilitate the integration into the European Research Area and in turn the European Union.

The leitmotiv of this INCO.NET has without doubt been: “cooperation on R&I: a tool to prepare and facilitate for EU accession”. From the very beginning it has been underlined that cooperation on science and research should not be constrained by geography, history or politics and on that basis the EC committed to open widely the doors of the European Research Area to the Western Balkans. Back in 2006 this was not so evident but after seven years of intensive cooperation, through and with the support of the WBC-INCO.NET, we can proudly say, as seen also during the final conference in Vienna on 27-28 March 2014, that this goal has been achieved. More importantly, in bringing together all stakeholders committed to strengthening the research and innovation capacity in the Western Balkan region, in particular through supporting the meetings of the WBC Steering Platform, the WBC-INCO.NET played an important, and not to underestimate, symbolic role in this achievement.

The WBC-INCO.NET was, however, also very operational: it really put the Western Balkan scientists on the European and world map through multiple networking events and mapping exercises of scientists and research infrastructures in the Balkan Region. The INCO.NET supported analyses on the strengths and weaknesses and always ensured that the WBCs would be informed about the latest developments on EU policy on Research and Innovation. The latter is well illustrated by the prolongation of the project in 2011 precisely to allow covering also the actions that in the meantime the EC had adopted under the Europe 2020 flagship initiative Innovation Union (IU).

Much remains to be done. This is also normal since preparation for EU accession requires many reforms and capacity to absorb all EU requirements (also called EC

acquis) which is work in progress. This is why it is of utmost importance that cooperation at regional level, through a Platform or any other form of regional support and coordination action, in which all relevant stakeholders can continue to meet at regular intervals, should be sustained. It is necessary, for example, to ensure that the right framework conditions conducive to research from the lab to the market are in place. It is also necessary to ensure that the Western Balkans which, in principle, will all be associated to the new EU framework programme on research and innovation 'Horizon 2020' can continue to have a forum in which they can meet and network and form research consortia to address their common problems and challenges.

Last but not least, it would be a real pity that the European scientific community could no longer benefit from all the information provided by the WBC-INCO.NET through its website and Newsletter. Another achievement of the very professional support that all stakeholders and the Western Balkan Science community in particular could enjoy from the project leader of this project – the Centre for Social Innovation in Vienna, Austria: congratulations and thank you.

As for the EC, and DG Research and Innovation in particular, it remains convinced that strengthening cooperation on research and innovation in the Western Balkan Countries will facilitate the journey to the EU. To further facilitate that, it goes without saying that meeting regularly at regional level should and will also continue.”

Tania Friederichs
International Cooperation Directorate

Presidency of the Council of the European Union (Greece)

Hellenic Republic
Ministry of Education and Religious Affairs
General Secretariat for Research and Technology
International Scientific and Technological Cooperation Directorate

“Greece is holding the Presidency of the European Union in the first half of 2014, before handing over reins to Italy on 1 July 2014. Greece assumes the Presidency of the Council of the EU at a time that Europe is going through a crucial transitional phase connected to a financial crisis imposing the implementation of restrictive fiscal policies. At this important juncture, the EU’s biggest challenge is to foster growth, competitiveness and jobs and to ensure stability and prosperity for all. Today, the EU is called upon to safeguard financial stability through the deepening of the Economic and Monetary Union, to boost growth-enhancing economic policies aiming to fight unemployment by, and inter alia, enhancing synergies between migration and growth and to restore lending to the economy, in particular to SMEs. Therefore, the promotion of policies and actions for achieving

growth, combating unemployment, promoting economic and social cohesion and structural reforms, deepening integration and completion of EMU, as well as addressing external challenges, including EU enlargement, formulate the priority framework of Hellenic Presidency.

Investment in research and innovation has been proved a major factor in support of the long-term stabilization of economy leading to Competitiveness, Growth, Jobs and Cohesion. This is a principle integrated in the philosophy of the new framework programme for research and innovation “Horizon 2020”, 2014-2020 the implementation of which has just started supported by a total budget of ~80 billion euros. In the course of the Greek Presidency of the European Council, the General Secretariat for Research and Technology will undertake actions to fulfill the EU objectives and pave our way for overcoming the crisis at a European level through investing in Research & Innovation and capitalizing on the asset of excellent European human resources. These actions aim at securing the optimum use of available tools to achieve the integration of the European Research Area and enhance the cooperation between industry and academia with particular emphasis on SMEs, as well as international cooperation. In the context of the enhancement of international cooperation, the integration of the WB countries into the European R&I landscape and ERA remains one of our main priorities. Greece through the GSRT, has actively participated in the WBC-INCO.NET project which we consider an important political instrument towards the above direction”.

A. Patroni

**Head of international S&T Cooperation Directorate
The General Secretariat for Research and Technology**

Ministry of Education and Sports (Albania)

“From the beginnings, MoES, as a partner of WBC-INCO.NET project has been active in implementing different project activities, as well as in attending and organizing the Steering Platform on Research in WBC. The project results and the SP were also of a great help in developing Albanian Strategy for Science, Technology and Innovation for years 2009 - 2015. The partnership created between all these Ministries and Agencies, covering Science and Higher Education in WBC and Europe, has been successful and a major share of the merit should be attributed to the Centre for Social Innovation as the coordinator. We hope that the Steering Platform will also be supported in the future.

We consider scientific progress as a forerunner of the social, economic and cultural development, as a factor for the democratic consolidation, and as a fundamental part of the European Albania image. Therefore, the Ministry of Education and Sports of Albania has already expressed interest to take part as an associated country in the new

framework programme for Research and Innovation – Horizon 2020. WBC-INCO.NET project helped us to establish numerous opportunities also for the future cooperation under Horizon 2020. Albania is very interested in the rapid implementation of the new reforms in HE and research sector, enabling the incorporation of Albania in the European Higher Education and Research Area, and eventually integration into the European Union. Thanks and good luck to the multilateral cooperation in the Region and Europe!”

Arbjan Mazniku
Deputy Minister

Ministry of Civil Affairs (Bosnia and Herzegovina)

“The WBC-INCO.NET project has significantly contributed to Bosnia and Herzegovina’s research policy. A wide range of the project’s activities fully met the goals endorsed by our Strategy for Science Development in Bosnia and Herzegovina 2010-2015. The project and the Steering Platform on Research for Western Balkans Countries greatly helped us to build roads towards the European Research Area on our path towards integration of Bosnia and Herzegovina into the European Union and its policies.

Strengthening of regional cooperation at the policy and experts levels has been a great success of the project. It created positive interaction and served as a credible commitment for implementing reforms and promoting a society of knowledge in our countries. The exchange of information and ideas, in connection with regional and European scientific, technological, and innovation networks and institutions has re-connected the R&D community in the Western Balkans and, at the same time, has contributed to cooperation with researchers from the European Union. This cooperation worked mainly through the 7th Framework Programme for Research, Technological Development and Demonstration Activities (FP7).

Results of the project have an important impact on the future. Association to “Horizon 2020” will present a challenge to researchers from our region to compete with the best researchers in Europe. Nevertheless, it is going to be a great opportunity to collaborate on projects with European research goals and values. WBC-INCO.NET provided a valuable foundation for this collaboration.”

Zlatko Horvat
Secretary General

Ministry of Science, Education and Sports (Croatia)

“For the first time in its history, Croatia opened a new year as an EU Member State and in this role is committed to use the opportunity for further advancing its economy and society. A strong science and education sector is the prerequisite for such development, and close transnational cooperation with our European partners, particularly through programs such as “Horizon 2020”, will help us achieve this goal.

Fostering regional cooperation is the greatest contribution that the Republic of Croatia can provide to the policies on which the European Union was founded. Croatia sees this cooperation, as well as that of European Union membership of all countries in the region once all criteria are met, in its national interest for the long term and as a foundation for its own security and development. We believe that we can be constructive in this regard and that we can be true friends to all who are oriented towards promoting the values of the great project of European unity.

The Steering Platform on Research for Western Balkan Countries has served a key role as an excellent forum for the development of strong partnerships in the field of science and technology and as a useful platform for the exchange of information, needs, suggestions, and proposals between Western Balkan Countries, the European Commission, the EU Member States, and other countries associated to the Framework programme.”

Stasa Skenžić
Head of Division for International Cooperation
Directorate for Science and Technology

Ministry of Education and Science (FYR of Macedonia)

“The FP7 WBC-INCO.NET project with its strategic position to become a leader in enhancing scientific cooperation of the Western Balkan Countries with the European Union has not only fulfilled but has greatly exceeded its goals.

The establishment of the Steering Platform on Research between the EU and the WBC, based on the S&T Action Plan adopted at the Thessaloniki Summit in 2003, has had an important impact on the overall development of closer relations between WBC and the EU political and other scientific actors.

The three crucial objectives of the project have significantly contributed to the advancement of the countries from the region on their way towards EU integration in the field of research, development, and innovation:

- *The bi-regional dialogue on S&T within the Steering Platform and the possibility to directly and actively discuss open issues of common interest with the most relevant representatives from the European Commission, the EU member states, and international organizations such as EUREKA, UNESCO, COST, and others, have helped overcome many problems and challenges.*
- *Setting priorities and the identification of R&D potential have been the second most important issues for the benefit of the WBC. The transparent and open way in which these activities were performed gave opportunity to all the involved parties to agree on the most relevant fields of interest.*
- *The enhancement of participation of researchers and other stakeholders from WBC in European projects of mutual interest and benefit has resulted in a significantly increased level of participation, particularly in FP7 projects.*

The regional potential has become visible and recognized being desirable partner in many networks and consortia. They create the basis for further and better collaboration and participation in the new EU Research and Innovation Programme “Horizon 2020”.

The Ministry of Education and Science of the Republic of Macedonia has been actively involved in the implementation and performance of all the tasks and activities within the project’s life-cycle, contributing to the successful achievement of the expected results.

On this occasion, we would like to thank all the involved parties for the support and assistance in building our overall capacities for successful and enhanced participation in EU and other research and innovation projects.

Special thanks to the Coordinator of the project, ZSI, with all the people working there, to Ms. Tania Friederichs from the EC, for all her efforts and support and to all the other partners and participants.”

Spiro Ristovski
Minister

Ministry of Science (Montenegro)

“The Government of Montenegro and the Ministry of Science have strongly supported the implementation of the WBC-INCO.NET project and have promoted cooperation in the area of R&D within the region of the Western Balkans. Deepening regional collaboration through activities implemented in the WBC-INCO.NET project has helped us share our knowledge and improve collaboration.

The WBC-INCO.NET project and the Steering Platform on Research for WBC at the policy level have served as a commitment to implementing reforms at the national level and have promoted further integration of the region into the European Research

Area (ERA). In this regard, we have improved the R&D development strategy objectives in Montenegro: fostering regional cooperation within the knowledge triangle (research, education, and innovation), improved research capacity, improved knowledge transfer and mobility of researchers and technology, and better cooperation between science and business. In order to integrate Montenegrin research community into the ERA and into international programs for R&D and innovation in a better way, we have adopted the Law on Scientific Research Activities in December 2010 and the Amendments to the Strategy on Scientific Research Activities in December 2012, and we have introduced new instruments for developing the Montenegrin scientific research system, such as a Center of Excellence as a key instrument for promoting quality in science, research, and innovation and the establishment of a Science and Technology park.

Finally, all our efforts have resulted in progress in the negotiation process with the EU: opening and provisional closure of Chapter 25 of the EU Acquis Communautaire on Science and Research in the Ministerial Conference held in Brussels on December the 18th, 2012. The Steering Platform on Research for Western Balkan Countries (WBC) meetings have served as an excellent forum for the development of strong partnerships in the field of Science and Technology and as an information exchange centre for needs, suggestions, and proposals between WBC on one hand and the European Commission and EU Member States on the other. I hope this initiative will continue to exist in the future, also in the view of association of the Region to "Horizon 2020".

Darko Petrušić
Deputy Minister

Ministry of Education, Science and Technological Development (Serbia)

Strategic activities undertaken within the WBC-INCO.NET project and the Steering Platform on Research for WBC have contributed to an exchange of experiences within the WBC and the EC in the area of research and innovation policies. It has created the R&I environment for better understanding the process of integrating the whole region into the ERA. Our country has got the opportunity to become familiar with EU policies in order to design and implement national and regional R&D&I policies. The WBC-INCO.NET project has enabled us to further improve regional cooperation since we have a lot of common interests and priorities.

Radomir Žikić
Assistant Minister

Messages from WBC-INCO.NET partners

The short paragraphs on the next pages express in some cases personal views of individuals who were engaged in WBC-INCO.NET project, which do not automatically represent the opinion of their home institutions. The authors are solely responsible for the content of their contributions.

Ministry of Economic Development, Trade and Entrepreneurship, Albania

“The project WBC-INCO.NET is important because it succeeded to provide valuable insights into ways that successful models of innovation have taken shape in different countries’ conditions and into their recipes for success. We appreciate the special efforts and tasks of the project on how these models can be replicated or adjusted to the other Western Balkan Countries. The results of the project for benchmarking countries against their peers in areas of innovation policies and infrastructure, to study the countries’ strengths and weaknesses are very useful. We believe that the common efforts of all countries in the region are paving the way for better and more innovation policies that will contribute to more job creation and wellbeing. The project has contributed in creating a friendly and familiar atmosphere among all participants, bringing all Balkan countries to the table to discuss our common problems, to find solutions, and to address them. As the project comes to an end, I will miss all the people who made this project possible: Violeta, Marina, Niko, Liljana, Zeljka, Alma, Djuro, Ulrike, Carmen, Ines, and above all Elke.”

Kujtime Stefani

Agency for Research, Technology and Innovation, Albania

“ARTI has been a WBC-INCO.NET project partner since January 2011. First of all, it is really great to work in a network with so many partners from so many different countries. It is a valuable network that supports Albanian researchers to find partners for cooperation in the field of Higher Education and Science. ARTI was involved in several work packages and each work package has its importance—we have learnt a lot from each one. But for us, WP1, WP2, and WP8 were the most important. In WP1, Steering Platform Meetings and Regional Cooperation, we have learned a lot about Policies for Science, about activities in our region with respect to science and research, and about strategies

for science in our region and in Europe. The Progress Reports are very useful materials for improving our science policy. Albania also successfully organized the Steering Platform meeting of June 2012. In WP2, Priority Fields, we have learnt a lot about methodologies and questionnaires, to prepare reports and to present them at important European conferences. The participation of a lot of scientists in all these conferences, funded by the project, was very helpful.

The “Best Practice” meeting has been one of the most fruitful meetings of all. WP8, Innovation, was also extremely important for us. We have learnt a lot about innovation, and METE and ARTI have been able to realize the Report of Innovation in Albania for the first time. At the same time, I participated in the Advisory Group of the project for the Strategy of Science for Innovation for West Balkan Countries, whose aim is a Regional Strategy for Science and Innovation, a project led by the World Bank.

In closing, I would like to thank ZSI and all the people that have worked and are still working on the project for your excellent efforts to realize and coordinate this great WBC-INCO.NET project successfully.

CONGRATULATIONS,

Edmond Agolli

Ministry of Civil Affairs, Bosnia and Herzegovina

“For over six years, I have had the pleasure to work on the WBC-INCO.NET project with people from many different countries. The management of the project at the Centre for Social Innovation in Vienna gave evidence of high professional standards, which made the WBC-INCO.NET project a highly relevant reference for R&D subjects for the Western Balkan countries. While working on the project, I myself gained valuable experience of the administrative and financial management of European R&D projects. I equally became aware of how much motivation and energy is required to run such a large and complex project in a successful manner.

I am much obliged to all project partners, the European Commission, and the EU Member States which participated at various stages of the project’s activities, for creating a cooperation network that will have a lasting effect long after the project’s official conclusion.”

Alma Hasanovic

Foundation for Higher Education World University Service, Bosnia and Herzegovina

“SUS BiH (Foundation for Higher Education – World University Service Bosnia and Herzegovina) as a partner has the goal of facilitating the interaction between the Western Balkan Countries, mainly B&H, EU member states, and other states associated to the Framework Programmes.

We believe that we, with our project partners, helped to achieve the project objective, to support the enhanced integration of Bosnia and Herzegovina and other WBC into the European Research Area. With SUS BiH’s previous experience as an NCP incubator and through good cooperation with other WBC-INCO.NET partners, we have achieved our mission to provide active support to the academic community by adding value and knowledge to individuals and many another stakeholders in Bosnia and Herzegovina. The programs of SUS BiH in accordance the WBC-INCO.NET project have provided assistance to BiH higher education institutions, university staff, students, academics, individual researchers, and research institutes. All of that was possible through different project activities and information dissemination directed at connecting B&H and European partners, research centers, researchers, and academics with regard to international cooperation between BiH and different European institutions. Through the project activities we have supported strengthening inter-sectoral dialogue, the exchange of information, and best practices on innovation policies and training of innovation stakeholders with respect to technology transfer.

We will in future take part in similar projects to raise awareness within the research community for market demands, to link research to the market, and furthermore to continue networking and information dissemination for further B&H integration into the European Research Area, Horizon 2020, which will be in focus, and with other topics such as an update on regional cooperation issues, knowledge & technology transfer, ERA, etc.”

Haris Muhic

Ministry of Science, Education and Sports, Croatia

“Croatia and its academic community recognize WBC-INCO.NET as a very important project and/or tool for better integration into the European Research Area as well as into the European Higher Education Area. I assume that the Balkans region has a lot of opportunities to be a significant partner within the European Research Area. It has to be rather more involved in European cooperation within the scientific research community

than it is now. Nevertheless, I think that not only Croatia, which is now a EU member state, but the whole region has much more ability to contribute to this task. That is what WBC-INCO.NET has already proved.”

Damir Jelacic

Ivo Pilar Institute of Social Sciences, Croatia

“The project has established communication links and interrelations between policy makers and experts in the region that have been hardly thinkable before the project started. It has paved the way for the current common research and innovation strategy of the region whose implementation is expected in the forthcoming period. The continuous exchange of information, a broad range of various analyses, progress reports, networking, and related activities on scientific research and innovation systems has raised awareness on the part of national governments of the importance of national research and innovation systems for overall development. It has helped them to consider the various instruments and mechanisms of improving national research and innovation capacities and how regional cooperation can contribute. Experts and researchers have also benefited greatly from participation in the project. They have not only published scientific and expert papers but also gained invaluable experience in how EU projects actually work. Today, they are familiar with how to write a project proposal, how to make a financial report, how studies carried out within the projects are evaluated, what the roles of project and financial coordinators are, etc. They have learnt that complex management abilities are needed to coordinate such a large consortium project and how project partners should be responsible to meet the requirements. Future cooperation in the region should be focused on research topics and innovation activities which would connect a much broader range of stakeholders from universities and research institutes to local authorities and companies.”

Jadranka Švarc

Ministry of Education and Science, FYR of Macedonia

“Becoming part of the WBC-INCO.NET team in the spring of 2009 was an exceptional experience for me. My first participation in the Steering Platform meeting happened in Liblice, Czech Republic. I was impressed by the representation, the number and variety of participants, the possibility to discuss issues of common interest for the countries from the region with high officials from the Commission, representatives of EU member states,

and representatives of international organizations. The support that we got from the coordinator, the partners in the project, and the EC representatives assured me in the efforts that we all put together to achieve the projects most important goals.

Besides all the project achievements and results, lessons learned, and skills gained, equally important for me was the opportunity to meet and work with wonderful people from all over Europe and build lifetime friendships. Thank you, WBC-INCO.NET, for all the wonderful moments.”

Violeta Atanasovska

Ministry of Science, Montenegro

“The WBC-INCO.NET project was a very good knowledge exchange platform on the developments of research cooperation in the EU, important initiatives, programmes, and projects that has helped us in structuring the research system in Montenegro in an important, pre-accession phase of our integration into the EU. The Ministry of Science was the task leader for organizing the Regional Dialogue meetings. They served as place to form regional opinion on topics common to us all, as well as to propose certain regional initiatives. Initiation of the development of a regional strategy for research and the preparation of a Joint Position on the next Research and Technology Development Framework Programme of the European Union are examples of outcomes of the Regional Dialogue meetings.

MoS-ME was also in charge of the organization of consultation sessions aimed at defining thematic regional research priorities for WBC. Representatives of the researchers, industry and government sectors from the region discussed joint research priorities and defined topics of highest interest for Western Balkan countries, in order that they are taken into account in wider EU policy planning processes.

I am glad that Montenegro hosted WBC-INCO.NET and the Steering Platform meetings two times: in November 2010 and June 2013. The project as a whole has greatly contributed to the excellent cooperation in R&D among all partners within the region.

I assess the project website and newsletter as worth of sustaining since the wide research community has been using them as a valuable information and dissemination tool.”

Milena Milonjic

Directorate for Development of Small and Medium Sized Enterprises, Montenegro

“The Directorate for Development of Small and Medium Sized enterprises of Montenegro, through realization of the WBC-INCO.NET project, enhanced its capacities for innovation and research, raised awareness of innovation support measures and technology transfer among SMEs, and contributed to overall dialogue and networking. Thus, the R&D issue and innovation should be fostered by continuation of dialogue and introduction of new measures aimed at enhancing SME’s innovation capacities.”

Ministry of Education, Science and Technological Development, Serbia

“Regular semi-annual reporting to the European Commission on the progress in the field of science and innovation has contributed to a better perception of deficiencies in national R&D systems and designing future strategic documents. Encouraged by the presentations of these reports at Steering Platform meetings, we managed to bring a number of amendments to the Law on the S&R Activities and Innovation Activities, as well as modifications of bylaws. Numerous training sessions for researchers and research managers have contributed to the development of human capacities that are and will be involved in FP7/H2020 projects and other EU programs. The promotion of regional research potential at large EU conferences has contributed to raise awareness in European researchers of our scientific capacities and capabilities. Well skilled NCPs have improved the quality of their services provided to the research community. Activities in the field of innovation and technology transfer have helped establish closer links between research institutions and industry. Besides this, the mapping of common regional priorities in the field of R&I is shown to be an important factor for improving regional collaboration and faster integration of the entire region into ERA.

We would welcome the continuation of activities by WBC-INCO.NET, the Steering Platform, and the policies dialog with the EC in order to monitor progress.”

Mihajlo Pupin Institute, Serbia

“This project has succeeded at establishing dialogue on number of issued relating science, technology, and innovation between EU and partners in Western Balkan Countries. Most of all, Western Balkan Countries have joined a variety of platforms in order to raise the

profile of the region so as to be better accepted by the EU member countries. The end of the project should bring solutions for a continuation of the dialogue and possibilities for further development of research and innovation in the WBC.

We consider the entire project to be important, but we would like to stress particular benefits reached within three working packages: WP2 Priority Setting, WP4 Building Capacities, and WP8 Innovation Support. Introducing a new way of building priorities for this region, WP2 Priority Setting has offered opportunities for cooperative research projects in selected areas of specific interest to the region. WP4 Building Capacities was an interesting learning experience with possible integration of reduced resources in region. Finally, WP8 Innovation Support has brought to us EU most efficient and least expensive mechanisms for development of innovation activities in the Balkans region. Their implementation will depend on regional readiness for launching such programmes but, also, will depend on the continued support by the EU.

Administrating activities during the project's life-time took a lot of time, but looking back, we can say that it was not a waste of time, but on the contrary useful, with a lot of new experience spend time."

Kosova Education Center, Kosovo*

"WBC-INCO.NET has supported the preparation and publication of seven national background reports for Kosovo (Health, Transport, Environment, ICT, Agro-Food, Social Sciences and Humanities, and Energy). These reports were also used in the process of developing the National Research Program for Kosovo 2010-2015, approved by the Kosovo Assembly. After an initial impact of the project on policy making, the EU office in Kosovo in 2012 also supported four research projects focusing on priority areas from the National Research program. In addition, WBC-INCO.NET has supported the participation of the Kosovan research community in several training, coordination, dissemination, and information events with Western Balkan countries, thus contributing to upgrading the research capacities in Kosovo and also establishing strong mutual partnership with EU research institutions. As one of the few FP7-funded projects in Kosovo, WBC-INCO.NET has had an important role in encouraging the research community in Kosovo to benefit from regional and international cooperation and to be better prepared for participation in Horizon 2020."

Dukagjin Pupovci

Austrian Research Promotion Agency, Austria

“Looking back at the last decade, our organization has taken an active part in supporting RTDI performance of the Western Balkan Countries in general and our NCP colleagues in particular. We are content with the results that have been achieved within the frame of the WBC-INCO.NET project and sad about the ending of the project. The network and intensive relationships between RTDI actors across the region will remain as one of the cornerstones of the full integration of the WBC into the European Research Area. The Austrian Research Promotion Agency will remain active in this process with the Western Balkans as one of the main focus areas.”

Ralf König & Irina Slosar

Slovenian Business and Research Association, Belgium

“As a partner in the project, the Slovenian Business and Research Association (SBRA) has organised five workshops in the Western Balkan Countries, attended by more than 700 representatives of universities, research institutes, companies, and NGOs interested in research programmes. We have also produced an overview of the information systems for research and development in the Western Balkan countries. Participation in one of the most important capacity building projects in the Western Balkans has generated many good contacts, useful experiences, and relevant knowledge for further successful work for SBRA. We are looking forward to developing future cooperation with many of the partners and other organisations we have met during the project cycle. Congratulations to all partners and especially to the coordinator for initiating and successfully implementing the project.”

Boris Cizelj
President of the Board

Federal Ministry of Education and Research, Germany

“The integration of the Western Balkan countries into the European Research Area is one of the priorities of the German research and innovation policy. In this sense, the German Federal Ministry of Education and Research has been actively supporting the cooperation with this region for more than 10 years. And it will continue in this regard by strengthening the cooperation with the region, accompanying the Western Balkans on their way to the European Union.”

International Bureau of the Federal Ministry of Education and Research at the German Aerospace Centre, Germany

“In the past years, a good and reliable partnership of the Project Management Agency at the German Aerospace Centre with the countries of the Western Balkans has been established on both individual and institutional levels. Supporting the BMBF, we have achieved valuable results of mutual benefit on bilateral and multilateral levels with partners in the region. Ongoing support will also be a guiding principle for the future cooperation in Research and Innovation.”

South-East European Research Centre, Greece

“In the course of the past seven years, WBC-INCO.NET has created a lively and passionate community of researchers, professionals, and policy makers that addressed with tenacity and efficiency the issue of embedding the Western Balkan Countries in the European Research Area. The South East European Research Center is honored to be part of this community and to add its humble contribution towards achieving the goals of the project and the INCO program. We have exchanged ideas and experiences, we have been engaged in training and networking activities, we have brainstormed, and most importantly we have learned. We learned that the Western Balkans as a region has ample but mostly dormant capacity; that the researchers and innovators are resourceful; that cooperating and co-creating is always fruitful, and most importantly that challenges are similar to those that research and innovation communities are facing in all the countries: how to engage in meaningful collaborative research; how to overcome isolation; how to create bridges between research, the business community, and society; how to better coordinate policies and how to create value out of research results for the economy and local societies. WBC-INCO.NET has made a big contribution towards addressing these issues and building capacity in the region. The human networks and the knowledge created are the project’s legacy.”

European Commission - Joint Research Centre – IPTS

“WBC-INCO.NET provides a good example of dialogue on strategic policy issues, combining an integrated set of activities at the micro and macro level. It is a project that offers many learning opportunities for other regions in Europe.”

Ministry of Education, Science, and Sport, Slovenia

“Traditionally Slovenian research institutions have recognised a long term commitment to foster very good cooperation in science and research by establishing tight links with research institutions from the Western Balkan countries. Besides that also one of the key national priorities on the field of RTD for Slovenia is to enhance cooperation with the countries from the Western Balkans. Slovenia is aware that with joint presence in this area and intensive cooperation we are strengthening not only the scientific and technological development but also the economic and societal development of the countries in the region. EU-supported initiatives like WBC-INCO.NET, SEE-ERA.NET, and SEE-ERA.NET PLUS have managed to establish good grounds and have formed a platform which is used to bring together all important regional stakeholders. This has had a direct positive impact also on research organisations from the WBC which are now more closely connected with ERA and are able to enhance cooperation in FP7 and in the new Horizon 2020 framework programme. Slovenia is strongly committed to support future RTD initiatives through upcoming European projects like INCO.NETs, ERA-NETs, JPIs, etc., in particular with a goal to support joint calls actions for the preparation of European research projects with a focus that is of high interest also for the Western Balkan countries.”

Scientific and Technological Research Council of Turkey, TÜBİTAK and TuR&Bo – Turkish Research & Business Organisations Public & Private Partnership, Turkey

“TÜBİTAK, the Scientific and Technological Research Council of Turkey, has been involved in the WBC-INCO.NET project since its inception, and in the past five years, TUBITAK has organized brokerage events and trainings for the researchers and research administrators of the region, has been an active contributor in the regional dialogue process, has followed the uptake of WBC research priorities by the EU in its 7th Framework Programme (FP7), and has been disseminating the FP7 calls in the Western Balkans

region with a view to enhancing the participation of the WBC in the EU FP7 towards establishing sustainable collaborations with European researchers.

Among other things, the regional dialogue process within the WBC-INCO.NET project has allowed the Western Balkan Countries together with Turkey – as the EU enlargement countries – the opportunity to speak with one voice towards the EU with regard to the needs and expectations of those countries of the EU Horizon 2020 in its planning phase. In that respect, in 2011 and 2012, the WBC and Turkey together prepared two position papers of the enlargement countries in order to provide input for the future structure and scope of Horizon 2020. Turkey shares a common vision with the Western Balkan Countries in the form of integration with the European Union and the area of research and innovation has been instrumental in opening new horizons in this process, where the role and contribution of WBC-INCO.NET project has been critical.”

Centre for Social Innovation, Austria

“It has been a pleasure. And a privilege. And a challenge. And fun. And worth all efforts. And so much more. – WBC-INCO.NET has been a lot to us, personally and professionally. WBC-INCO.NET was a project, but also a process: it supported the national research and innovation systems in the Western Balkan countries with the focus on regional cooperation, sharing of experiences and sound analysis, involving the key stakeholders on the levels of policy making and policy delivery. For the Centre for Social Innovation, it was a key project, building on previous projects such as SEE-ERA.NET, enabling us to build strong expertise and networks in R&I cooperation with Southeast Europe and further transferring also processes to other world-regions. Personally, we were able to build friendships and a passion towards the region. We had the chance to influence policies, also on EU level, and we provided important sparks for new projects and initiatives, such as the regional strategy and we supported for example the inclusion of RTDI funding as one of the priorities for the Instrument for Pre-Accession Assistance (IPA) II funding (2014-2020). All of this makes us proud. And grateful – to all the people active in and for the project, the researcher who sent us their announcements for further dissemination, who followed our invitations for workshops, who trusted us and shared their insights in the research and innovation systems. Dear reader, we would also like to thank you for your interest and support to the cause of advancing research and innovation in the Western Balkans and beyond!”

Elke Dall and Ines Marinkovic

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Introduction

Ines Marinkovic and Elke Dall

Centre for Social Innovation, ZSI, Austria

This book outlines results from the past and discusses options for the future while it also tackles the issue of regional cooperation in research and innovation from different standpoints and in different styles. Researchers as well as policy makers and administrators inform on the broader picture but also on their particular perspectives. The publication at hand is not only prepared as a report on the WBC-INCO.NET project that has ended in 2014, but it is intended to promote regional cooperation also in the future and is aimed at everyone interested in research and innovation in Western Balkan region.

A foreword to WBC-INCO.NET final publication: *“History and Outlook on the Cooperation in Higher Education and Research with the Western Balkans – A View from Austria”* is written by Heribert Buchbauer and Christian Gollubits from the Austrian Federal Ministry of Science, Research and Economy.

In addition, the messages to WBC-INCO.NET from: European Commission, Directorate General for Research and Innovation; General Secretariat for Research and Technology on behalf of the current Greek Presidency of the Council of the European Union; Ministry of Education and Sports (Albania); Ministry of Civil Affairs (Bosnia and Herzegovina); Ministry of Science, Education and Sports (Croatia); Ministry of Education and Science (FYR of Macedonia); Ministry of Science (Montenegro) and Ministry of Education, Science and Technological Development (Serbia) as well as messages from WBC-INCO.NET partners are included as introductory part of this publication. At this point we would like to express once again our deepest appreciation for the support and commitment to the WBC-INCO.NET project.

The publication at hand consists in general of three parts: while the first part is focusing on policy issues, the second part presents some of WBC-INCO.NET’s findings and third part puts the term *Innovation* in focus of discussion.

The **first part** entitled *“Moving towards 2020: New Horizons for RTD and Innovation in the Western Balkan Region”* is discussing the development of RTDI policies and initiatives in Western Balkan region towards 2020 while including also articles on current strategic approaches in/for the region – Regional R&D Strategy for Innovation, SEE 2020 Strategy, EU Strategy for the Danube Region. Some of the articles included in this part have been

presented and discussed during the WBC-INCO.NET final conference in Vienna, on March 27/28 such as articles provided by Slavo Radošević and Peter Polajnar. Some insights from the conference are summarised in an article provided by Mićo Tatalović. The readers are also invited to visit the conference website <http://towards2020.wbc-inco.net/> and download the presentations and audio files of their interest which are publicly available.

The **second part** “*Science and Research in WBC – WBC-INCO.NET’s Findings*” includes several reports compiled by the project WBC-INCO.NET on the situation of Science and Research in the Western Balkans and the coordination of relevant policies and initiatives in: Albania, Bosnia and Herzegovina, Croatia, FYR of Macedonia, Montenegro, Serbia, and Kosovo*.

The **third part** “*WBC Innovation Systems in Focus*” puts the focus on Innovation and discusses a broad range of topics – from innovation infrastructures, needs and capacities to smart specialisation, innovation and brain drain and RTDI evaluation. This third part includes also some of the WBC-INCO.NET’s findings which are related to innovation issues.

We hope that readers interested in research- and innovation-related topics as well as in the progress of the integration process of the Western Balkan countries into the European Research Area will gain some fruitful insights from this book.

Part I:

**Moving towards 2020: New Horizons
for RTD and Innovation in the Western
Balkan region**

Coordination of Research Policies with Western Balkan Countries – 6 Years of European and Regional Dialogue

Ines Marinković and Elke Dall

Centre for Social Innovation, ZSI, Austria

The Western Balkan countries (WBC) are an exciting region to work with and in, facing however many internal and external struggles— aspiring EU membership, improving their governance and policies—with the area of Research and Innovation being only one of them, and often not one of high priority. But research is genuinely international and fairly advanced when it comes to integration. The European Research Area (ERA) is very open for cooperation, and the past years have seen the association of almost all countries from the region to the 7th EU Framework Programme for Research and Technological Development and more or less active participation in the ERA and its governance, the struggles to improve the mobility of researchers, to improve the exchange of knowledge, etc. Regional cooperation and participation in several support activities have been one way to tackle the challenges.

The WBC-INCO.NET project started in 2008, when the regional policy forum (the Steering Platform on Research for the WBC) was still only two years young—being initiated by the European Commission and the Austrian EU presidency in 2006. This forum allowed for the presentation and discussion of national achievements and of regional activities in cooperation with EU Member States and stakeholders, such as different EC Directorates General, the Regional Cooperation Council, OECD, CEI, COST, the World Bank, and many more.

Every country has its own specifics for Science and Technology policy-making due to historical experiences, cultural and public understanding of science, the general economic development of the country, and the general political situation. Croatia is now an EU Member State, a regional WBC Strategy for Research and Innovation has been developed, and several studies have been carried out looking at the region from different perspectives. And – a lot of networking and information exchange has been initiated.

The European Union plays an important role in the process and the possibilities under the new programmes—the Instrument for Pre-Accession Assistance II and how it can be used to support science on the one hand and Horizon

2020, to which at the time of writing the Western Balkans are currently negotiating their association, on the other. Several European Union programmes have provided opportunities for financial support of the WBC economies and also more specifically their research, science, and technology sectors; WBC-INCO.NET was just one of these projects. But one of the strengths of WBC-INCO.NET was the involvement of almost all national ministries in charge of S&T in WBC as well as several ministries with responsibilities for SMEs, the economy, and innovation as beneficiaries of the project. The close cooperation with the European Commission, which accepted this project as a concrete tool to support its policies was one of the strengths too. The implementation of the project resulted in the involvement of many individuals, on the frontlines as well as backstage, who organised events, contributed to workshops, prepared background reports and studies, and supported networking along the triple helix: university-industry-government.

The online platform WBC-INCO.NET acted as information sharing portal providing news from several programmes and projects, disseminated event announcements, calls for papers and proposals, as well as other possibilities for cooperation. The website received many visitors every month, and the newsletter was subscribed to by more than 10,500 people by 2014. In several circumstances, the WBC-INCO.NET online portal was indeed acknowledged by the regional stakeholders as a powerful tool to support their own dissemination efforts and to spark the interest of many European researchers and stakeholders to disseminate information towards the region.

WBC-INCO.NET was indeed more than its parts, but at this point we would like to list the official tasks as proposed and implemented by the project:

- WP 1: European and Regional Dialogue
 - T1.1 Organisation of the WBC-INCO.NET Steering Board Meetings back-to-back with the Steering Platform Meetings
 - T1.2 Administrative and Logistical Support to the Regional Dialogue Meetings
 - T1.3 Dialogue with other European Union institutions
 - T1.4 Dialogue with other Multilateral Initiatives and Programmes

- WP 2: Priority Setting
 - T2.1 Development of Methodologies and Guidelines for S&T Priority Setting
 - T2.2 Dialogue with EC Cooperation Directorates
 - T2.3 Screening and monitoring national priority setting initiatives in the WBC
 - T2.4 Organisation of consultation process
 - T2.5. Survey to include opinions of civil society, industry etc.
 - T2.6 Identifying priority lines for research and industry cooperation
- WP 3: Monitoring and Analysis of S&T Cooperation
 - T3.1 Monitoring of Take-up of WBC-S&T Priorities by the Cooperation Programme and in other S&T Programmes (such as COST; EUREKA, SEE-ERA.NET)
 - T3.2 Analysis of Cooperation Patterns
 - T3.3 Analysis of Barriers to Cooperation
 - T3.4 Analysis of Opportunities to Access S&T Infrastructure
 - T3.5 Analysis of National Policies Regarding Global Issues
- WP 4: Building Capacities
 - T4.1 Learning Groups on ERA Indicators
 - T4.2 Learning Groups on Financial Audits
 - T4.3 Training Workshops for Academic and Industrial RTD Managers
 - T4.4 Benchmarking of NCP System
 - T4.5 Enhance Information on RTD Capabilities in WBC
- WP 5: Facilitating Networking and Increase Participation in FP7
 - T5.1 Brokerage Events

- T5.2 Information and Awareness Raising Sessions
- T5.3 Support to NCPs
- WP 6: Project Management
 - T6.1 Administrative and Financial Management
 - T6.2 Communication with EC and Reporting
 - T6.3 Extension and Enlargement of the INCO-NET
 - T6.4 Quality Assurance
- WP 7: Dissemination
 - T7.1 Website, News-Portal and Databases
 - T7.2 Journal
 - T7.3 Brochures
- WP 8: Innovation Support
 - T8.1 Stocktaking
 - T8.2 Fostering innovation and adapting good practices
 - T8.3 Joint innovation activities in WBC
 - T8.4 Capacity Building and Networking
 - T8.5 Support to the implementation of good practice examples

Looking into the future, hope can be expressed that the integration processes will move on, that national investments in R&I will increase and also that the excellence which is sometimes still hidden in the Balkans will be recognised world-wide. The South East Europe 2020 strategy will be one of the frameworks for future cooperation, the EU Strategies for the Danube, the Adriatic, and the Ionian Regions will be others. As cooperation is rapidly developing and the region is still regularly undergoing institutional and structural changes, we discover new aspects on a daily basis. The reader is therefore invited to visit the website www.wbc-inco.net to learn about the project follow-ups.

The Steering Platform on Research for the Western Balkan: History and Outlook

Elke Dall and Ines Marinkovic
Centre for Social Innovation (ZSI), Austria

The Steering Platform on Research for the Western Balkan countries was one of the major policy tools to implement the Thessaloniki Action Plan on Science and Technology (2003) and proved to be a useful tool ever since its installation in 2006. With the closure of WBC-INCO.NET project, a major pillar of support for the SP is no longer available, including the responsibility for logistics and administrative management as “Information Office of the Steering Platform”. The meetings were usually held back-to-back with Steering Board meetings of the WBC-INCO.NET project and the project partners supported the preparations and content of the senior officials meeting.

The launch event of the Steering Platform received full high-level support from the European Commission. In fact, EU Commissioner Janez Potocnik addressed the participants who gathered in Vienna on June 26, 2006 expressing his pleasure to celebrate the launch. The Austrian presidency made it possible that the idea of such senior officials meeting or monitoring committee as it existed already for the Mediterranean countries was implemented quickly. He also emphasized the clear European policy: The future of the Western Balkan Countries lies in the European Union, and research is a key tool to facilitate integration. As a policy field, it opens doors and allows advancing in other domains as well. In the words of the EU Commissioner, the platform “*has a double function: to bring together all stakeholders within one Platform and to steer the process*”¹. The Platform contributes to the preparations for the *acquis communautaire*, brings together ideas and means and allows sharing of information and experience. In particular he highlighted the role to prepare the ground for the inclusion of research actions to the capacity building actions supported by the pre-accession funds and gave important political messages: Firstly, he emphasized that “*the ownership of the Steering Platform has to lie with the Western Balkan countries*” and called upon the regional stakeholders to “*not wait for suggestions from Brussels, be active, have high ambitions and fill this platform with life*”. Secondly, he

pushed the door to the European Research Area wide open, inviting the Western Balkan countries to be part of the Seventh Framework Programme (FP) and making their association as attractive as possible. The personal commitment of the EU Commissioner certainly contributed to the great start of the initiative in 2006.

In 2007, the Steering Platform adopted its guidelines² reconfirming its mission statement:

“The Platform facilitates the interaction between the Western Balkan Countries, the EU member states, the candidate and potential candidate countries and other states associated to the Framework Programmes for RTD and the European Commission. Its main objective is to support the enhanced integration of the WBCs in the European Research Area. It is a strategic body to deal with European, multilateral and regional issues of Science and Technology policies in and with the WBCs. It acts as an information exchange centre, clearing house for joint ideas and activities, and coordination forum for needs, suggestions and proposals of the WBCs to the European Commission, the EU27, candidate and potential candidate countries and the countries associated to FP7 (AC) and vice versa. In this spirit, the Platform continues and intensifies the progress achieved under the EU-Balkan Countries Action Plan on Science and Technology.”

The guidelines also confirm that the Platform “*shall continue until the accession of the Western Balkan Countries to the EU*” and defined WBC-INCO.NET as one of its support tools, while the platform itself did not receive a budget allocation.

Platform members are the EU Member States, the Candidate and Potential Candidate Countries, the associated countries to the Framework Programmes, the European Commission and it was open to representatives from other organisations and stakeholders, such as OECD, UNESCO, COST, EBRD, etc. The Platform in principle had three co-chairs for each meeting, which are usually held twice a year: the European Commission, the EU Presidency, and one Western Balkan country.

After the launch event in Vienna, the next meeting was held on March 29, 2007 in Berlin under the auspices of the German council presidency. The German Commissioner for EU Affairs and the German Presidency at the Federal

Ministry of Education and Research highlighted the preparation of a Green Paper on new perspectives of the European Research Area. Mr. Alessandro Damiani, Head of Unit, DG Research, International Policy Unit reiterated the high priority of the region for the Commission while Ms. Tania Friederichs, Policy Officer for the EU-WBC relations in DG Research informed about the activities towards association to FP7, attributing the progress clearly to the Steering Platform. At this meeting, the Information Office of the Steering Platform was introduced, at that time as a part of the project called SEE-SCIENCE.EU, supported by FP6 and coordinated by Ms. Elke Dall from Centre for Social Innovation, Austria. For the Western Balkan countries, Serbia co-chaired that meeting, speaking on behalf of all WB countries on future steps e.g. related to the setting of joint priorities.

The following meetings of the Steering Platform, with the latest one being organised in Zagreb in December 2013 with the support by WBC-INCO.NET project included a stock-taking round from the Western Balkans: senior officials from Albania, Bosnia and Herzegovina, Croatia, FYR of Macedonia, Montenegro and Serbia – and at a later stage also Kosovo, reported on the current developments – on new strategies, new laws, the establishment of new agencies, new priorities, new programmes, new infrastructures, the actions undertaken to increase participation in international programmes, to avoid brain drain or to improve the national research and innovation systems.

Other standing points on the agenda were the short reports from the EU Member States and other stakeholders on their initiatives to advance science and research cooperation with the region. Of course, the European countries put different priorities to the region of the Western Balkans and predominantly Central European and South East European Countries have been present. But also other countries took part in the Steering Platform process from time to time and representatives of many countries visited at least one of the 15 meetings held between 2006 and 2013 (see Figure 1 below): Austria, Belgium, Bulgaria, Cyprus, Czech Republic, Denmark, Estonia, France, Germany, Greece, Hungary, Italy, Ireland, Lithuania, Malta, Poland, Romania, Slovakia, Slovenia, Sweden, Spain and the United Kingdom. Furthermore, Switzerland, Norway and Turkey have been very active in attending the SP meetings as well as a wide range of regional/international stakeholders, among them the Regional Cooperation Council, COST, EUREKA, the Central European Initiative, UNESCO, OECD, the World Bank, etc.

Figure 1: List of Steering Platform meetings 2006-2013

1st Steering Platform Meeting and Launch Event: Vienna, June 26, 2006
2nd Steering Platform Meeting: Berlin, March 29, 2007
3rd Steering Platform Meeting: Thessaloniki, October 29, 2007
4th Steering Platform Meeting: Ljubljana, June 26, 2008
5th Steering Platform Meeting: Paris, December 19, 2008
6th Steering Platform Meeting: Liblice, May 28, 2009
7th Steering Platform Meeting: Zagreb, October 29, 2009
8th Steering Platform Meeting: Belgrade, June 24, 2010
9th Steering Platform Meeting: Becici, November 11, 2010
10th Steering Platform Meeting: Ohrid, May 26, 2011
11th Steering Platform Meeting: Sarajevo, December 1, 2011
12th Steering Platform Meeting: Tirana, June 12-13, 2012
13th Steering Platform Meeting: Belgrade, December 6, 2012
14th Steering Platform Meeting: Budva, June 5-6, 2013
15th Steering Platform Meeting: Zagreb, December 11-12, 2013

The Information Office of the Steering Platform, i.e. WBC-INCO.NET gave a presentation about its activities at each of the meetings and usually presented and disseminated a printed journal including articles from all WBC, EC, RCC, SEE-ERA.NET PLUS etc. 3. Table 1 gives an overview on major topics discussed during the SP meetings 2007-2013.

Table 2: Main topics of discussions of the Steering Platform

2007	IPA and Research, SEE-ERA.NET White Paper and Joint Action Plan, actions to support mobility (Web-MOB project results).
2008	Strengthening research capacity, use of IPA, EUREKA, COST; European Strategy Forum on Research Infrastructures; statistics and S&T indicators, young scientists, IPA projects, UNESCO activities.
2009	Participation in FP7, in particular REGPOT, mobility of scientists and brain circulation, Euraxess, building human capital, research infrastructures, ERA vision, negotiating chapter 25 of the acquis communautaire, update of the Joint Action Plan of SEE-ERA.NET, research infrastructures.
2010	FP7 cooperation patterns WBC-INCO.NET study, SEE-ERA.NET PLUS call, research potential, synergies with IPA and CIP, involving the private sector in research cooperation, Research for the benefit of SMEs and specific support available for SMEs, EEN, EUREKA, European Technology Platforms, innovation dialogue fora, European Innovation Scoreboard, CEI activities.

2011	Common strategic framework for research and innovation, Danube Strategy and research opportunities, synergies with IPA, Regional Competitiveness Initiative by OECD, Regional Strategy on R&D for Innovation (RCC and World Bank), Innovation Union, WBC-INCO.NET studies on national innovation systems, innovation infrastructures, preparations for Horizon 2020, social innovation.
2012	FP7 association, EU acquis on research and innovation and progress reports, strategic innovation technology audits, synergy with IPA II, smart specialisation strategies, WBC-INCO.NET study on good practices to increase innovation capacities, knowledge transfer, Horizon 2020, widening participation, NCPs, Bio-economy for Europe, regional R&D strategy for Innovation, evaluation and evaluation capacities in SEE.
2013	Preparation for Horizon 2020, novelties, association procedures, support offered, European Research Area, South East Europe 2020 strategy, regional R&D strategy for Innovation, COST, IPA II, EVAL INNO project results, South East European Center for Advanced Studies (CAS), CEI activities, knowledge and technology transfer (WBIInno, TEMPUS project), new opportunities through Danube-INCO.NET, smart regions / smart specialisation, Danube Regional Research and Innovation Fund, Social Sciences and Humanities, democracy challenges, development of evaluation culture in SEE.

The official conclusions⁴ have been prepared for the most of the meetings, which summarized main points of the discussion and highlighted specific follow-up activities. WBC-INCO.NET played an important part in some of the follow-ups also reporting at the following meetings on the latest developments.

2014 is a period of transition for the platform, as a different mechanism of support needs to be defined and the guidelines need to be revised. There are some proposals to reduce the frequency of the meetings, but there is still a high interest from the WBC to maintain the Platform, which did offer a valuable instrument to exchange information and to work together on regional initiatives. Based on this interest expressed, the European Commission, the Regional Cooperation Council and other stakeholders actively explore different opportunities to continue the work in this open forum⁵.

4 Conclusions of the SP meetings online: <http://wbc-inco.net/object/document/14087>

5 See also the conclusions from the 15th SP meeting held in Zagreb on December 11/12, 2013.

From Animosity to 'Happy Family' through Science – Some Insights from the WBC-INCO.NET Final Conference

Miće Tatalović

Science and Development Network (SciDev.Net)

The WBC-INCO.NET, a project funded under the seventh EU research Framework Programme, has come a long way since it started in 2008. The list of achievements, deliverables and specific outcomes alone could easily take up the space of this article: during the last seven years of the projects workshops, studies, and numerous networking events took place all aiming at strengthening the research and innovation capacity in the Western Balkan region.

But perhaps its main impact, as identified by people who know the project, is taking science policy players from countries with an uneasy recent history and struggling research sectors inherent to transitional economies and political systems, sitting back together at the same table along with representatives of European Commission (EC), the and European Union (EU) member states and regional stakeholders, to exchange experiences and engage in common research projects.

This particular impact was also reflected in the project's final conference that took place in Vienna, Austria (27-28 March), where the WBC-INCO.NET was coordinated by the Centre for Social Innovation and managed first by Elke Dall and then by Ines Marinkovic.

Apart from concrete outcomes and serious results, the project has also created an amicable community of experts ready to approach future challenges together, in a dialogue with European and global partners.

"Our biggest achievement: we have created a very nice family," Tania Friedrichs, policy officer at the EC Directorate-General for Research & Innovation told at the conference. *"And we have to put this into historical perspective, then this is more than symbolic."*

Klaus Schuch, strategic research manager at the Centre for Social Innovation, Austria, said WBC-INCO.NET *"really achieved a great regional ownership, impact and produced useful results"*.

And Ammar Miraščija, head of the Department for Science in the Ministry of Civil Affairs of Bosnia and Herzegovina (BIH) said: *"We created a platform so that the region can speak with one voice, and maintain a political dialogue with*

the European Commission". "This single voice", he added, is "important as we all share the same problems".

At the conference, people from countries that were in some cases enemies until recently, and some that still don't fully recognise each other as nations or cooperate politically, were mingling happily and working together toward a common goal: creating scientific excellence and more globally integrated research in the region that could also provide one of the pillars for the growth of innovative, adaptive and successful economies and societies there.

And that final goal is so desperately needed to ensure people have a future in their own countries - something many still lack, and scientists are no exception as is seen from high brain drain rates. For example, estimates of Kosovo's diaspora put it at 800,000 - with some 11.5% of the most recent émigrés having tertiary education, the conference heard from Dukagjin Pupovci, director of Kosova Education Center.

Vienna is a living testament to this huge emigration from the Balkans - it would have been difficult not to notice that the service industry employees speak Bosnian/Croatian/Serbian en masse, including waiters at the conference venue. Indeed, one of the more dramatic presentations at the conference, by Slavo Radošević, professor at the School of Slavonic & East European Studies of University College London, United Kingdom, suggested that the way forward is for the region to make its scientific workforce and skills available to service the needs of large companies in advanced EU states, for mutual benefit. But more on that later.

The idea for a WBC-INCO.NET grew out of several other initiatives that preceded it and sustained effort as part of the EC's new engagement with the region in 1998, following the bloody breakup of Yugoslavia and Albania's slow opening up to the world post-communism. The year saw the region become eligible for some of the EU's Research Framework Programme's (FP5) research funds, but the real impetus for cooperation came from the 2003 Science and Technology Action Plan, endorsed at a European Council meeting in Thessaloniki, Greece, by science ministers.

FP6 continued with dedicated calls following the Thessaloniki agenda, including some aimed at analysing the situation, such as SEE-SCIENCE.EU and capacity building like ERA WESTBALKAN and ERA WESTBALKAN PLUS. The SEE-ERA.NET (2004-2009) was also coordinated by ZSI in Vienna. Finally, an FP7 call for proposals in 2007 included one for an INCO.NET, designed to strengthen regional coordination of science and technology activities specifically in the Western Balkans, and following a successful application, WBC-INCO.

NET was kicked-off in February 2008 in Ljubljana, Slovenia. It enabled the continuation of the coordination activities of SEE-SCIENCE.EU, and in addition it provided technical support for the organisation of the WBC Steering Platform on Research, which was launched in Vienna in 2006 under the Austrian EU presidency and the former EC commissioner for research Janez Potočnik. It was especially this political initiative, which allowed for close and effective cooperation among all stakeholders committed strengthening the research and innovation capacity in and for the Western Balkans.

The grant was extended twice, highlighting the importance of the project in strengthening cooperation with the research entities from the Western Balkan Region. The project comprised 29 partner institutions from 15 countries implementing activities worth some €3 million and covering both research and innovation policy.

Heribert Buchbauer, head of the Department for International Research Co-operation at the Austrian Federal Ministry of Science, Research and Economy told the conference that WBC-INCO.NET *“was a highly successful project, carrying out a number of important activities”*. This included the support to the Steering Platform, which he said was still important for exchanges between Western Balkan countries and the EU, as well as a website and newsletter that are a very important source of information, used daily by many scientists. *“Now we have a solid ground for regional cooperation - a lot of partnerships have been established - and we can take the next step,”* he said.

How did countries benefit?

Kosovo's ministry wasn't officially part of the project but was represented through the Kosovo Education Center, and Kosovo participated through its civil society and researchers. *“The participation was to some extent useful, because we could exchange practices with the region, we could see what the others were doing, what we were doing, and we learnt from each other,”* said Bujar Gallopeni, head of the Kosova Center for International Cooperation in Higher Education, Science and Technology Development at the science ministry.

Also, Kosovo benefited from a study supported by WBC-INCO.NET that surveyed and analysed the state of its research, pointing to gaps and necessary policy actions, he said. *“We also profited from being in different networks, through the platform, which makes our research community visible in the region.”*

The project has helped increase awareness and knowledge among researchers and small and medium enterprises in FYR of Macedonia, especially in help-

ing to prepare them for Horizon 2020 applications, said Bratislav Stanković, science and technology advisor to the president.

But science remains an “*ugly duckling*” within the highest political levels, he added.

Albania, too, was helped by WBC-INCO.NET, said Arbjan Mazniku, the country’s deputy minister of education and sports. It found support both at researcher and policy level, with several papers on how to improve the R&D system in the country. “*It helped figure out solutions to problems*”.

Radošević said: “*Without it, the situation would have been much worse. It brought research and technology development policy to another level, and that’s very good,*” he added.

“*The issue is now whether you can go to the next step: looking more at the region as it is, because you have here an expertise and network that understands the region better than somebody sitting in Brussels. This is where the network shouldn’t be passive but should also start to come up with its own initiative which has not come from the EU.*”

But he is less optimistic that a sufficient critical mass of policymakers exists already that can carry forward the ideas and projects without further support from Brussels.

The final conference: synthesis, consolidation and some surprises

More than 250 people from almost 30 countries, including several EU and all WB countries, registered for the final conference, and close to 200 attended. It was mostly a friendly and insightful meeting with a packed schedule and time helpfully allotted for one-to-one networking meetings where participants sought to partner up on a variety of projects they were working on, with examples ranging from individual research and outreach projects to regional social media or news for scientists.

The meeting was permeated by messages about the importance of supporting high-quality research to boost innovation and the economy. It was also characterised by calls that the public and private sector support for research and development (R&D) in the region remains extremely low: figures of much less than 0.5% of GDP investment in science kept reappearing on slides of different presentations.

The meeting’s flow and consensus were broken twice by dramatic departures from widely accepted ideas and assumptions we hold about the way science oils the wheels of the economy.

The first came from Slavo Radošević, who did not mince words when describing the region's failures: funding for R&D is "marginal" and „insignificant”, he said. And while Croatia and Serbia stand out as superpowers in the region when it comes to science funding and the number of papers published, this is “miniscule” when viewed globally. Also, while Western Balkan countries have some science and some production capability, they don't have much technological capability to bring the research efforts to the market.

He sees the lack of market demand for R&D in the region as a key consideration and urges a rethink of the linear approach to supporting R&D. *“The crucial constraint is the demand for R&D - who will need it? Who is that firm or investor who will say ‘great, exactly what I needed?’”*

Instead of relying on basic research to produce innovations that will help their economy grow, countries should revisit this paradigm. To unleash growth, they need to look at their relative strengths and weaknesses and their potential role in the EU supply chains.

Lower labour costs and proximity to the major markets of Western Europe mean that the region should focus on improving the quality of its production capability, instead of just focusing on basic R&D.

The countries should find their “leading dragon” in Western Europe, whose companies may benefit from offshoring to the region, benefiting both economies, as has been seen with the example of Germany and central European economies.

To do this, more support should be given to the weakest agents in the innovation system: local businesses in R&D and engineering and software, and universities should be modernized to become more relevant to the economy.

Also, exclusive support only for the best science and scientists may not work for the region, he said, because it may lead to one or a handful of disciplines monopolizing science. Instead, science must also have local relevance to the economy and society; it cannot be funded based on a single criterion.

He described the current trend of taking R&D systems with links to industry and completely reorienting them to pursue global excellence as *“damaging”*. *“What are you doing? You are basically making your system marginally globally relevant, but completely irrelevant to your local economy - that's also not good.”*

His approach may be considered radical.

“It is radical in the sense that it doesn't come out of the conventional framework about R&D policy,” he says. *“They will not find it in the EU materials”*. And in a region that relies so heavily on the EU, *“that's a problem”*.

But from a business and technology perspective, the approach is not radical, he adds, and countries should use their low level of development as an advan-

tage by linking technology, industry, and innovation. Foreign direct investment should be linked to innovation, and there has to be better coordination of the economy and science within governments, industrial associations, chambers of commerce, NGOs, etc., he said.

And public policy can help support business development by setting incentives for industries from Western Europe to find collaborators and suppliers in the region. *“I’m trying to influence policymakers,” he concluded. “So they don’t go in completely the wrong direction.”*

Some of this sentiment was echoed in a presentation by Jadranka Švarc, researcher at the Institute of Social Sciences Ivo Pilar, in Croatia, who said that in the region *“R&D and innovation are not vital elements of companies’ business strategies and of economic development in general”*.

But not everyone agreed with Radošević’s dismissal of the paradigm that support for R&D leads to development through innovation.

Misleading stats and missing numbers

The second presentation that challenged assumptions was from Djuro Kutlača, head of the Science and Technology Policy Research Centre at the Mihajlo Pupin Institute, in Serbia, who claimed that figures on R&D investment in the region are misleading.

First, he said, the figures commonly used, even by the likes of World Bank, are sometimes not those that are officially available, which in the case of Serbia means it is said to invest 0.3% of its GDP in R&D, when in fact the official figure for the latest available year (2012) stands at 0.96% of GDP.

Another example is the oft-cited 0.01% of GDP invested by BIH, which is in fact 0.27% of GDP, according to recent official data, he said, adding: *“And those are minimum figures.”*

But the main crux of his argument is that even these official stats are widely underestimated - he puts Serbia’s real investment at 1.4% of GDP and says that for most countries in the region investment is at least 50% higher than current official figures. This means Western Balkan countries already spend between 0.5-1.5% of GDP on R&D and that governments are already making efforts to fund science, despite a difficult economic situation.

The underestimation stems from the fact that national statistical capacities are not good enough to collect data from various ministries that contribute to R&D and are especially poor in the collection of private sector contribution to R&D, he said.

“What is important for innovation activities is actually one sector that is not covered properly by the statistics - this is the business enterprise sector. This sector is really underestimated,” Kutlača said.

Part of the problem is the ‘silo’ mentality of ministries that do not open up and share their data - political will is needed to change that. *“There is no official statistic, there is no communication [between the ministries], that’s why there’s no figures.”* Statistical offices are not sufficiently skilled and equipped for data gathering and producing such indicators: *“they need support”*, Kutlača said.

Fret not, though, because Kutlača came armed with a solution, just waiting for funding. In three years, his project, endorsed by partners including Eurostat, OECD and the UNESCO Institute of Statistics, could fill the gaps and produce *“proper figures so that research and innovation could be governed using facts, not feelings”*. *“If this is supported, only then will decision makers in 2018 both on national level and in Brussels have proper figures to form decisions.”*

Not everyone was impressed by the focus on more analysis, though. *“You can get better statistics - to what end? Have you helped research in our Balkan countries? I don’t think so,”* said Betin Çiço, dean of contemporary sciences and technologies at South East European University in FYR of Macedonia.

These two talks stood out as the most surprising, but there were others that were highly original and insightful.

Indeed, the conference included many other noteworthy presentations and messages, including the need to invest in social sciences, too; barriers and challenges to research; the issues of brain drain and engagement of diaspora; lack of implementation of science strategies; the need to upload and open up data currently sitting in cellars and inaccessible archives; the importance of inclusive, cheap innovations and learning from developing nations; the importance of rule of law and efficient public policies; and the importance of professional research and funding management. Or as the EC representative of the EC summarized, as pre-accession country, all Western Balkans should concentrate efforts on some key EU framework conditions from the Innovation Union flagship.

What happens next?

Dušan Vujović, independent expert from the USA and a World Bank consultant on the Western Balkans Regional Innovation Strategy said: *“Although this is a closing event, what has been done lives on, and can be start of new projects”*.

Two of the arguably most important activities: the regular provision of updated information via WBC-INCO.NET website and newsletter and the Steer-

ing Platform were seen by all participants as key achievements that should not be lost.

The newsletter will likely continue in some forms, and the Steering Platform on Research will in principle be taken forward by the Regional Cooperation Council in the context of the implementation of the SEE 2020 strategy. Other opportunities to continue to work together at regional level will be under the recently adopted Western Balkans Regional Innovation Strategy in which actions to foster research and innovation at regional level have been identified.

There are thus some possibilities to continue to cooperate at regional level but it remains to be seen how the efforts to be undertaken at national line will be addressed so as to ensure that they are fully in line with what the EU expects from all Western Balkan's in view of their accession.

While largely welcome, the implementation of the agreed strategy is leaving some with concerns - how will it interact with strategies at a national level and what it will do to ease the wide gap between capacity and development levels in the region?

On ensuring good coordination of actions, Kosovo's Gallopeni says that it seemed a bit foggy. *"The Regional Strategy has been discussed for many years but we are still not clear on the instruments and funding to implement it. How much specific countries will be profiting from this strategy, and how it will focus on the particular needs of the countries - perhaps it does this on the regional level but it should also address the particular needs of the countries to see where they are and how they could be in the same line of regional development."*

Meanwhile, other avenues for similar regional cooperation and integration into ERA are emerging, such as the EU Strategy for the Adriatic and Ionian Region or the Danube Region Strategy. Most notable, the Danube-INCO.NET, led by the same team at ZSI in Vienna, will include many of the West Balkan countries in its activities. It will incorporate information from the WBC-INCO.NET website and continue part of its newsletter and also share information that will be relevant to many in the region.

"Regional initiatives are good for the region," says Radošević. "As the region itself is losing attractiveness, it's not in a priority in the EU, but hopefully these regional initiatives can compensate partly for that and they have an opportunity of directly leveraging the region with more developed countries." German or Austrian priorities for the Danube region may not coincide with the priorities for Serbia, for example, he said.

"There is always a danger of picking somebody else's agenda rather than coming with your own agenda. So it's this capacity to know what your agenda is: that's

not trivial, that's one of the crucial problems, the core of semi-development." To be able set such an agenda there is a need for inclusive strategies and their implementation, he said.

But representatives of some countries, such as FYR of Macedonia, fall outside the geographical Danube region and don't really see themselves in that project.

"They shouldn't feel sorry or bad that they're not in this Danube-INCO.NET," said Tania Friederichs, adding that "a separate platform to continue to meet for the policy on research and innovation with the Balkans had demonstrated its usefulness and it is our task to look for similar opportunities adjusted to the current level of development".

"I would be very much in favour of continuing to meet in a regional context," she says. *"I would hope that we could have another forum, maybe with another focus; the focus in the beginning was more just research policy - what is it, where does it fit in the preparation for the EU - now maybe we know the bottlenecks, the weaknesses, and maybe we can do something focusing more on the real reforms that are necessary in research and innovation policy to facilitate integration into the European Research Area and in turn the European Union."*

"We have created a really good dynamic, a family spirit, the fact that they speak to each other, that they work with each other, that they learn from each other, even if there is competition among them," concludes Friederichs.

In the meantime the calls for Horizon 2020, the main research funding programme of the EU, have started. Paraskevi Afentaki, programme manager at the General Secretariat for Research and Technology in Greece speaking on behalf of the Greek EU Council Presidency said that *"the integration of Western Balkan Countries into the European Research Area remains one of our main priorities"* within the larger Horizon 2020 context.

How well this will progress, though, remains to be seen. Kutlača, for example, says the benchmark for Horizon 2020 is much higher and it will be extremely difficult to compete for its grants.

This was echoed by other speakers, who highlighted the need for better national funding of science and increased capacity and networking on a national and regional level in order to be able to plug in to Horizon 2020, which will be different, and in some ways more demanding than FP7. Švarc asked a provocative question: *"Do we really believe that countries which invest between 0.15% and 0.77% of GDP can compete on an equal footing with the EU member states?"*

Perhaps the most fitting message of conclusion came from Peter Polajnar, from the EC's Directorate-General for Enlargement who said that within 15 years

the situation in the region could be the same as in the EU, “*but without significant [policy] changes this is not achievable*”.

Indeed, science is often seen as the first step to cooperation with the EU, and is often among the first negotiating chapters to be closed in the accession talks, and as such can lead towards better cooperation in other fields, too, and lead to integration of WBC into the EU - a goal they all share.

Technology Upgrading and RTD Challenges in Western Balkan Region: Issues and Policy Options

Synopsis of keynote presentation (with ppt)¹

Slavo Radosevic
University College London
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In the post-socialist period the Western Balkan countries have effectively followed economic strategy shared by the EU new member states. Institutional convergence to the EU was followed as result of political wish for the EU integration. This in turn led to integration of their product and services markets through EU association agreements and CEFTA as well as to capital mobility through large – scale FDI inflows.

The outcome of the pre-2008 development model was somewhat disappointing (Becker et al, 2010²). A very rapid and unsustainable real appreciation of exchange rates during first decade of 21st century has weakened their competitive position. The extreme credit growth and sharp fall in real interest rates led to current account deficits which in turn led to fast-rising external debt. The trade balance deteriorated continuously before the 2008 crisis. Finally, the composition of FDI became heavily biased (as in Baltic States) in favour of banking, real estate and other local market seeking sectors. The overall outcome turned out to be much less catching-up and much more ‘spurt’ in economic growth i.e short period of high growth which eventually exhaust itself due to limited technology upgrading, institutional reforms and restructuring (Rodrik, 2005³). This period culminated in deindustrialization and weak tradable sector whose processes have started immediately in transition period and in the case of Western Balkans was deeper due to war destructions.

Industrial upgrading and innovation driven growth has emerged as a new policy concern. In addition, there is growing realization that structural reforms

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- 1 Key note presentation at WBC-INCO.NET final conference (“Towards 2020: New Horizons for RTD and Innovation in the Western Balkan Region”). PowerPoint presentation can be downloaded here: http://towards2020.wbc-inco.net/wp-content/uploads/2014/01/Slavo-Radosevic_1st-key-note-speech.pdf
 - 2 Becker et al (2010) Whither growth in central and eastern Europe? Policy lessons for an integrated Europe, Bruegel Blueprint Series, Brussels.
 - 3 Rodrik, Dani (2005) Growth Strategies, handbook of Economic Growth, Edited by P. Aghion and S. Durlauf, Elsevier.

as standalone supply side policies are not able to generate 'catch-up'. A move away from exclusive focus on structural reforms has opened a variety of policy dilemmas. First, a room for Keynesian or quantitative easing type policies are quite constrained in the WB countries. Also, 'Big push' policies in infrastructure (energy, transport) at regional level are not (yet) feasible for a myriad of political reasons. So, it seems that the EU accession is 'the only game in town' despite warning that 'the benefits of EU integration for countries that are catching up are not and cannot be unqualified, but are conditional on the quality of national policies and the EU framework itself' (Becker et al, 2010).

In this presentation I will explore what are the opportunities and challenges in deploying RTD policy as one of levers of growth?

When exploring this issue it is important to recognise that there are structural differences between low, middle and high income countries. This recognition is at the core of New Structural Economics (Lin, 2012⁴) which contains strong lessons for the WB region. Hence, I want to explore whether current policies are fit for purpose i.e are they differentiating between countries or are they dominated by 'the best practice policies'? Are Western Balkan innovation policies conducive to their industrial and technology upgrading?

A stylized mainstream policy model of technology upgrading assumes that R&D leads to innovation which then improves competitiveness and which in turn generate economic growth and employment. My argument is that this model maybe be of some relevance to countries at technology frontier but not for countries that operate well behind technology frontier like the WB region.

There is a large diversity of the countries in terms of their driving factors of growth (see World Economic Forum reports). For example, Bulgaria and Romania and Western Balkan countries are growing based on production and business efficiency drivers. Other new member states are in between efficiency and innovation driven stages where we find from CEE only Slovenia and Estonia. Our research shows that the sources of productivity improvements in FDI in CEE are production capability (quality assistance), not technological capability (Majcen, Radošević and Rojec et al, 2009). Also, our econometric research suggest that production capability (ISO9001 as proxy) is the most significant driver of productivity growth in transition economies (Kravtsova and Radošević, 2011). Innovation in these economies is equally important as in developed

countries but innovation here is about acquisition and adoption of machinery, equipment and software, not R&D.

Western Balkan countries have very weak R&D capabilities. Only Serbia, Croatia and Montenegro spend on GERD around 1% of GDP while the rest of region spends very marginally (up to 0.2% of GDP). In terms of internationally recognised scientific papers Serbia and Croatia are leading and surpass by at least ten times other WB countries. On positive side, we observe 'catch-up' and reintegration of Western Balkan science systems as their average annual rate of internationally recognised papers has been growing above the EU27 average (1998-2011). Major areas of specialization of their science systems are medicine, math and chemistry. There is notable underdevelopment of life sciences.

While we observe some recovery of science systems their technological activities are stagnant and marginal. Number of resident patents in all WB countries has been falling at already low levels. Their technological effort at world frontier, as measured by the US patents, is extremely limited and is measured by maximum around 20 patents annually in Croatia, and around 10 in Serbia. In other countries, this type of effort is almost nonexistent.

The WB countries have been improving their production capability. If we take ISO900 as proxy than regional average is around 200 ISO certificates per 1 mn pop in 2010. This is well behind Central Europe (Hungary, Czech R and Slovenia) where this indicator is five times higher. However, there has been visible growth of ISO certificates since 2003 especially in Serbia and Croatia. Also, there has been visible process of quality upgrading (product differentiation) taking place in traditional industries, especially food, furniture, clothing, footwear. Data on trademarks applications by residents of WB counties shows big increases in Croatia, Macedonia, B&H and Albania.

A low technological level and weak technological activities in WB region point to low demand for RDI as an important policy concern. Indeed, comparison of composite indicators of supply and demand for RDI (see ppt) shows that demand for RDI is bigger constraint than supply, except in Albania. In other words, although RDI capacities in the WB are very limited demand for RDI is even more limited. The characteristic of successful innovators in the CEE (and presumably also in WB) is primarily in understanding of user needs and user involvement, and understanding of market. Factors of lesser importance are successful R&D collaborations and successful innovation collaborations (Radosevic and Yoruk, 2012⁵).

This is quite in line with other research which shows that in CEE non-R&D innovators dominate. Although turnover from innovation as percentage of total turnover is old and new member states are similar modes of innovation seemed to be quite different. Innovation at behind the frontier is largely about acquisition of machinery, equipment and software rather than about intangible activities like R&D.

On the other hand, new member states including WB import quite sophisticated capital goods. For example, Bulgaria imports equally sophisticated equipment and inputs as UK. This shows that in addition to own very limited or non-existent R&D there is important indirect R&D embodied in imported equipment and inputs. This is quite important as technology upgrading in WB should lead to increase in R&D but in interaction with imported and indirect domestic R&D (embodied in capital goods and inputs). Hence, great importance of integration of FDI and innovation policy.

Current factors of competitive advantage of WB region are in proximity to EU core markets and in costs of labour. The WB region is 12-14 hours from Western Europe while costs of clothing are 22% cheaper than Chinese due to advantages of 'nearshoring'. Costs of labour are 15-50% of Hungarian wages, except for Croatia. However, the region is not yet part of the EU global value chains. This is despite flexible labour marks which are comparable in that respect to China. WB is integrated into EU economy as markets but not as production location. FDI are focused on non-tradeable and are market seeking. In overall, FDI in WB have contributed much less towards build up of competitive and sufficiently sized tradable sector which would lead to efficiency seeking FDI as has been in the case in Central Europe. In nutshell, this region is outside the newly established German-Austrian industrial system. The region is integrated largely via buyer driven value chains in clothing sector through subcontracting. A process of quality upgrading has taken largely in Central Europe but much less so in SEE and Baltics (Dulleck et al, WIIW, 2004).

Based on this evidence we can conclude that R&D based model of growth cannot be the only policy model of technology upgrading for WB. This is quite important conclusion as Horizon 2020 is largely about R&D based growth. Instead our conclusion is that policy model for WB should be based on pattern of technology upgrading for latecomer economies. This model assumes that there is process of upgrading which starts with improvements in production capability (quality) and is then followed by improvement in process and product engineering (incremental innovations). After this stage latecomer firms are aiming to master advanced development for manufacture and then exploratory

development (prototypes)(see ppt). A next step – towards applied research – is significant threshold as it requires different types of skills and PhD labour force. In addition, there is process within R&D sector of shifting from pure science towards basic research or generation of new knowledge for radically new marketable product. The key focus of Horizon 2020 is on threshold from applied research to development or vice versa. The key focus of the WB is de facto in shift from production to technology capability. Partly, there is need to shift science system from ‘pure science’ to basic research.

There are numerous examples of RTDI weaknesses of industrial sectors in the WB. For example, OECD (2010) study shows the following weakness of the WB automotive components sector which we have grouped under weaknesses in terms of learning, linkages and leverages (Mathews, 2002; 2006):

Learning management practices: Only 75% of enterprises have ISO9001 standard while only 12% have industry specific TS16949 standards which guarantee quality at source. There is very weak enterprise resource planning and there are skills gaps in design and engineering)

Linkages: only 16% of enterprises have B2B/on line procurement links, links with FDI are poor and there are skills gaps in supply chain management. Also, there are not sectoral linkage programmes.

Leverage: A partnership with 2nd tier suppliers is undeveloped and there are limited collaborative innovations between FDI, SMEs and RDI organisations.

OECD (2010) also indicates patterns of industrial upgrading in Western Balkans in selected industries:

In apparel upgrading should go from only ‘cut, trim, make’ (CTM) stage in which 42% of enterprises are involved towards gradual introduction of value added services. Also, next stage would require going beyond imitation and establishing local design schools. In automotive suppliers sector there should be move out of subcontracting ‘cost trap’ towards improved quality standards, design and supply chain management skills

In business process IT Outsourcing activities there should be shift from fragmented, diversified and local market oriented firms towards focus on core competencies (specialization) and creation of BPITO champions.

In summary, patterns of current industry and technology upgrading show the irrelevance of entirely R&D-led models of innovation and policies for catching up countries like WB. Innovation policy in WB is not concerned with users and demand side factors (see Edler, 2011) which based on our research seem to be the major differentiating factors in innovations in CEE. Like in other CEECs, there is strong focus on policies for science – industry linkages but largely up-

stream oriented – i.e. driven by technology push incentives and opportunities (Radosevic, 2011⁶). On the other hand, reality shows a much greater relevance of downstream R&D and innovation collaborations which are driven by firms with the view of enhancing market led innovation.

What is the way forward?

First, the biggest obstacles are irrelevant policy models and hence there is need for much better knowledge innovation and growth area of the WB policy makers and businessmen. Second, we need to recognise the major ‘stylized facts’ of the WB context some of which we have outlined above. In terms of policy priorities innovation policy should aim to support:

- Upgrading from production to technology capability
- Integrate FDI and innovation policy: linkage, leverage, learning
- Continue but limit the scope of ‘R&D commercialization’ policies: excellence vs. relevance

The first policy area requires support to the weakest agent in innovation system: local business R&D&E&S (R&D, engineering and software). This could be done through:

- Programs for adoption of ISO certificates. It should be co-financed via ‘vouchers’ issued to enterprises based on certificates by eligible international and local organisations for standardization.
- Support programs for engineering. These programs should be added to current funding for R&D based on co-funding
- Program of support to software training

The biggest challenges are missing levers to growth due to weak vertical integration & horizontal fragmentation in innovation system. Links between FDI and local suppliers are weak while links between national and EU centres of excellence are also weak but could be improved though Horizon 2020. However, this will generate structural gap in the system as there will be weak links between upstream RD capacities and technological activities in business sector. This would require support to the weakest agent which (as already mentioned)

is local business R&D. Also, it would require support to transfer functions of RDI organisations and of local firms rather than as standalone like S&T parks.

The WB region does not have endogenous technological capability for further growth and hence strong need to integrate FDI and innovation policy. The issue is how to 'plug' WB firms into EU/German and Austrian (Italian) industrial networks based on the principles of 'linkage, leverage and learning? Given weak domestic firm level capabilities which is the key factor for weak spillovers (technology transfer) from MNEs the WB should shift towards 'third wave' FDI policies ('after care embedding', supply chain focused) modelled on examples like CzechInvest.

Opportunities should be explored to establish *W.B. - EU Integrator: Twining industry partnerships*. This should aim to support domestic firms to become quality suppliers for MNEs. A long-term aim would be to increase the number of lines of businesses for and partnerships with MNEs. Program should be evaluated based on share of local firms in overall purchases of the large enterprises and MNEs

A weak endogenous technological capability cannot be substituted by FDI. Hence, there is strong need to improve countries 'absorptive capacity'. This would require:

- A reform and modernization of universities as education and skills are the emerging major constrain.
- Establish industry and technology specific intra-regional vocation training programs as part of twining industry partnerships
- Prioritize movement of people between industry and universities and public research organisations

Finally, Horizon2020 is based on the principles of excellence which if applied as the sole criterion will have harmful effects for structural change of RTD system in the WB. The exclusive use of excellence criteria may actually 'freeze' science specialisation and thus hinder diversification. As we argue elsewhere (Radosevic and Lepori, 2009)⁷ it is important to couple S&T excellence with economic and social relevance. Funding systems in the WB are still inadequate in terms of ensuring industry and social relevance and there is need for a much stronger involvement of users in evaluation and funding.

How Efforts on Research and Innovation Contribute to Economic Development and Integration into the European Union

Synopsis of keynote presentation (with ppt)¹

Peter Polajnar
European Commission
Directorate General for Enlargement

Research and innovation are not policies traditionally associated with EU enlargement. The Union has little legal competence in this area thus it limits its dialogue with aspiring countries to a subcommittee meeting per year and very quick negotiations. The chapter on research policy is the low hanging fruit which is normally open and close within a few weeks into negotiations. In terms of funding, pre-accession assistance favours projects related to hard obligations in the areas of the political, economic or *acquis communautaire* criteria. Research is stated as a priority but little funds are eventually invested. An optimistic explanation is that the enlargement countries gain full access to the EU research programme, which enables its researcher and policymakers to work directly with EU peers regardless of the politics of enlargement. The pessimistic view is that there are anyway only few capacities to build on and that research losses out to other shorter term priorities.

So far, the sidetracking of such an important policy for economic development did not leave negative impact on the catching up of the enlargement countries or their capacity to integrate in the EU Single market. The recent Transition Report published by the European Bank for Reconstruction and Development notes that in Central and Eastern Europe as well as in South East Europe the main drivers of growth are not increases in labour or capital participation but almost exclusively total factor productivity. Firm restructuring, which necessarily includes important aspects of innovation and technology transfer, is the main driver of growth. This is not recorded as research and development

1 Key note presentation at WBC-INCO.NET final conference ("Towards 2020: New Horizons for RTD and Innovation in the Western Balkan Region"). PowerPoint presentation can be downloaded here: http://towards2020.wbc-inco.net/wp-content/uploads/2014/01/Peter-Polajnar_2nd-key-note-speech.pdf

activities in line with the reporting standards, but signals to policymakers that enough innovative activity is present in the economy.

As far as growth is concerned, this model delivered. The growth rates were above 4% in the late 1990s and the early 2000s. However, the catching up is far from accomplished. The new member states, EU-12, are still on average below 60% of EU-28 GDP in per capita purchasing power terms. The Western Balkans are only at 35% of the EU level. The crisis has all but halted convergence since 2009. In Central and Eastern Europe the catching up can still be recorded on average, thanks to the very good performance of Poland. It is estimated that the relative resilience to the global crisis originates also in enlargement related reforms accomplished in the early 2000s. In the Western Balkans, the catching up has completely stopped, as the sources of external finance have dried up.

This context has important consequences on the political perception and the state of play of research policy. As research is not recognised as a driver of growth, the policy suffers from mismanagement and the lack of public commitment and investment. The World Bank notes that in the Western Balkans national research policies are partial, small in scale and short-lived as they are subject to political cycles. Furthermore, the evaluation of implemented reforms shows that even when the efforts are supported by international organisations they fail to bring about systemic and sustainable change. Consequently, the shares of investment in research as percentage of GDP are extremely low, if measured at all. It is revealing to see empty boxes for GERD and BERD in the statistical annex of the annual progress reports, as prepared by Eurostat. The World Bank Knowledge Economy Index (KEI) defines the production methods in the Western Balkans as twice less knowledge-intensive than in the EU.

New policies for new economic and political reality

The deep economic crisis and the measures to return to growth in the European Union are shaping new EU policies and are simultaneously redefining policies which were so far considered as fully national competence. The eurozone crisis has revealed the need for more coordination and the deepening of structural reforms to support competitiveness. These events coincide with the end of “big bang” enlargement which expanded the Union from 15 to 27 members in the course of 3 years. The enlargement agenda of today is limited to the Western Balkans and Turkey, countries which are on average even poorer than the previous candidates. Political support for enlargement remains firmly in place, but it is challenged by waning public support and slow speed of reforms in the enlargement countries. In

consequence, the enlargement process and negotiations are becoming more rigorous, with increased emphasis on deep political and economic reforms, as opposed to the past insistence on simple alignment with the EU law.

The new economic reality post 2009 instinctively instructs us that the positive link between progress in the accession process and economic development might not work anymore. Deeper reforms will need to be implemented, including the area of research policy, to attract investors and secure convergence and integration with the EU. However, as before in CEECs, the Western Balkans today face other greater economic concerns than research which dominate public debate and demand increased public support.

- The countries are still at the very low level of development and have undergone significant de-industrialisation, also due to the recent wars. The production base is narrow with little needs for application of research results.
- Social and political problems are more pressing than the low level of R&D investment. Unemployment in the Western Balkans is on average over 22%. Significant public funds will need to be devoted to put young people into work. They are often formally educated but not necessarily equipped with the right skills.
- The countries have little funds at disposal and need to rely on private investors, including to secure technology transfer or to provide on site training to increase skills. However, the current trends of foreign direct investment (FDI) are not encouraging. Majority of FDI is brown field and oriented towards non tradable sectors. To attract better FDI, transport and energy links need to be upgraded and quality support infrastructure aligned with the EU in order to support swift logistic.
- All public policies and the economic environment suffer from the weak rule of law and corruption. Without serious reforms of the political and judicial system, public policies will remain inefficient.

The bleak situation demands better reform plans than those witnessed so far. The institutional lenders and private investors demand credible reform across many areas, starting with the political then macroeconomic and finally micro-economic, if they are to decide to invest into capacities that can bring about growth and jobs. Research, with the capacity of public research to support private initiatives and the availability of highly skilled people, needs to be part of that reform agenda.

New economic governance for improved policies, including research policy

The enlargement strategy 2013-14 committed the European Commission to work on improved economic governance in enlargement countries. Recognition that more needs to be done to improve economic policies originates in two facts. Firstly, the EU has changed. The euro crisis revealed that the Union needs better economic policies and better coordination of national structural reforms. Secondly, none of the Western Balkan countries is yet a functioning market economy nor has the capacity to sustain competitive pressures of the Single market. Both areas need to improve as they are the economic criteria which have to be met before EU accession. In the past, the countries were recognised as functioning market economies before the accession negotiations had been open or swiftly afterwards. The EU is now in a situation when it actively negotiates with two Western Balkan countries without prospect to achieve this status in the near future. It is essential for the credibility of the enlargement process that a clear economic development agenda become part of this process.

To this aim, the Commission proposed a two track process. Under the first track, focused on macroeconomic stability, the countries are asked to notify its mid-term fiscal and structural reform programmes. These are then evaluated in a peer review of the Commission, the member states and the enlargement country. A set of country specific recommendations is agreed, which can be fulfilled in the relatively short term. Pre-accession assistance to implement the recommendations is immediately mobilised.

The second track deals with microeconomic reforms for areas such as industry, competition, internal market, research, education, transport, energy and environment. In the case of research, the programme will promote better design and stable funding of research policy. The emphasis will be on applied activities which can, in the mid term, contribute to increased competitiveness of the economy. The Commission will use its annual progress reports to evaluate the reforms as proposed in a national programme and give guidance on what remains to be done.

The third track of the new approach to economic governance is the financial support through the instrument for pre-accession assistance (IPA). The new instrument, in place from 2014-2020, has increased emphasis on the relevance of projects for the accession obligations. Its primary focus are political reforms. However, in view of the bad economic situation, economy figures high on the list of priorities. IPA projects will need to follow up on recommendations of the

two tracks described above. At the current stage, the countries and the Commission have already indicatively allocated 7-year funds for a sector of intervention called “Competitiveness and innovation,” which should cover research activities. There is no indication of specific activities yet, as they will be defined annually. The countries, which will be able to match the EU strategy with a credible domestic strategy, will qualify also for direct IPA budget grants. Research policy can be considered a candidate for direct budget support, if properly prepared and presented to the Commission.

An important aspect of the current enlargement agenda is regional cooperation. The obligation to establish good neighbourly relations and to engage in a series of cross border projects is prescribed by the Stabilisation and Association Agreements that the countries have signed with the EU. Two years ago, the Western Balkan countries agreed to work on the regional development strategy called SEE 2020. This initiative includes *inter alia* a headline target committing the signatories to additionally employ 300.000 highly skilled people in the regional labour pool. The Commission recognises the need for a regional process and encourages the countries to regularly meet and exchange best practices, which are often more relevant than the transfer of knowledge from the EU level in view of different economic realities. For the regional strategy to function, the countries need to ensure national implementation. The Commission will finance projects proposals based on the SEE 2020 strategy.

The above initiatives are carrots promising better policies and additional funds for economic development. As in the past, the stick will be applied through the negotiations. In line with the methodology adopted in 2006, the negotiating chapters need to define opening and closing benchmarks which are expressed as short lists of key reforms. The research chapter is void of hard obligations and it remains largely national responsibility. Therefore the EU cannot impose reforms and the chapter has been so far spared of benchmarks. However, there are other chapters which have indirect impact on research policy. Putting in order state aid schemes is an obligation of the competition chapter. Putting in place modern public procurement systems and regulation of information and communication technologies is demanded in the course of negotiations and can increase innovation. The newly found insistence of the EU to improve the state of industry has changed the nature of the industrial policy chapter and is likely to impact cooperation between the public and private research sector. It will also inspire the future COSME and Horizon 2020 workprogrammes which are open for participation of enlargement countries. The obligation to improve statistics will give a basis to better design of research policy and it can lead to

more sustainable reforms. Finally, the hard obligations included in the chapters on justice and the rule of law will reduce corruption and contribute to better public policies.

Conclusion

Research is not yet entering the enlargement process as it does in the case of other EU policies. However, the new emphasis on putting the economics in order and to work jointly with the countries to promote competitiveness will have positive impact on research policy. It should improve the bad track record of national reforms in this area, the consequential brain drain from the research sector and political mismanagement of research funding. Only when research becomes a stable feature of national reform programmes in the Western Balkans we can be sure that convergence with the EU is sustainable and will continue after the formal accession.

Western Balkans Regional R&D Strategy for Innovation

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Box 1: Western Balkans Regional R&D Strategy for Innovation

Growth through Research and Innovation: the Moment for Action

On October 25, 2013, the ministers responsible for science and education in seven Western Balkans countries - Albania, Bosnia and Herzegovina, Croatia, Kosovo*, Former Yugoslav Republic of Macedonia, Montenegro, and Serbia - met in Zagreb, Croatia to sign a declaration endorsing the Western Balkans Regional R&D Strategy for Innovation. This is the first time that countries from the region have developed a common view on how to jointly address the challenges of the research and innovation sector in the region.

The Strategy, accompanied by an Action Plan, serves as a framework for a collective effort to recommend policy and institutional reforms, and promote the Western Balkans's most urgent priority of increasing innovation, economic growth and prosperity. It includes a set of policy and institutional reforms that the beneficiary countries believe will increase the impact on the investments in research and innovation in the region. At its core, the document proposes to invest more resources in a more strategic manner to improve the quality of research and innovation and create knowledge-based economies that will generate higher-value-added jobs and stronger growth. The target is to mobilize additional resources from public and private sources, the EU and other stakeholders to reach an average of 1.5% of GDP of Gross R&D expenditures at the regional level by 2020.

The Strategy's Action Plan describes the joint investments to be undertaken by the Western Balkan countries. It proposes the creation of the Western Balkans Innovation Strategy Exercise (WISE) facility – a nonprofit organization that will support systematic capacity building, learning and policy improvement in the region. The facility is also expected to design and supervise the implementation of four proposed programs: the research excellence fund

program; the networks of excellence program; the technology transfer program; and the early-stage start-up program – all to be implemented at the supra-national level.

During the Zagreb's signing ceremony, a preliminary consensus on how to implement the agreed Action Plan was achieved, with countries committing to meet bi-annually and identifying Croatia as the host country for the WISE facility, which has agreed to cover for administrative and infrastructure costs for the initial two years at least. Beneficiary countries intend to submit a multi-beneficiary Instrument for Pre-accession Assistance (IPA) project to finance part of the programs while additional EU funds may be sought as well (e.g. the Horizon 2020). Bilateral donors, such as Norway, have also expressed interest in supporting the program. The Regional Cooperation Council plans to make resources available in the context of the implementation of the South-Eastern Europe 2020 Strategy.

The Strategy follows up on the Ministerial Conference, held in Sarajevo, Bosnia and Herzegovina (2009), where a Joint Statement expressing the initial interest of the Western Balkans region in developing a joint strategy on research and innovation was developed. The work on the Strategy was supported by the World Bank, the European Commission, and was financed through a multi-beneficiary IPA.

*This designation is without prejudice to positions on status, and is in line with UNSC 1244 and the ICJ Opinion on the Kosovo Declaration of Independence

THE CONTEXT: EUROPE 2020 STRATEGY

Research and innovation are at the heart of the *Europe 2020* Strategy for growth and jobs. A joint agenda for increasing the effectiveness and efficiency of Europe's research and innovation is developed in more than 30 action points.¹ Public support for research and innovation is critical, particularly in stagnant economies and in response to economic downturns. In recent years most developed economies chose to promote economic recovery and job creation by expanding public support for research and innovation.²

1 European Commission 2010a, 2010b

2 OECD 2010.

This renewed emphasis on research and innovation is also pertinent to the Western Balkans. The global economic crisis hit the region especially hard, revealing the structural limitations of a growth model based on the expansion of domestic consumption, stagnant productivity, and limited trade integration. Five years after the start of the crisis the region continues to struggle toward economic recovery. Unemployment levels are among the highest in the world. Youth unemployment is particularly dire—often more than double the national unemployment rate.³

Research and Innovation Matter for the Western Balkans

Sustaining economic growth and job creation in the Western Balkans will require a substantive shift toward productivity-based, export-oriented growth model. This model assumes macroeconomic stability and a market orientation. However, given the magnitude and complexity of the required adjustments in the productivity structure, its success hinges on a strategy to unleash the region's innovative potential.

Innovation is at the heart of creating and sustaining comparative and competitive advantages of WB economies, raising productivity levels and expanding employment opportunities. Simulations indicate that unleashing the Western Balkans' innovative potential could generate important economic gains, such as better firm performance and increased productivity and exports (Box 2). Firm investments in R&D are fundamental to enhancing the region's "absorptive capacity"—that is, its ability to adapt and adopt foreign technology, to benefit from spillover effects from foreign direct investments (FDI), and to gain from other sources of knowledge transfer.

Box 2: The Impact of R&D and Innovation in the Western Balkans

According to a recent study, reaching the Lisbon Agenda target (3 percent of GDP for R&D) would generate a 6 percent permanent increase in GDP and a 13 percent increase in export levels in Croatia (World Bank 2009).

Results from a study using firm-level data for Western Balkan economies (Seker 2012) provide additional evidence in this respect:

- Innovative firms grow 15 percent faster in sales and 8 percent faster in labor productivity than noninnovative firms.
- Firm R&D expenditures significantly contribute to sales (by 14 percent) and labor productivity growth (by 7 percent).
- R&D expenditures have higher correlation to sales growth than training or infrastructure services.

Source: World Bank 2009; Seker 2012.

Stronger research and innovation capacity will also pave the way for full EU integration, both in meeting the requirements of chapter 25 of the EU Acquis on Science and Research, participating in the EU research and innovation programs, and in creating an economy that could withstand the competitive pressures of the EU market. In view of the Horizon 2020, the region will need to strengthen its capacity to face new challenges. Improved regional research and innovation capacity would also help countries comply with EU requirements and standards in key industries (for example, energy efficiency and food security) and facilitate integration to the European Research Area (ERA).

More broadly, a renewed emphasis on research and innovation will enable the region to gradually converge with the R&D and policy targets set by the EU. Croatia, which joined the EU on July 1, 2013, as its 28th member, will have slightly different priorities, but the nature of existing structural challenges remains similar to those faced by the region.

The Performance of the Research and Innovation Sector⁴

The economic and political transition in the 1990s had serious, often negative consequences for the region's research and innovation sectors. Economic re-

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For a summary of the analysis of the underlying causes of the current performance of the Western Balkans Research sector, see World Bank 2013a.

forms dominated the policy agenda and crowded out the science, technology, and innovation policies and funding. Research capacity deteriorated, and links with the productive sector disappeared.

Gross expenditure on R&D (GERD) has declined dramatically in the past two decades. In 2011 the whole region invested about €500 million in R&D, which corresponds to the amount invested by the second-largest U.S. university. At the same time, other emerging economies, such as China and Turkey, systematically raise investments in R&D and innovation. The variance of R&D intensity within the region is also worrisome: Croatia and Serbia invested almost 30 times more than BiH. Another structural limitation of the research and innovation sector is its level of economic efficiency—the creation of wealth from knowledge. Croatia or BiH required, on average, almost three times more R&D expenditures to create one (triadic) patent than the U.S. This is an indicator of weak academic and technology transfer performance (Box 3).

Box 3: Research and Technology Transfer

- The average number of citations per document in the Western Balkans (0.62) in 2003–10 was about half the EU-27 average (1.27).
- None of the Western Balkan countries surpassed the EU-27 or the world’s “impact factor” average in the same period.
- In a science-industry collaboration ranking of 144 countries, the Western Balkans’ average stands at the 88th position, compared to the 40th of the EU-27.

Source: SCIMAGO Research Group 2012;

The Western Balkans’ scientific performance is, for the most part, substantially below that of the average EU country in both quantity (in spite of some noticeable recent improvements) and quality (measured as the normalized impact of publications, number of citations, and h-index).⁵ Technology transfer activities, such as technology licensing and spin-off companies, are also scarce in the region, and collaboration with industry tends to be driven by occasional opportunities and short-term objectives rather than by strategic, long-term partner-

ships. For instance, the entire Western Balkans region applied for 38 patents in the United States in 2012, compared to 27 patent applications, on average, for U.S. research universities.

In addition, the enterprise sector that emerged from the economic transition of recent decades has had a very low propensity to invest in research and innovation. The economic liberalization of the 1990s shifted the productive structure of the Western Balkans away from manufacturing—especially those industries that are more likely to invest in R&D, such as metal processing and pharmaceuticals—toward the service sector. Overall, the share of the manufacturing sector in GDP declined until 2008, characterizing what some observers called a “de-industrialization” process. In addition, firms in the region seem much less integrated into global value chains than those in Central Europe, a situation that limits local firms’ access to knowledge and market opportunities for innovation.⁶

Mainstreaming Research and Innovation⁷

Several attempts have been made to revamp the Western Balkans’ research sector and to promote innovation in recent years. Measures have addressed a broad spectrum of issues, including the challenge of the regional “brain drain”; the modernization of research infrastructure; the support to technology transfer offices and technology parks; the development of early-stage financing programs; the improvement of the regulatory environment in which firms operate; and the enhancement of conditions for policy coordination, among others.

Despite some substantive results, most of the achievements so far have been essentially partial, small scale, and short-lived, with a strong influence from the political cycle. Fragmentation and limited coherence are sometimes observable characteristics even among initiatives supported by international donors. Several interventions have been redundant, having a similar focus and duplicating the services provided. Progress has thus been slow and uneven across the region.

Most important, those initiatives have so far failed to alter the structural

6 Radosevic 2013; Kutlaca 2013.

7 The Western Balkans has adopted a variety of reforms and programs to improve the performance of the research and innovation sector. To document this large set of initiatives in a comparable and systematic way, a policy questionnaire was developed and implemented with the collaboration of national experts. Based on the information obtained and complementary data gathering, individual country reports (the country paper series) have been prepared.

deficiencies of the research and innovation sector in the Western Balkans.⁸ Policy and institutional instability, inadequate incentive frameworks, and resource constraints (human, infrastructure, and funding) are among the causes of the sluggish modernization of the region's research and innovation sector.

The result is a fragmented system, one that is unable to generate or adapt knowledge, to unleash innovation, or to help shift the region's growth model. As in the EU member states, the Western Balkans region needs to redefine the role of the sector in its future development strategy and mainstream innovation policy.

Deepening Regional Cooperation

The European Union and the Western Balkans have a solid history of bilateral cooperation in R&D (box 4). The experience of regional cooperation on R&D within the Western Balkans is comparatively more limited. Between 2005 and 2013, Western Balkans' governments were supported by EU funds (predominantly through the coordination and support actions of the Framework Program) in their intentions to integrate into the ERA and rebuild the once-strong cooperation in R&D within the region.⁹

Box 4: EU -Western Balkans' Cooperation in R&D

Cooperation in R&D has been part of the agreements negotiated by the EU and the Western Balkans within the framework of the Stabilization and Association Process.

These agreements have been concluded with all countries, and their implementation provides a natural framework for the progressive compliance with the EU *Acquis Communautaire* in the field of R&D (see chapter 25, "Science and Research").

The region participates in the Seventh Framework Program (FP7) and is actively involved in the European Research in COST and Eureka programs.

Upon joining the FP7, the region gained access to the EU's Joint Research

8 SCIMAGO Research Group 2012; World Bank 2013a, 2013 b.

9 Two examples are the FP6 Southern European Research Area project, a networking project aimed at integrating EU member states and southeastern European countries into the ERA by linking research activities to existing national, bilateral, and regional research, technology, and development program, and the FP7 WBC-INCO.NET, a project aimed at coordinating research policies within the Western Balkans.

Center and to the provision for capacity building and training on EU-related policies.

Source: European Commission 2010c

In recent years, cooperation between the Western Balkans and the EU has increasingly focused on the role of R&D in promoting economic development. Financial support under the Instrument of Pre-Accession (IPAI) in the 2014–20 period is expected to evolve from a sector-wide approach based on a comprehensive view of reforms aimed at increasing the impact of the funds on economic development. As a result, the Western Balkans should actively design integrated research policies to support economic reform, while at the same time contributing to overall ERA objectives.

Apart from their common history and common heritage, economic factors also favor a deeper collaboration among the countries of the Western Balkans. The small size of the regional economies, which limits individual research and innovative potential, implies that pooling regional resources to create a regional critical mass might pay major economic dividends.

Factors related to economic geography are also relevant. For instance, a large coastal area shared by the region's many countries and their similar climate and soil conditions generate economic opportunities with potentially significant synergies among countries. Moreover, economic clusters that tend to evolve from knowledge spillovers—given their cumulative and tacit nature—are not necessarily consistent with political boundaries.

In that context, deepening regional collaboration is expected to (1) enable better use of available human capital and financial resources by avoiding fragmentation and redundancy; (2) increase the stability of sector institutions and programs through joint implementation; (3) create a political platform for continued promotion of policy reforms in the national research and innovation systems; and (4) strengthen the capacity to mobilize external sources of funding for R&D and innovation.

THE REFORM PROGRAM

To unleash the innovative potential of the region and to address the EU-related opportunities and requirements in research and innovation, the Western Balkans needs to invest more, and more wisely, in research and innovation. Countries have suggested a target for R&D intensity corresponding to 1.5 percent of

GDP by 2020 for the Western Balkans, on average. To improve the quality of public expenditures, the region proposes to adopt a two-pronged approach, in which long-term institutional and policy reforms are advanced and in which selected strategic investments are undertaken to address the structural bottlenecks that hinder the performance of the research and innovation sector. Four intermediate goals are considered:

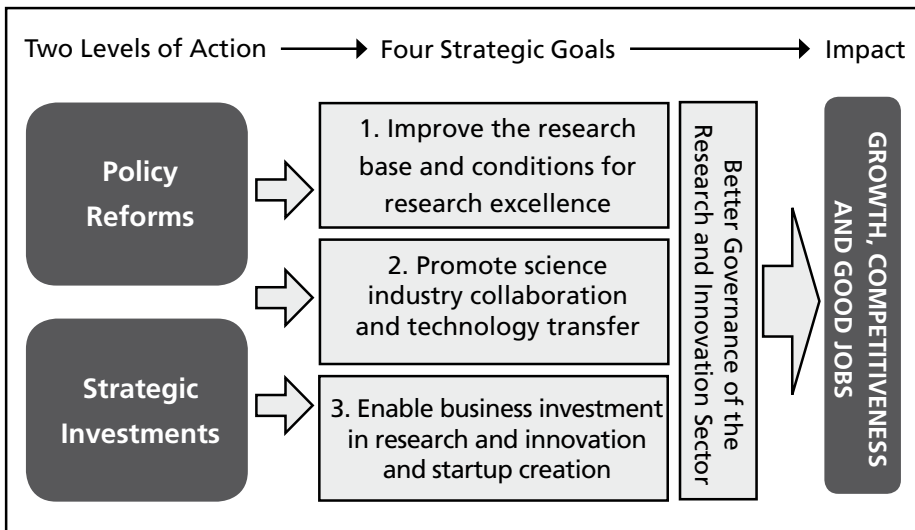
- Improve the research base and conditions for research excellence.
- Promote collaboration and technology transfer between research institutions and industry.
- Enable business innovation and innovative start-ups.
- Strengthen the governance of national research and innovation policies.

The institutional and policy reforms necessary to reach these strategic goals are detailed below, together with possible milestones and measureable indicators to monitor progress. Overall, they represent a comprehensive agenda: a sector-wide reform program, aimed at raising the impact of public investments in research and innovation and catalyzing economic growth (figure 1).

The proposed measures build on existing reform initiatives and were selected by representatives from the region's research and innovation sector. Their final format (for example, as laws or as regulations) and their consequent implementation strategy and timing depend on specific institutional and political conditions.

The next section describes the structure of the proposed reform program, suggesting how the strategic goals can be taken in additional directions and describing some key policy actions.

Figure 1: Results Framework for the Western Balkans R&D for Innovation Strategy



Improve the Research Base and Conditions for Research Excellence

Over the past two decades, the Western Balkans experienced a massive “brain drain” and a decay of its research infrastructure facilities. Coupled with inadequate recognition and promotion of scientific merit, these factors resulted in declining performance of research output. For research to become a meaningful input to economic growth and accelerated convergence with the EU, improving its quality is a necessary precondition.

The Western Balkans can improve its research base and conditions for research excellence by following three strategic directions:

- Slowing down the brain drain, supporting a “brain gain,” and investing in human capital.
- Improving access to modern research facilities and availability of research funding.
- Reforming the incentive regime for researchers’ performance.

While broad integration into the ERA and the global scientific community should always be encouraged, the Western Balkans should promote collaboration with the scientific diaspora as a short-term mechanism for increasing research productivity and research excellence.

The region needs to invest in the qualifications of its researchers and expand participation in tertiary education. Reforms promoting the mobility of researchers, within the region and between the region and other countries, both in Europe and elsewhere—such as adopting common PhD programs, diploma equivalence, and lower visa requirement for scientists—should be advanced.

- The Western Balkans could also review the policies and regulations of the research sector to eliminate any bias against young researchers that may exist, for example, in career development in comparison with the EU countries.¹⁰
- In the medium term, the Western Balkans could consider implementing policies to attract talented young scientists, the scientific diaspora, and “star scientists.”

Investment in and management of research infrastructure should be rationalized to avoid duplication and to ensure that public funds are not wasted. Common ownership should be encouraged on the basis, for example, of the Common Legal Framework for European Research Infrastructure Consortium (ERIC).¹¹

Investment planning should be based on “infrastructure roadmaps” to increase the selectivity of investments, in line with the priorities of national strategies.¹² The region should gradually increase the amount of public funds available for research and innovation. In the short term, attempts to mobilize resources from beyond the region could be made.

An important factor is the reduction of the cost-based allocation of funds for institutes and universities and the use of competitive mechanisms. Reforming the incentive regime for researchers’ performance also requires reviewing human resource policies.

Recruitment, career development, and remuneration should emphasize transparency and academic performance. Making science careers attractive through clear, transparent, and merit-based recruitment policies is also necessary.

- Career progress should be based on the assessment of research impact and, when pertinent, of technology transfer and teaching achievements.

10 EC 2005.

11 European Commission 2009.

12 ESPRI 2008.

- Examples of ways to make research careers more attractive can be found in the European Charter for Researchers and the Code of Conduct for the Recruitment of Researchers.
- Another potential mechanism for enhancing the selection of scientific talent is posting, in English, research positions on EURAXESS.

Promote Research-Industry Collaboration and Technology Transfer

The sustainable impact of public R&D expenditures on economic development depends on how effectively the research results of public investment are commercialized. Yet commercialization and collaboration do not evolve effortlessly from the research stage to commercialization.

The issue is whether the conditions for massive and systemic (as opposed to rare and occasional) research commercialization are in place. Such conditions include an institutional framework that incentivizes economic agents (researchers, research organizations, and businesses) to engage in commercialization efforts and partnerships and that promotes the availability of intermediary organizations dedicated to commercialization, such as technology transfer offices and science and technology parks. The Western Balkans can promote research-industry collaboration and technology transfer by:

- Improving the incentive regime for collaboration between research institutes and the private sector.
- Providing “soft” support for collaboration and technology transfer.
- Rationalizing access to and enhancing the performance of science and technology parks and incubators.

To leverage the economic impact of publicly funded research, the Western Balkans region needs to take steps to simplify the legal requirements governing the interaction between public research organizations and the enterprise sector. Legislation regulating the management of intellectual property (IP) generated from publicly funded research is crucial, since uncertainty about the ownership of research results can limit the incentives of public research organizations (PROs), individual researchers, and businesses to generate and use research for commercial purposes.

As illustrated by international experience, transferring IP management responsibilities to PROs is a crucial step. In parallel, revising the criteria for the

career advancement of researchers to reward technology transfer activities would augment the flow of research susceptible to commercialization. Other important measures include devising effective mechanisms for financing research-industry collaboration (such as vouchers and matching grants) and facilitating the institutional provision of contract research.

The development of dedicated technology transfer organizations should be encouraged. These should have staffs skilled in managing IP, should encourage patenting and licensing, and should promote spin-off companies. The establishment of long-term consortia between the public sector (research providers) and the private sector (research users) can ensure financial sustainability and the long-term alignment between research output and the needs of the economy.

Investment in physical infrastructure (science and technology parks and incubators) is often wasteful. Before embarking on such large-scale investments, financial backers need to assess the regional demand for science and technology parks and incubation services and the current supply. The establishment of new science and technology parks and incubators should result from transparent criteria, such as an unmet demand from the private sector and a solid local research base. Once science and technology parks and incubators are established, their management should employ best practices, including private management and self-sufficiency targets. The regional dimension in infrastructures is particularly relevant and a first step could be to establish also a regional roadmap for infrastructure development.

Enable Business Investments in Research and Innovation and in the Creation of Start-Ups

Enabling the efficient reallocation of resources between declining and ascending sectors is critical for the development of an entrepreneurial economy. An expanding sector of “high-potential growth firms” can play a critical role in generating growth and job creation. The Western Balkans region could encourage business investments in research and innovation and start-up creation by:

- Reforming the investment climate factors particularly relevant to young and innovative start-ups.
- Improving access to innovation financing and mentoring services.
- Supporting the international integration of young and innovative firms.

While overall improvements would naturally help the emergence and expansion of those firms, young and innovative firms are particularly sensitive to particular aspects of the investment climate. For example, greater market competition (entry, exit, and rivalry conditions) could foster business investments in R&D and innovation when they reduce pre-innovation profits by more than they reduce post-innovation profits.

With structural reforms still under way, this differential may be relevant, and promoting competition (such as by reducing pre-innovation rents) may play an important role in transition economies. These measures would include better product market regulation (especially in the service sector) and a better bankruptcy regime.

Labor flexibility (and security) enables the efficient reallocation of labor from less to more competitive firms, a dynamic process for generating new products, and a process for achieving productivity gains. Appropriate contract enforcement and overall legal certainty are important for young firms, which are often less connected to informal networks and have less tolerance for uncertainty than incumbent firms.

Tax policy may also affect the propensity of individuals to engage in entrepreneurial activities, especially those with high risk and potentially high returns that could have a transformational impact. Assessing the effect of marginal taxation on entrepreneurship is another measure worth considering.

Moreover, it is widely recognized that a “funding gap” exists between available inventions and private investment in innovative projects. The reasons for this gap are related mainly to the difference between the external and the internal cost of capital in an R&D investment.

This differential arises from the asymmetric information between inventor and investor and the moral hazard on the part of the inventor due to the separation of ownership and management.¹³

In the long term, continued improvements in access to finance (deepening local financial markets) would be beneficial for business innovation, especially in the context of the global financial crisis. Better access to credit for routine activities frees up internal resources for investment in riskier businesses, including R&D and innovation.

13 Hall and Lerner 2009. In addition, the lack of collateral to secure bank loans makes R&D riskier than other types of investment, which turns debt financing into an inappropriate mechanism for this type of financing. As a result, retained earnings and equity tend to play an important role in financing private R&D investment. Moreover, business R&D and innovation tend to be pro-cyclical, declining in periods of economic downturn.

To improve financing for innovation, the Western Balkans could adopt the following measures, among others:

- Matching grant schemes for pre-seed financing (proof of concept and prototype development) for new small and medium enterprises (SMEs) and mentoring and nurturing services for project development and commercialization.
- Tax breaks for firms' expenditures on R&D.

The region could promote legal reforms to promote the development of risk capital markets (particularly seed and venture capital):

- *Reviewing procurement legislation to encourage innovation and entrepreneurship.* Public procurement, while not directly relevant to mission-oriented research and innovation, has a great influence over the types of research on social challenges.

Firm expansion requires connectivity with the rest of the economy, locally and internationally. Yet the integration of young innovative firms into local and global markets entails a number of challenges related to high “sunk costs,” in some cases, due to poor access to information. Measures to address this problem include:

- Reducing the cost of investments (the acquisition of capital goods), for example, through capital depreciation rules and reducing the cost of “knowledge” assets.
- Adopting managerial training and skills development programs, technology services, or, more broadly, manufacturing extension services.
- Continued promotion of FDI in industries with a global orientation.
- The promotion of R&D-intensive FDI.

Strengthen the Governance of National Research and Innovation Policies

The EU and countries in the Organization for Economic Co-operation and Development (OECD) are increasingly strengthening their research and innovation sectors to promote better system performance, to reduce the leakage of R&D results to others for commercialization, to channel resources toward areas of current or potential national comparative advantage, to facilitate collabora-

tion between research institutes and businesses on R&D, and to facilitate the private sector's uptake of innovations in their own investments.

In the Western Balkans, steps toward a systemic view of national innovation systems are still tentative. Individual components of the systems are often affected by poor policy prioritization, limited implementation oversight, rigid budgeting processes, inflexible rules governing human resource management, and weak incentives for performance. The systems are further complicated by a confused legal framework and a plethora of actors who may or may not coordinate, who often compete for budget resources, who have different institutional priorities, and who do not readily adopt the vision of one ministry or another over a sustained period.

The governance of national research and innovation systems can be improved by:

- Completing the institutional reforms of universities and research institutes.
- Enhancing institution building for efficient management of research and innovation policy.
- Deepening regional cooperation.

Universities throughout the Western Balkans (with the exception of Croatia, which has already completed the process) need to continue their process of integration into the European Higher Education Area and their implementation of the Bologna Process.¹⁴ The consolidation of research institutes also needs to be completed. Broader reforms of the education sector would further strengthen the research and innovation system. For instance, the introduction of performance-based contracts and greater autonomy in managing resource allocation and research results would enhance the quantity and quality of research outputs and their relevance to the economy.

Improved system performance requires effective mechanisms for “horizontal” coordination, such as national research and innovation councils, as well as a fully institutional role for organizations focused on business innovation (“vertical” coordination). Improved coordination should be complemented by

14 A three-year Tempus project called “Modernisation and Reconstruction of University Management and Structures” (MOREMS) involving universities from Bosnia and Herzegovina, Croatia, FYR Macedonia, and Serbia, and together with higher education institutions from the EU, put a strong emphasis on improving the existing university management system and structure.

greater accountability of public policies, with the institutionalization of public consultation and feedback mechanisms.

On the funding side, investment in research should be made part of the overall budget planning process to ensure that the flow of funds will be consistent over time and that it will have the same priority as other items in the government budget. Monitoring and evaluation (and impact evaluation) of public programs should be made systematic, and the information gathered should inform policy formulation in a continuous feedback loop. In light of the data deficiencies outlined earlier, statistics on research and innovation should be automatically generated and updated.

A good balance between basic and applied research would also increase the impact of research on the economy.¹⁵ On a related issue, the allocation of resources could be defined according to a “smart specialization strategy,” which favors fields where scientific excellence meets the region’s economic potential.¹⁶

As a first approximation, four areas of research specialization seem to be relatively prominent in the Western Balkans: agricultural and biological sciences, environmental sciences, physics and astronomy, and chemistry.¹⁷ Knowledge generated in those fields could help develop some latent comparative advantages:

- The coastal area shared by several countries represents a large potential for aquaculture and marine biology.
- The regional climate and soil conditions create opportunities for the development of the wine industry and other segments of agribusiness.
- The Western Balkans could benefit from region-specific knowledge on reducing carbon emissions and energy intensity and enhancing energy efficiency.
- A small but growing number of start-up companies in the fields of “translation medicine,” new materials, biotechnology, and information technologies have potential in selected niches.

15 Arnold and Giarracca 2012.

16 This specialization is a process through which research and innovation efforts are applied to enhance existing comparative advantages or the development of new firms or sectors through an entrepreneurial process of self-discovery (European Commission, 2011) A process of “smart specialization” might be better managed regionally as economies of agglomeration tend to go beyond national boundaries.

17 Based on SCIMAGO Research Group 2012.

Some suggested measures for strengthening the governance of national research and innovation policies include:

- Creating a regional facility to support the implementation of policy reforms and selected joint programs.
- Monitoring the implementation of the South East Europe 2020 Strategy's research pillar.
- Supporting the implementation of the Enterprise Development and Innovation Facility (EDIF).

ACTION PLAN FOR REGIONAL COOPERATION

This proposed Action Plan for Regional Cooperation complements, strengthens, and builds on national strategies, policies, and programs while recognizing the different levels of development of national research systems and their contribution to development. It is meant to be firmly embedded in the national, regional, and local priorities in every one of the seven countries involved. Moreover, the strategy should inform every relevant policy area with politically stable, adequately financed support structures.

The proposal builds on the recent experience in regional cooperation on research and innovation among the Western Balkan countries through bilateral initiatives funded by the EU and other stakeholders and donors. The comprehensive, sector-wide approach adopted by the strategy complements the treatment of other regional initiatives, notably the Danube and Adriatic Ionic Strategies, neither of which addressing in a comprehensive way the entire chain from research to innovation in the Western Balkans.

It is envisioned that the proposed Regional Strategy and Action Plan will be integrated with the South East Europe (SEE) 2020 Strategy as its research pillar. Moreover, by focusing on research for innovation, the proposed action plan seeks to complement the Enterprise Development and Innovation Facility initiative—a project dedicated to improving access to finance by innovative firms in the Western Balkans.

The action plan, therefore, proposes five regional initiatives seeking to cover the whole spectrum of the research and innovation chain from laboratory to the marketplace, including both public and private sector actors. It emphasizes the importance of research performance, technology transfer and collaboration with the private sector. It includes the creation of a facility for capacity building

for research and innovation and four regional programs. All five initiatives are detailed according to motivation, objective, operational procedures, estimated costs, outputs, and outcomes in the annex.

The WISE Facility

In order to support the implementation of the national reform programs, the Western Balkans proposes the creation of a regional technical assistance facility, the Western Balkans Research and Innovation Strategy Exercise (WISE) Facility.

The facility will advocate for and advise on the implementation of reforms while serving as a platform for continued policy exchange, public policy dialogue, capacity building, and policy advocacy.

The facility aims to provide an enduring, long-term platform on which countries in the region can pursue efforts for their mutual benefit in research and innovation and through which they can continuously advance their policy agenda. Collaboration at the regional level (and possibly at the international level) will contribute to the stability of programs and policies that are jointly supported, help insulate research from political interference, and promote the needed economies of scale while avoiding unnecessary duplication of effort.

It is envisaged that WISE will also function as a technical secretariat for the coordinating team responsible for the implementation of the research and innovation pillar of the SEE 2020. The facility will also promote capacity building for local entities, including training.

WISE Programs

In addition, the proposed WISE Facility would promote the development and monitor and evaluate the implementation of selected regional support programs. Four programs, building on the recent experience of the region along with its strengths and weaknesses, have been proposed so far:

- ***A research excellence fund*** to promote collaboration between local scientists and the scientific diaspora, along with the development of young scientists toward further integration with the ERA.
- A program to encourage the development of “***networks of excellence***” in areas consistent with the “smart specialization” of the region, increasing the rationalization in resource use, and focusing research on areas with greater economic impact.

- ***A technology transfer program*** for public research organizations to facilitate collaboration between research and industry in its different formats, including joint and contract research, technical assistance, training, technology licensing, and the creation of spin-offs from public research organizations.
- An ***early-stage start-up program*** to provide pre-seed (proof of concept and prototype development) financing and business incubation and mentoring programs to help bridge the “valley of death”¹⁸ in the process of bringing an idea to the marketplace and to help develop a pipeline for venture capital investors.

Implementation Issues

The following are envisioned as the implementation issues:

- ***Regional asymmetries.*** In the implementation of the regional programs, asymmetry in national research and innovation systems should be considered. The strategy should contribute to making national capabilities less asymmetric across the region. Operating procedures should seek to provide further assistance and capacity building to lagging countries to ensure their involvement. A methodology for proportional distribution of the overall resources among beneficiary countries shall be defined.
- ***Governance structure.*** The WISE Facility is expected to be supervised by representatives of each beneficiary country (supervisory body). A small professional team will be responsible for the daily activities.
- ***Program implementation.*** The regional programs will be implemented and supervised at the national level to help build local capacity in designing, managing, and implementing research and innovation programs.

18 The “valley of death” is a term referring to the difficulty of covering the negative cash flow in the early tages of a startup, before their new product or service is bringing in revenue from customers.

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South East European 2020 Strategy and Relevance of the Smart Growth Pillar

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Significance of SEE 2020 Strategy...

In June 2010, the European Union brought forward its new strategy for jobs and smart, sustainable and inclusive growth - Europe 2020. Preparations of the Western Balkans states for future membership suggest that the Europe 2020 internal policy goals and implementation methods are pertinent to enlargement countries as well. Europe 2020 flagship initiatives recognise that in some areas, enlargement countries can work together with member states and join the open method of coordination exercises. However, given the specific economic, social and political challenges of the enlargement countries, it was evident that a shared effort in developing a regional response to the Europe 2020 Strategy is needed.

Recognizing that economic prosperity is essential to long term stability and is a part of the European integration process, the Governments of SEE have adopted an outline of a comprehensive cooperation agenda as a regional response to Europe 2020. During 2011, the Ministers in charge of the Economy adopted the SEE 2020 Vision, laying out the region's growth and development priorities contained in five pillars:

- Integrated growth - through deeper regional trade and investment linkages and policies that are non-discriminatory, transparent and predictable and enhance the flow of goods, investment, services and persons within the region.
- Smart growth - through a commitment to innovate and compete on value-added rather than labour costs in the long run.
- Sustainable growth - through raising the level of private sector competitiveness, entrepreneurship and a commitment to greener and more energy-efficient development.
- Inclusive growth - through skills development, employment creation

and labor market participation by all, including vulnerable groups and minorities.

- Governance for growth - through improving the capacity of public administrations to strengthen the rule of law and reduce corruption so as to create a business-friendly environment.

The adoption of the SEE 2020 Vision was followed during 2012 by the agreement on 11 regional headline targets backed up by 77 national targets to guide the common regional action towards the end of the decade. In addition to adopting these targets, the Ministerial held on November 9, 2012 in Tirana also mandated the RCC to coordinate the development of the SEE 2020 Strategy and present it for adoption during 2013.

Acting on this mandate, the RCC has engaged with regional organizations, institutions and structures that have a potential role in the development and, more importantly, implementation of SEE 2020. RCC's role in the SEE 2020 process, restricted to coordination and monitoring, implied building a network of strong regional partners with an implementation mandate and a solid track record. This also reinstated the focal role of RCC in regional cooperation, as relationships with other regional organizations are formed based on clear objectives, cooperation measured upon agreed and controllable indicators, and implementation carried out with the full support and knowledge of national administrations.

The process of associating regional platforms with the pillars of the SEE 2020 Strategy was initiated in November 2012 through a series of consultations and kick-off workshops in each of the pillars. These workshops aimed to: (i) take stock of developments within each of the pillars, (ii) identify the necessary activities to reach the SEE 2020 targets and assess their feasibility in the regional context, (iii) determine the roles and responsibilities of all stakeholders involved, (iv) define the process of development and format of SEE 2020 Strategy in each of the domains, (v) revisit the monitoring mechanism and a governance structure to implement the Strategy going forward, and identify potential synergies between different pillars of the SEE 2020 Strategy.

Working with the government and regional and international partners, RCC has developed a proposal of the SEE 2020 Strategy which was adopted by the governments and endorsed by the Ministers of Economy at their meeting in Sarajevo on November 21.

The five pillars of SEE 2020 are central to socio-economic policies of each SEE country and are also critical elements of the EU accession process. There-

fore, in essence, the SEE 2020 Strategy provides a framework to assist the governments of the region to implement their individual development strategies, including EU accession related goals, by enhancing national efforts through focused regional cooperation on those specific issues that can benefit from a shared approach. A number of specific sectoral dimensions suitable for regional cooperation have been identified under each pillar, including Research and Innovation dimension. Activities in these dimensions are expected to contribute to the achievement of the headline targets set for each pillar.

Although the development of a regional SEE 2020 strategy was largely inspired by Europe 2020, it is evident that the regional strategy differs considerably from the EU framework in two main aspects:

1. **Focus:** from the regional point of view, the three pillars of Europe 2020 strategy (smart, sustainable and inclusive growth) although relevant, required considerable customization to fit with the regional context. The main alterations were envisioned along two main axes: a different emphasis within the three pillars (along with realistic and credible targets), and the need for a fourth and fifth pillar - integrated growth and governance for growth - relating to the deepening of the regional common market within a good governance framework.
2. **Governance:** To be able to successfully engage with SEE 2020, the region needs to develop its own version of the governance mechanisms and processes that exist in similar EU-level initiatives. Employing such mechanisms (e.g. open method of coordination), implies determining common policy goals and reform targets that are both regionally relevant and consistent with Europe 2020 priority areas. Non-binding guidelines were to be developed to help shape the transposition in national policies, and specific benchmarks and indicators were to be agreed upon to help measure progress. Finally, RCC will embark on regular monitoring and evaluation of the results achieved.

Coordinating development and implementation of the SEE 2020 Strategy, RCC hopes to provide an anchor for regional reform and shift regional cooperation towards more coherent, result-oriented approaches. The ambitious nature of the SEE 2020 Strategy reflects the political will of the SEE governments to take a decisive step towards creating vibrant economies and thriving societies in each and every country of the region. SEE 2020 has the objective of engineering a pattern of job-rich growth, which will both help improve the labour market

situation and contribute to raising living standards. The Strategy will also reinforce the countries' efforts to advance along their EU accession pathway.

... and relevance of the Smart Growth pillar

In order to ensure a long-term economic growth, the region is looking for ways to change its development path towards more value added, moving away from low-cost labour to other sources of competitiveness. Smart growth needs to be fostered in the framework of a “knowledge-based economy” – an economy founded on the production, distribution and use of knowledge and information. To reach proclaimed goals, it is necessary to increase investment in research and innovation, knowledge and information infrastructures, develop modern education and training systems, and explore creative industries.

The central objective of the Smart Growth pillar is to promote innovation and foster knowledge-driven growth in the region. Targets set in the Smart Growth pillar are 32% increase in average labour productivity relative to 2010 and a 300.000 increase in the number of highly qualified persons in the workforce. Four policy dimensions address the pillar objectives:

- Education and Competences dimension aims to improve the regional knowledge and skills base and sets specific objectives in two main domains: a reduction of early leavers from education and training and an increase in tertiary educational attainment.
- Digital Society – the overall objective of this dimension is to further enhance the cooperation on economic and social development in South Eastern Europe and reap the full potential of the Information and Communications Technologies to spur innovation, economic growth, regional competitiveness and improved quality of life.
- Cultural and Creative Sectors – strategically nurturing these industries will help foster tourism, SME growth and entrepreneurship, ultimately improving the business atmosphere and climate in the region.
- R&D and Innovation – Investing more and better in research and innovation and prioritising investments with the direct possibility to leverage wealth generation from other available economic assets, countries will contribute to smart specialisation of the region.

Innovation is a cross-cutting way of equipping all sectors of our economy to be more competitive. Innovative economy is what the Western Balkans should aim to bring to European community. It is indeed about turning new ideas into growth, prosperity, jobs and well-being of our citizens. In this area, SEE 2020 builds upon the efforts already invested by the SEE countries in developing the Regional R&D Strategy for Innovation, adopted by the Western Balkans Ministers in charge of science in Zagreb, in October 2013.

Implementation of R&D Strategy for Innovation and its Action Plan for Regional Cooperation represents the basis of future cooperation in the field of science and research. The main aims of this important and comprehensive Strategy are:

- First and foremost, the intention is to improve the research base and conditions for research excellence in the Western Balkans, by investing in human capital and improving access to modern research facilities, thus slowing the brain drain and supporting the brain gain;
- Secondly, to promote Research-Industry Collaboration and Technology Transfer, by improving incentives for collaboration between research institutes and the private sector;
- Thirdly, to enable business investments in research and innovation through Early-Stage Start-up program;
- Fourthly, and certainly not less important, to strengthen the governance of national research and innovation policies with appropriate regional technical assistance facility, just to name some of the ideas in this ambitious venture;

Regional cooperation in the field of research and innovation is necessary also for the facilitation of participation of the Western Balkans in the related EU programs, such as the Innovation Union and Horizon 2020. By building capacities to join these programmes, we are directly improving institutional capacities for EU accession processes.

In building research capacities in the region, one should not expect the overnight results, but rather a steady and continuous process. Our next step will be creation of a regional mechanism, based on the principles of good neighborly relations and all-inclusiveness, a mechanism which will be supported by strong team of experts, leading the implementation of the activities envisaged by the Strategy. To that aim, the RCC and its Secretariat is joining efforts with all the participants from the region and international partners in order to estab-

lish transparent and efficient mechanism, in accordance with best international practices.

The aim of the common endeavour will not only open opportunities for implementation of the Regional R&D Strategy for Innovation and its Action Plan, but will also increase our capacity to reach other available funds, attract investments, including those from the private sector.

There are many challenges ahead; joining our strengths we can achieve concrete, tangible and sustainable results, thus opening one important window to secure the future of development and prosperity of South Eastern Europe.

The EU Strategy for the Danube Region – Opportunities for some Western Balkan countries

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The term “macro-region” has been coined in a new way during the preparation of the EU Strategy for the Baltic Sea Region, as “*an area including territory from a number of different countries or regions associated with one or more common features or challenges.*”¹

In the EU context, macro-regions involve several countries but never the whole Union with common features and challenges. The geographical limits can be rather fluid when addressing a macro-regional challenge, as they can vary based on the relevance for specific policies under scrutiny. The functional regions may overlap, and there need not be a specific regional identity being shared by all citizens. Specific processes have been defined in the EU’s Regional Policy to define macro-regional strategies. This was first used and implemented in the EU Strategy for the Baltic Sea Region (EUSBSR): “*An integrated framework that allows the European Union and Member States to identify needs and match them to the available resources through co-ordination of appropriate policies, thus enabling the Baltic Sea Region to enjoy a sustainable environment and optimal economic and social development.*”² The European macro-regional strategies therefore offer a new framework of shared opportunities and responsibilities to address common challenges faced by EU Member States and third countries located in the same geographical area, which thereby benefit from strengthened cooperation contributing to achievement of economic, social, and territorial cohesion.

The idea behind a macro-regional strategy is “*to add value to interventions, whether by the EU, national or regional authorities or the third or private*

1 http://ec.europa.eu/regional_policy/sources/docoffic/official/communic/baltic/action_17122010_en.doc

2 Website of DG Regional Policy, http://ec.europa.eu/regional_policy/cooperate/baltic/pdf/macrorregional_strategies_2009.pdf

*sectors, in a way that significantly strengthens the functioning of the macro-region. Moreover, by resolving issues in a relatively small group of countries and regions the way may be cleared for better cohesion at the level of the Union. Working together can become a habit and a skill.”*³

The macro-regional approach includes a variety of policy areas, with the strategy suggesting and facilitating ways to address several issues. EU macro-regional strategies target a relatively small group of countries and regions to support better cohesion at the level of the European Union but allow for a definition of objectives that vary according to the needs of the regions concerned.⁴ Competitiveness, research, and innovation are policies that are addressed in the macro-regional strategies developed to date. The EU has recognized strategies for the Baltic Sea and Danube Region and is currently developing strategies for Adriatic–Ionian and the Mediterranean Sea—all covering EU Member States and non-EU Member States.

It is nothing new to group a set of countries and regions and assign to them a specific term; “the European Union” or ASEAN, too, are groupings that are used to analyze and compare several parts of the world with each other. Often, these groups of countries have a common regional identity, sometimes they joined forces and developed common policies and strategies or have been jointly addressed by other stakeholders.

This also applies to the “Western Balkan countries”, which are—as such—not covered by a macro-regional strategy. The term was coined in the 1990s and is often explained by the formula “Yugoslavia minus Slovenia plus Albania”. It covers an area of almost 200,000 km² and a population of more than 20 million citizens. In the dialogue of the “Stabilization and Association Process” and the context of EU enlargement, the term has been used frequently and it was also adopted in the dialogue related to research and innovation between the EU Member States and the region (see “Steering Platform on Research for Western Balkan countries” or “Western Balkan countries INCO-NET” project). The outside view of “one region” in geographical and political terms is often not in line with the view from inside, lacking a regional identity and even academic literature not offering clear definitions⁵ (Graef, 2012).

3 http://www.interact-eu.net/macro_regional_strategies/macro_regional_strategies/283/3921

4 https://www.academia.edu/2236951/Reinventing_Europes_Internal_Other_in_the_Western_Balkans

5 http://ec.europa.eu/regional_policy/sources/docoffic/official/communic/danube/com2010_715_danube_en.pdf

Although the geographical limits of the macro-regional strategies are fluid and adaptive towards the specific policies, there is an official definition for the EU Strategy for the Danube Region (EUSDR) that is going beyond the area defined by the river basin: “*Geographically it concerns primarily but not exclusively: Germany (Baden-Württemberg and Bavaria), Austria, the Slovak Republic, the Czech Republic, Hungary, Slovenia, Romania and Bulgaria within the EU, and Croatia, Serbia, Bosnia and Herzegovina, Montenegro, the Republic of Moldova and Ukraine (the regions along the Danube) outside.*”⁶ (European Commission, 2010, page 3). Officially, the Strategy covers over 100 million people and a fifth of the EU area, but it is clearly also open to other partners in the region—i.e. the Black Sea region, the other Western Balkan countries, etc.

The EU strategy to boost the development of the Danube Region was proposed by the European Commission in December 2010 and endorsed by the European Council in 2011. It is described in a Communication from the European Commission to the other EU institutions and in an accompanying Action Plan, which aims at identifying priorities for the macro-region, actions and projects, and a governance structure. The strategy seeks to create synergies and coordination between existing policies and initiatives taking place across the Danube Region and thus addresses a wide range of issues divided into 4 pillars and 11 priority areas, from connecting and strengthening the Region to building prosperity and protecting the environment.

A major issue facing Europe is the competitiveness of European higher education and research. In recent decades, higher education and research have grown immensely so that today their performance affects the whole society. Besides their obvious economic implications, they also remain imperative for the achievement of social equity, mobility, and cohesion. The overall policy attempts to engage the European Higher Education Area (EHEA) and the European Research Area (ERA) globally by striking a balance between cooperation and competition.

The Prosperity pillar C rests on three priority areas (PA): from Knowledge Society (PA7) and Competitiveness (PA8) to investment in People and Skills (PA9). While “knowledge society” and “competitiveness” are the ones mainly addressing research and innovation, the importance of science, technology, and development is also underlined within the other priorities, such as energy or the environment. They are all governed with a focus on research and innova-

6 See European Union Scoreboard, http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf

tion, aiming at boosting effective cooperation between participating countries of the Danube macro-region, with respect to their national and regional policy makers, relevant stakeholders, project promoters, programmes, and funding sources.

The Danube area is characterized by a pronounced northwest–southeast divide with respect to all innovation indicators. While some countries are classified as “innovation leaders”, others are “catching up innovators”⁷. These developing regions, however, have shown a fast growth of R&D rates. A common feature for the “catching up innovators” is their relatively weak performance with regard to availability of finance for innovation projects, government support for innovation activities, and availability of highly skilled human resources. In terms of tertiary education quality and standing within the globalised educational environment, a similar divide can be observed. Studies on academic mobility show a disadvantageous position of South-East European countries, especially in terms of international research mobility and the ability to attract R&D cooperation.

Aiming at feasible and sustainable actions to defined challenges, the Steering Group of the Danube Strategy Priority Area 7—to develop the Knowledge Society through Research, Education and Information Technologies—supports the following targets:

1. To invest 3% of GDP in Research and Development by 2020;
2. Broadband access for all EU citizens in the Region by 2013;
3. Increase the number of patents obtained in the Region by 50%;
4. Increase the share of the EU population aged 30-34 with tertiary or equivalent education to 40% by 2020;
5. To reach 20% of academic mobility by 2020.

These targets are challenging, but one can think of them as opportunities: developing regions downstream can benefit from the leading—indeed world-class—innovative regions upstream. So policies and mechanisms are being promoted—also for the benefit of the Western Balkan countries, such as:

- Networking of centres of excellence and complementary partnerships

7 See European Union Scoreboard, http://ec.europa.eu/enterprise/policies/innovation/files/ius-2013_en.pdf

- Diffusion mechanisms and targeted support for research infrastructure
- Smart specialization as a regional policy instrument for enhancing competitiveness and cooperation in the Danube region
- Brain-circulation.

Based on the procedure of labelling outstanding projects, the PA7 Steering Group has already awarded four collaborative projects the label PA7 flagship projects.⁸

The official documents stress that the strategy is financially neutral and that no new funds shall be generated. Still, the macro-regional approach has now strongly influenced the European Territorial Cooperation and the programming of the new financial period 2014-2020. There will be a “Danube Region programme” covering the macro-region as geographically defined in the EUSDR. However, it will remain a challenge to coordinate funds for some macro-regional projects as different funding streams are available for different areas, such as:

- Structural Funds for the EU Member States (for some more, for some less; for some on national level, for some on regional level),
- the Instrument for Pre-Accession Assistance (IPA) 2 addressing the enlargement countries,
- eventually the European Neighbourhood Instrument which is relevant for Moldova and Ukraine and
- Horizon 2020, for research and innovation projects, to which some but certainly not all the non-EU Member States in the Danube Region will be associated and
- smaller programmes and initiatives in the European Research Area which address different countries in an approach of variable geometry (e.g. Joint Programming Initiatives, ERA-NETs, etc.).

Addressing such a variety of financial resources with their different administrative approaches is one of the aspects that need a truly joint strategic approach. Allowing for coordination already in the planning of the programmes, would make it a lot easier to address them strategically with flagship projects. But

8 See Criteria for Label of Flagship Project, <http://groupspaces.com/KnowledgeSociety/pages/projects>

while discussions about the synergies between Horizon 2020 and the Structural Funds are ongoing (and even there they seem to be too late to truly affect the development of the operational programmes so that they are compatible with Horizon 2020), true Danube Region projects face an added complexity: some countries are eligible for Structural Funds to a minor extent (e.g. Austria), some have huge budgets (e.g. Romania), and for the non-EU Member States still other instruments apply, as mentioned above, such as the Instrument for Pre-Accession Assistance and the European Neighbourhood Instrument. In these instruments, the support to R&I may play a role but it does not always and it needs to be prioritised locally, which is often not the case.

Consequently, a coordination of funds becomes an even greater challenge and several stakeholders are already busy exploring the barriers and opportunities. The Joint Research Centre (JRC) plays a major role, but a joint Danube Region Research and Innovation Fund (DRRIF) is also under discussion. These may be some of the opportunities for cooperation for the Western Balkan countries too—partly competing with other initiatives and programmes.

The Danube Region is certainly a rather attractive region to be associated to, as it covers also the most competitive regions such as Baden-Württemberg and Bavaria. An active partnership with these regions—under the approach of regional policy and cohesion—seems to be more acceptable than being under scrutiny as an “enlargement country”, i.e. a candidate country or potential candidate country in the Western Balkans or even as a recipient of “aid” in an approach following the logic of development policies towards specific target countries.

The EUSDR aims at making a contribution to fostering cooperation with non-EU countries in the Danube river basin and assist them on their European path and so the inclusion and participation of these so-called “third countries” is crucial if the desired objectives are to be achieved.⁹

It is not an easy task for the governments of the region, being part of many geographical sub-systems and being subject to many demands and requests on their tight budgets and limited resources as well as the administrative capacities, to prioritize the participation in a number of initiatives, projects and programmes. For some Western Balkan countries, it will make more sense to have a close look at the EU Strategy for the Adriatic and Ionian Region, which will be presented before the end of 2014. The Adriatic–Ionian Region covers four EU

countries (Croatia, Greece, Italy, and Slovenia) and four non-EU Member States (Albania, Bosnia-Herzegovina, Montenegro, Serbia). But taking into account the time it takes from publishing the Strategy to an effectively implemented governance structure, it is still quite some time until the benefits of this cooperation will be ripe.

The geographical composition of these macro-regional strategies makes it particularly difficult for the land-locked countries in the Balkans which are not targeted by any of the strategies currently under development. At least the new transnational Programme “Balkan–Mediterranean” of the 2014-2020 programming period covers also the Former Yugoslav Republic of Macedonia, together with Greece, Bulgaria, Cyprus, and Albania. It will also address socio-economic competitiveness and institutional capacity in the region with the thematic priorities of connectivity, the environment, and entrepreneurship.

In any of these configurations, the benefits of cooperation can be reaped only with a long-term commitment and investment and by getting truly engaged. The joint coordination of the EUSDR Priority Areas (each being coordinated by two countries in cooperation) has given valuable opportunities to less developed countries of the Region to take an important role in the Strategy, get highly involved in its coordination, and start dealing with advanced themes on the regional level. In this sense, Serbia and other WBCs active in the EUSDR are some of the major actors in the EUSDR and provide excellent examples of stakeholders making use of the opportunities open to them.

Similar to the WBC-INCO.NET, another coordination and support action received funding from the European Union’s Seventh Framework Programme for research, technological development and demonstration (FP7) and will implement several tasks benefiting the Western Balkan countries—and not only those who are directly involved in the EUSDR and the project. Mainly an information platform and service will be built up (and continued from WBC-INCO.NET) open to all researchers and innovators from South East Europe. The project will support them in particular in integrating with the European Research Area, fulfilling the Innovation Union commitments, getting involved in the process of smart specialisation, being informed by analytical evidence, etc. This Danube-INCO.NET project was successfully kicked off at the beginning of 2014 and will run for 36 months. It involves partners from almost all

countries participating in the EU Strategy for the Danube Region¹⁰ as well as international organizations of key relevance¹¹.

The cooperation with neighbours, within the framework of a macro-regional strategy (or even without it), is a key to increased competitiveness and growth, in particular for small economies such as the ones in the Western Balkans. Exploiting the tools and instruments offered, but with a strategic focus, a pragmatic and operational approach as well as clear priorities are highly recommended. Cooperation and networking boost the prosperity of all countries involved as well as their macro-regions and the European societies. Therefore, the long-term commitment to participation in the macro-regional strategies is exceedingly relevant for all countries involved.

10 Austria (ZSI as coordinator, BMWFW and FFG), Bosnia and Herzegovina (Ministry of Civil Affairs), Bulgaria (University of Ruse), Croatia (EKO SUSTAV limited liability company), Germany (BMBF, DLR and Steinbeis), Hungary (RCISD), Moldova (National Academy of Sciences - CIP), Romania (Ministry for National Education), Serbia (University of Novi Sad and Mihajilo Pupin Institute), Slovak Republic (Bratislava Innovation Center), Slovenia (Ministry for Education, Science and Sports), Ukraine (National Academy of Sciences, IMPEER)

11 Joint Research Centre (JRC) and Central European Initiative (CEI)

Democracy Challenges in Western Balkans

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In Eastern and South-eastern Europe and particularly in the region of the former Yugoslavia, where the states have been undergoing multiple transformation processes in the last two decades (including the transition from war to peace in the former Yugoslavia), the global economic crisis has revealed the fragility of the political and socio-economic systems and jeopardized a democratic consensus. The region entered a new phase of development facing certain signs of democracy fatigue. Twenty years after the end of the Cold War, initial euphoria about democratic change in many countries of the East and Southeast has given way to growing mistrust in political institutions and political representatives, and an increasing disaffection with democracy itself. This wide-ranging disaffection is due to the weak performance of political systems and a rather weak output-legitimacy of the regimes. Politicians seem not (any more) able or willing to deliver tangible results to their voters. Harking back to Abraham Lincoln's famous quote that democracy was "government of the people, by the people, for the people", politics thus produces no or too little goods "for" the people. This is a situation where people start questioning the notion of democracy itself, paving the way to something new – be it another and better form of democracy or another kind of regime with authoritarian characteristics. With the general crisis of democracy in the West we face an emergence of grey-zones between democracy and authoritarianism and even new forms of authoritarianism in some parts of Eastern and Southeastern Europe.

Classical authoritarianism seeks for an absolute obedience, is directed against individual freedoms and liberties and always ready to use repression against opponents. New authoritarian regimes are chameleon-like – they are able to adjust to new circumstances, they have institutionalized representation of a variety of actors and they even incorporate some democratic procedures like elections and thus create a structure resistant to change. Even in Eastern- und South-eastern part of Europe, in a region that went through two decades of democratization, we are witnessing new semi-democratic or new authoritarian regimes

(or grey zone regimes), which – under the guise of democracy – limit individual freedom and reduce liberties.

The empirical evidence: Stagnation of democratic development

Judging recent democratic developments by comparing the scores from the general democracy indices such as Bertelsmann Transformation Index or Nations in Transit, the stagnation of democratic progress (Nations in Transit 2012) or even authoritarian tendencies become obvious. The overall score of the countries in South Eastern Europe over the last decade has only marginally improved from 4:22 to 4:07. In the recently published Nations in Transit Reports for 2012 and 2013 the fragility and vulnerability of democracies in Eastern and South-eastern Europe has coined the title of both reports. In 2012 Freedom House presented the newest democracy scores under the title “Fragile Frontier. Democracy’s growing vulnerability in Central and South Eastern Europe”, whereas the 2013 report speaks about “Authoritarian aggression and the pressures of austerity”. The evaluation of the democracies particularly in Southeastern Europe reads very negative:

„Stagnation and decline have (...) become apparent in the parts of Southeastern Europe that lie outside the EU. Albania, Bosnia and Herzegovina, Croatia, Kosovo, and Macedonia have all suffered decline in national democratic governance over the past five years, driven in part by the overlap between business and political interests and the nagging problem of organized crime“. (Nations in Transit 2012, p. 2-3)

These findings correspond with results of scholarly work on the state of democracy conducted by international and regional experts (see Pesic 2012, Bieber 2012, Kukic 2012, Dzihic/Segert 2012, Jelevic 2011, Jovic 2012, etc.). Generally opinion polls and studies of local experts and scholars often show that fundamental democratic promises (such as freedom, equality, the rule of law or participation), at least from the perspective of citizens, seem to be seriously in danger (UNDP surveys, Balkan Monitor Report 2011, Golubovic 2010, etc.) This is particularly true when it comes to participation rights. On the one hand side citizens observe diminishing possibilities for participation in political processes, which results in growing disenchantment with politics and democracy and a rapid increase in scepticism towards democratic institutions and their representatives. (See Bohle / Greskovits 2009, Krastev 2010, Nations in Transit 2012 and 2013, at the same time Pesic 2012, Podunavac 2011, Curak 2012)

These attitudes and behaviours of the citizens reinforce the loss of importance of the institutions of representative democracy – such as parliaments – over the last two decades. The economic transformation processes starting from the 1990s featured a intertwining of economic and political power, which results in a situation where newly emerged transitional economic elites (oligarchs, Tajkuns) deployed in-formal and non-democratically controlled tools to control formal institutions of democracy and thus increase the dominance of the executive branch of government over parliaments. (Pimples G. / Pimples 2006).

Regional experts furthermore underline the tendencies of partocratic regimes or regimes with strong elite dominance (cf. Mujkic 2009, Sarcevic 2011, Shala 2010, Pavlovic 2010). The political representatives in those cases respond to the growing alienation between themselves and the electorate with increased use of concepts of social and national populist mobilization. The fears from each other, which are a common feature of all post-war societies (like in the case of former Yugoslavia) are instrumentalised by political elites for political purposes. Such a politics based upon nationalist mobilization, quite often using hate speech, reinforce the authoritarian tendencies within societies and thus pose a challenge to the democratic consensus. (Curak 2010, Horvat 2012, Lukovic 2011, Pesic 2012, Edmunds 2009, Cohen / Lamp 2011)

To sum up here: The economic crisis in East and Southeast European societies reflects a crisis of institutions and norms of democracy and reveals the general lack of trust of citizens in formal institutions and political elites. Corruption and nepotism are both side effects to this. The core deficit this crisis reveals is this: the nominally representative systems (which allow for government “by” the people) established in East and Southeast Europe are too weak to compensate for the decrease in output legitimacy. The current protests in several countries of Eastern and South-eastern Europe (see the protests in Bosnia, Bulgaria, Montenegro, etc.) are thus an expression of a weakness of democracy. They indicate as well a desire of citizens to participate (again) in political affairs, and to buttress democracy “from below”.

All these crisis tendencies pose a challenge to the very notion of democracy and open up a space for non-democratic or even authoritarian practices. Thus the newly emerging crisis of democracy in transitional societies offers a good possibility to reflect upon general assumptions of democracy and democratization theory.

Re-Conceptualizing the zone between democracy and authoritarianism

We start with the insight that democratic transition in East and Southeast Europe has not brought the results wished for by external actors and/or expected by the local population.

The “classical” assumptions of transformation research holds onto a picture of a linear and normatively given direction of democratic transformation. It is supposed to progress in clearly distinguished phases from democratic opening to gradual consolidation up until the final goal of Western oriented liberal democracy. This model has been repeatedly criticized and revised over the last decades (see a summary in Merkel 2010, Dzihic/ Segert 2011). To make a short and main point here: Transformation does not necessarily lead to republican, liberal democracy of the ‘Western style’.

The significant functional weakness of democracies in the countries of Eastern and South Eastern Europe can thus be seen as a clear proof to the widespread assumption that there is no linear path to democracy and that democratization efforts in some cases can even lead to non-democratic effects and include democratic roll-backs. As Charley Tilly put it in the early 2000s, “de-democratization” seems to be immanent to any kind of democratization. (Tilly 2003 and 2007). It became increasingly clear that liberal democracy is only one possible final outcome of democratization processes (see some countries of the Post-Soviet space). We argue that there is no automatism in democratic transition, yet an inherent contingency of transformation processes as well as an enormous divergence of political system that have developed in East and South-east Europe since 1990 (Mackov 2000, McFaul 2002, Thierry 2002).

The assumption of an automatic, inevitable consolidation of democracy seems also to be misguided, especially since some states with a rather linear and stable process of consolidation of democracy started facing processes of de-democratization or regression from democracy. (See Albrecht / Frankenberger 2010, Källner 2008, Mackow 2000, etc.)

Consequently, having these new trends in mind several common assumptions of the democratization theory have been revised. A core assumption of Western liberal democracies being a normative role model for countries in Eastern and South-eastern Europe has lost a lot of its original credibility. The latest debates about post-democracy and crises of democracy (Crouch 2008, Fukuyama 2011, Rosanvalon 2008, Rohrer 2011, etc.) underline the fact that crisis of democracy in the West (and particularly within the EU) has changed

the perception of democracy in the periphery of the West. Another important assumption related to the importance of free and multiparty elections for democratic consolidation was challenged by scholars arguing that free and fair conducted elections are a necessary but not sufficient condition of liberal democracies (Diamond 2006, Bunce 2008 , Bunce / McFaul / Stoner-Weiss 2011) The reduction of the concept of democracy to a pure electoralism has certainly led to significant problems. By putting a strong focus on the importance of elections the importance of other important elements of democracy as for example the active participation of citizens, the functioning of the state, or the redistributive ability of the welfare state was largely underestimated.

Generally, we can conclude that “transition-to-democracy”-paradigm was generally able to generate some important insights into the course and characteristics of the political transition from authoritarian to democratic rule, but it remained rather blind towards regressive processes of democratization or so called “de-democratization” processes. Based on these deficiencies, the debate has shifted towards the tendencies of regression from democracy and towards so called grey zones between democratic and authoritarian rule. (Thierry 2002, Croissant 2002, Bunce / Mc Faul / Stoner Weiss 2011).

The early debate on de-democratization was dominated by two concepts, the one focusing on “defective democracies” and the second on “hybrid regimes”. “Defective democracies” are regimes “characterized by the presence of a largely functioning democratic electoral regime for regulating the access to power through elections, while having substantial problems with securing the functioning of those elements of governance related to the values of liberty, equality and control of democratic rule.” (Merkel et al 2003, p.15) The concept of “hybrid systems”, however, is based on the emergence of mixed regimes that combine both democratic and authoritarian elements of rule. (See Rüb 2002, Way 2004, Lauth 2006) While the concept of “hybrid regimes” can be seen as an important conceptual step for exploring the zones between democratic and authoritarian rule, we still do have a strong “democracy bias” within the concept. Meanwhile, however, a debate on new authoritarianisms has emerged. (see Benk 2010, Bredies 2011, Kailitz 2009, Gerschweski / Schmotz 2011, Albrecht / Frankeberger 2011 etc.)

Thomas Carothers sparked an important debate by developing a concept of feckless pluralism. According to Carothers, there are pluralistic grey zone regime types outside of the “democracy vs. autocracy”-logic that can be politically quite stable and produce an output valuable for the citizens without necessarily following the logic of democratic rule.

„Countries whose political life is marked by feckless pluralism tend to have significant amounts of political freedom, regular elections, and alternation of power between genuinely different political groupings. Despite these positive features, however, democracy remains shallow and troubled. Political participation, though broad at election time, extends little beyond voting. Political elites from all the major parties or groupings are widely perceived as corrupt, self-interested, and ineffective. (...) The public is seriously disaffected from politics, and while it may still cling to a belief in the ideal of democracy, it is extremely unhappy about the political life of the country. Overall, politics is widely seen as a stale, corrupt, elite-dominated domain that delivers little good to the country and commands equally little respect. And the state remains persistently weak. Economic policy is often poorly conceived and executed, and economic performance is frequently bad or even calamitous. Social and political reforms are similarly tenuous, and successive governments are unable to make headway on most of the major problems facing the country, from crime and corruption to health, education, and public welfare generally.“ (Carothers 2002)

The concept of Thomas Carothers seems to offer an appropriate framework for analysing the grey zones between democracy and authoritarianism in today's Eastern and South-eastern Europe. How can we approach those grey zone regimes? What are their characteristics?

Crises of democracies and economic downturn in East and Southeast Europe change daily life. They require new answers by politics and institutions and pose new challenges to the mechanisms of upholding or stabilizing power, and of producing legitimacy. Some regimes in East and Southeast Europe seek to meet such social and economic challenges in a 'grey zone' of mixed democratic and (neo) authoritarian government techniques. Hence we may find in many of those countries marked tendencies towards 'grey zone' regimes. Such regimes are characterized by a partial incorporation or imitation of liberal democratic procedures and formal institutions, which are however simultaneously undermined by an overall logic of limited pluralism (Krastev 2011).

As a starting point to develop a deeper understanding for such grey zone regimes and their internal logic, the following specific aspect from the scholarly research of "new authoritarianism" seems to be relevant: In order to ensure greater legitimacy and broader societal support for their rule the authoritarian politicians deploy and at the same time instrumentalize important elements of an institutional architecture of liberal democracies. At the time of general economic and social crisis and widespread crisis of democracy those new authori-

tarian forms of rule start to be perceived as attractive, rather flexible and adaptable, and finally functional system alternatives. As a result, in many countries of Eastern Europe and South East we are witnessing new and amazingly adaptable “grey zone regime”, able to incorporate the institutions of liberal democracy and to organize a rule based on a concept of limited pluralism (see the concept of feckless pluralism above). Here we find new forms of regimes that do reconcile competitive elections, multi-party systems, parliaments; constitutions and other elements of rule usually associated with liberal democracies on the one hand side with the functional logic of authoritarianism and with mechanisms and techniques of rule (including open or subtle repression) characteristic for authoritarian regimes.

Many regimes in Eastern and Southern Europe could be described as being in the grey area between democracy and authoritarianism:

„A rigid distinction between democracy and authoritarianism creates a big trap – namely, that everything which is not democratic must be authoritarian, and that any time an authoritarian regime is toppled, what must follow it is democracy. For better or worse, most political action takes place in a gray no-man’s-land between democracy and authoritarianism.“ (Krastev 2011, 199)

Ivan Krastev points at the bigger spread of these mixed systems and their functionality and rationality in the eastern European context. He also refers to the adaptability and strategic changeability of such regimes, which on the one hand refer to themselves not as authoritative but thoroughly democratic and on the other hand have long since started adjusting to the rules of global capitalism in which they fully participate. (Krastev 2011, 199-200) But let us take a closer look at the internal logic of rule of grey zone regimes.

First of all, those regimes create a façade of formal democratic elements and even rule of law. They seek to underline their democratic character by a strong declarative and rhetorical commitment to democracy, which is however undermined by nearly every aspect of the day-to-day functioning of the regime. There are several areas where the authoritarian character of the regime can be detected: It starts (1) at the level of participation, where elections are either slightly or strongly manipulated by the regime, and where media are shamelessly used for political exploitation and election advertising. (2) Secondly, courts, which are de jure independent, are de facto politically controlled or dominated by the executive branch of government. (3) Thirdly, although government has all rights to exercise the power, several informal and democratically non-legitimate actors such as economic oligarchs and businesses, religious leaders and other cliental-

istic groups claim the control over certain policies for themselves. (Merkel 2010, p 22). Quite frequently (4) ethnic or national issues or questions of territory and national sovereignty are used by the regime as a “scapegoat” to mobilize voters or divert attention from their own particular interests and non-democratic and non-transparent practices (Bohle / Greskovits 2010, p 62). A final and very important element for analysing grey zone regimes is the mutual relationship between political elites and citizens. In order to keep the democratic façade alive and continue operating in the grey zone between democracy and direct authoritarian rule the grey zones regime need to keep a certain level of popular support. How and with which means a necessary level of popular support is achieved by grey zone regimes seems to be one of the crucial questions for empirical analysis of particular countries in Eastern and South-eastern Europe.

Research and Innovation sector in WBC – is there a need for better democratic governance?

Generally speaking, the Western Balkan countries (WBC) are facing many internal and external struggles: from striving EU membership and improving their governance and policies – with the area of Research and Innovation being only one of them, and often not one of high priority¹ to combating poverty, (youth) unemployment, corruption etc. The multiple transformation processes in the last two decades (including the transition from war to peace) had negative consequences also for the region’s research and innovation sectors: today the scientific performance in the region is for the most part below that of the average EU country; the R&D capacities of WBC have been greatly affected by brain drain and underinvestment in research; (see also Švarc et.al 2013); technology transfer activities are scarce in the region and collaboration with industry tends to be driven by occasional opportunities rather than by strategic, long-term partnerships². Researchers are calling for stable long-term strategies to promote economic growth and democracy in the WB countries; successful integration into the European Research Area (Lisbon Strategy), as well as into the European Higher Education Area (Bologna Process) is seen as of utmost political and eco-

1 See also Marinkovic/Dall: “Coordination of Research Policies with Western Balkan Countries – 6 Years of European and Regional Dialogue” in this book; p. 39.

2 Comprehensive analysis of different aspects of Research and Innovation sectors in WBC is provided in several articles of this publication. See e.g. Radosevic: “Technology Upgrading and RTD Challenges in Western Balkan Region: Issues and Policy Options”, p.58 and Vujovic: “Western Balkans Regional R&D Strategy for Innovation”, p.71

conomic relevance; the cooperation in R&D has been part of the Stabilization and Association Agreements negotiated by the EU and their implementation provides a natural framework for the progressive compliance with the EU *Acquis Communautaire* in the field of R&D (see chapter 25, “Science and Research”) and EU enlargement process remains the “only game in the town”.

And while the Western Balkan countries have changed essentially in comparison to the 1990s, democratic stagnation is the defining characteristic of the past decades, while the state of democracy in WBC seriously influence also the governance of national research and innovation policies. For a good reason, democracy, democracy promotion, good governance etc. are (again) prominently represented in different regional and/or European strategies focusing WBC. The Enlargement strategy 2013³ makes the relevance of addressing the rule of law, democracy and the economy as a key lesson from the past:

“The accession process today is more rigorous and comprehensive than in the past. This reflects the evolution of EU policies as well as lessons learned from previous enlargements. The process is built on strict but fair conditionality with progress towards membership dependent on the steps taken by each country to meet the established criteria. A key lesson from the past is the importance of addressing the fundamentals first [Rule of Law, Democracy and the Economy].” (p.1)

It also makes clear that proper functioning of core institutions is vital:

“The Copenhagen political criteria require candidate countries to achieve stability of institutions guaranteeing democracy. The proper functioning of core institutions is vital, whether the national parliament, the government or the public administration. The transparency, accountability and effectiveness of institutions and public administrations, including a greater focus on the needs of citizens and business, needs to be prioritised in most enlargement countries. More needs to be done to strengthen participatory democracy and establish national platforms for EU-related reforms that build a consensus across parties and wider society to support the major reforms required. The countries also need to find an appropriate balance between central, regional and local government that best supports implementation of reforms and the delivery of services to citizens. The role of regional and local authorities in the EU alignment process and eventual application of EU rules is also key.” (p.8)

The Regional R&D Strategy for Innovation⁴ formulated four intermediate goals while including the recommendation on strengthening the governance of research and innovation policies. The “Governance for Growth pillar” within SEE 2020 Strategy is considered to be a cross-cutting component and a prerequisite for the achievement of the Strategy’s objectives and for the effective implementation of the Strategy’s policy measures and instruments across all pillars ((i) integrated, (ii) smart, (iii) sustainable, and (iv) inclusive growth):

“There is ample evidence that institutions – particularly those involved with governance – contribute significantly to development and growth. Positive contributions come from inclusiveness, responsiveness, efficiency and fairness (to mention just a few characteristics). The Strategy addresses those institutions that make a direct contribution to costs, to investments – and thus to growth; but a more indirect contribution to growth and welfare, the rule of law, respect for human rights, democratisation and strengthening of the role of public opinion and civil society also needs to be kept in mind. Regional cooperation in this whole area is important in terms of mutual learning and the adoption of best practice, but even more so in terms of long-term stability. Integrated, smart, sustainable growth requires regional institutional harmonisation, regulatory arbitrage, and policy cooperation and coordination.”(p. 29)

To sum up: Bearing in mind the general stagnation of democratic development in WBC on one side and revitalised promotional efforts on relevance of democracy, democratic values and good governance on the other, while at the same time considering stronger voices from the civil society sector and current protests in the region as well as the strengthened regional cooperation, hope can be expressed also towards newest efforts on improving the research and innovation sector in WBC including the governance of research policies. Obviously, there is a need for better democratic governance also in this sector however, state structure depends not merely on criteria for good governance derived from a certain single model, but on the deeply embedded social attitudes and cultures. On the other side, the global crisis of democracy and of traditional values and norms attached to democracy has become part of the current Balkans landscape as well.⁵

4 Other three goals are: a) Improve the research base and conditions for research excellence; b) Promote collaboration and technology transfer between research institutions and industry; c) Enable business innovation and innovative start-ups. WBRIS 2013, p.7. Online: <http://www.worldbank.org/content/dam/Worldbank/document/eca/WBRIS%20Strategy10-21-13%20web.pdf>

5 Džihic / Hamilton (ed) (2012): Unfinished Business: The Western Balkans and the International Community; p. 16. Online: <http://transatlantic.sais-jhu.edu/publications/Unfinished%20Business>

Part II:

Science and Research in WBC – WBC-INCO.NET's Findings

Priority Setting in Research Policy – the Experiences in WBC-INCO.NET

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Input to this article was also taken from the deliverable D2.8 “Guidelines and description of methodology for S&T priority setting” first published within WBC-INCO.NET project by Claire Nauwelaers, René Wintjes, Cristiano Cagnin and Totti Könnölä in 2008 that was edited by Ines Marinkovic and Elke Dall in 2014 for the purposes of the WBC-INCO.NET final publication.

Prioritisation in science and technology policy refers to the process of selection of thematic areas of research, which are seen as most relevant and important for the socio-economic and sustainable development of the country. Prioritisation on the public research side is necessary for two main reasons. Firstly, prioritisation needs to be done on public side because of budgetary limitation. Without prioritisation there is a (likely) danger that the limited public budget will be scattered and fragmented along too many unrelated research projects. Second, another reason for prioritisation is to express the societal relevance of certain research questions: a large part of R&D activities are considered as valuable activities through their contribution to larger societal development goals, and hence the most relevant activities should be given higher priority.

There is a danger that prioritisation exercises remain disconnected from actual policy-making; the prioritisation exercise is of value if it is clearly linked to policies, and results in decisions concerning the distribution of public research funds. For this, a number of starting conditions need to be fulfilled:

- Presence of political commitment to implement consequences of prioritisation in actual policy-making;
- Consensus between various Ministries and Agencies in charge of policy implementation, to avoid competing priorities;
- Long term views on prioritisation.

Identifying priority areas in research and innovation for the region of the Western Balkans is a crucial element for strategic cooperation among the countries of

the region. The demand for commonly agreed significant research topics arises among others from the need to provide input to a regional strategy; furthermore, regional research priorities could be fed into the development of Work Programmes of the European Commission's Framework Programme.

The WBC-INCO.NET Methodology for Priority Setting

WBC-INCO.NET's activities on priority setting aimed at the identification of regional research priorities of common interest with and within the Western Balkan countries. A number of tasks contributed to this aim, namely the

- development of a conceptual approach to the consultation process,
- screening of other FP7 projects identifying priorities in the region,
- analysis of the national research priorities in the WBC,
- dialogue with the respective thematic Cooperation Directorates in DG RTDI,
- implementation of the consultation process, and the
- reflection of the identified priorities by the civil society.

In the frame of WBC-INCO.NET, the priority setting and consultation process was designed under the lead of the Project Management Agency at the German Aerospace Centre and the German Federal Ministry of Education and Research, involving most of the consortium partners.

The consultation procedure was based on a sound concept presenting a consultative methodology in a transparent way. It foresaw well prepared Workshops called "consultation sessions" involving stakeholders from all Western Balkan countries. Thus, the project team invited political decision makers, researchers, experts, industry representatives, FP 7 National Contact Point representatives, and members/observers of the FP7 Programme Committees dealing with the FP7 Work Programmes. Representatives from the European Commission's Directorate General Research and Innovation were also involved.

The topics selected for identifying research priorities were chosen along the Themes of FP7 as follows:

- Agriculture/Food/Biotechnology
- Energy

- Environment
- Health
- Information and Communication Technologies (ICT)
- Social Sciences and Humanities
- Transport

They were considered by the project partners from the Western Balkan countries to be the most relevant and to have the maximum potential for regional and European cooperation.

The consultation sessions were prepared by background reports on the S&T systems of the Western Balkan countries. These documents were drafted by renowned national experts of each of the countries and they provide a detailed insight into the research and innovation landscape and an overview of political initiatives, running programmes and important projects. In the fields of ICT and Agriculture, the consultation sessions were organised in close cooperation with two Coordination and Support Actions (SCORE and BAFN projects). In these projects, priorities for most of the Western Balkan countries were identified in the fields of ICT and Agriculture/Food. These results were used for the preparation of the WBC-INCO.NET consultation sessions.

The three consultation sessions in the fields of Transport, Social Sciences and Humanities and Energy were combined with great European Conferences and brokerage events: SEETRANS 2011 - Transport Research Opportunities for South East Europe in the EU (Ljubljana/Slovenia, April 12 and 13, 2011), Challenge Social Innovation (Vienna/Austria, September 19-21, 2011), and the European Energy Conference "E2C" (Maastricht/The Netherlands, April 17-20, 2012). The benefit was twofold: firstly, the stakeholders from the Western Balkan countries could participate in the conferences and took part in the discussions which fostered integration into the European Research Area; and secondly, they were involved in the matchmaking of the brokerage events and could meet potential project partners. Furthermore, side events and an exhibition stand to showcase research excellence in the region were arranged during the conferences.

The results of the consultation process, regional research priorities in seven thematic fields, are given in Table 2. These findings, together with the background reports on the respective S&T systems in the Western Balkan countries, are considered very helpful and important (not only) for the national priority setting and strategy building processes in the region. In this context, the

Regional R&D Strategy for Innovation for the Western Balkans, and the SEE (South East European) 2020 Strategy of the Regional Cooperation Council play an important role. Furthermore, as the results and the regional research priorities are oriented along the FP7 Cooperation Themes, they can give valuable input for the drafting of future Work Programmes in European and other Programmes, such as Horizon 2020 and others. They also can support and structure the participation of researchers from the Western Balkan region in projects and initiatives of the EU Framework Programme.

As outlined above, the possibility of informing the European Commission about specific research topics of relevance for the WBCs, with the view of integrating these in the work programmes of the FP, was one of the starting points for the WBC-INCO.NET Workpackage on Priority Setting. The idea was to identify such topics based on:

- The identification of common interest for the WBC and the EU Member States;
- The policy relevance, for WBC and EU in general, and especially for the enlargement process;
- Special research niches (= strengths) in the WBC.

The definition of the methodology for the priority setting was led by United Nations University, Maastricht Economic and Social Research and Training Centre on Innovation and Technology (MERIT), The Netherlands. Their report (D2.8, presented in 2008) focuses on the role and means for S&T prioritisation for national policy-making in the area of R&D, and sees the determination of joint priorities across WBCs as a second step. The claim in this report is hence that such a process should be carried out in two steps:

1. Identification of suitable priorities from a national perspective;
2. Search for joint priorities across WBC, based on shared or complementary themes emerging from the first step.

Another thesis in this report is that the quality of prioritisation exercise influences the likelihood of its impact on actual policy-making.

The analysis of actual practice in Europe shows that there are three main types of outcomes of prioritisation exercises:

1. Thematic R&D programmes (targeted to public, or private R&D performers, of collaborative ventures);

2. Structural funding for dedicated Public Research Organisations covering the elected themes;
3. Selection of clusters or competitiveness poles around the identified priorities.

In practice, criteria for selecting S&T priorities are twofold: they relate to both the strength and relevance of research capacities.

The report investigates also two types of methods that can be used by national stakeholders to identify priority themes for R&D policy:

- Quantitative and empirically-based approaches, focusing on measurement of national S&T strengths and weaknesses: this covers notably the use of bibliometric and patent data to assess scientific and technological strengths, R&D specialisation indexes, but also participation in international research networks. Both public and private research capacities need to be covered. The key challenge here is to capture both quantity (critical mass) and quality (excellence and effectiveness) in scientific and technological specialisation;
- Institutional approaches, focusing on the setting up and use of formal and informal structures to determine priorities in research policy: establishment of advisory councils and permanent consultation mechanisms, foresight processes (which can feed into both types of methods), ad hoc participative exercises, external peer reviews, etc. Objectives of foresight processes include: i) vision building for clarifying shared interests and joint benefits of international collaboration, ii) networking for mobilising R&D communities in different countries and iii) priority setting for formulating promising or potential research themes and corresponding resource allocations.

WBC-INCO.NET partners also confirmed the claim that the use of formalised methods of priority setting contributes to a rise in quality of the prioritisation process, in enhanced likelihood of policy implementation, and in a sounder base for identification of joint priorities at WBC level.

Based on the proposal of different approaches for the prioritisation exercise, among them a foresight-based approach and an approach combining expert consultations and quantitative data analysis, the partners fine-tuned the methodology which involved several steps, which are briefly outlined above in described in more detail in the following.

1. Background reports

In order to prepare and support the consultation process for identifying regional research priorities, background reports on the research and innovation systems for each of the Western Balkan countries were compiled in seven thematic fields. They provide a valuable source of information and a good overview of the research and innovation landscape in the region giving information on institutions, stakeholders, important projects and initiatives. However, the reports and the information given are not exhaustive.

The national background reports were accompanied by a questionnaire assembling the most important data and statistics available with respect to the research and innovation systems. Information in the reports are based on the answers to this questionnaire and enriched by a quantitative data analysis, i.e. using existing data or undertaking primary data collection (e.g. enquiry with Public Research Organisations). The focus was on research strengths and identification of ongoing research projects as potential research priorities.

The content of the reports is structured as follows:

- The S&T system in the respective *Theme* in the respective *country*: The overall policy framework and the elements of research policymaking (national strategies that exist or that are being prepared/planned)
- Overview of research activities
- Research projects
- Key competencies
- Research infrastructure (most important relevant institutions, political, administrative, higher education, public/private research institutions)
- Key drivers of research
- Main sector trends
- Main socio-economic challenges
- Integration of the respective country in the European Research Area in the respective field
- SWOT analysis of research capacity (Strengths, Weaknesses, Opportunities, Threats)

- National research priorities:
 - Research priorities on the basis of the country's readiness
 - Research priorities on the basis of future potential.

In some cases, project partners arranged for an expert panel in their country aiming at discussing the draft national background report and the national priorities identified. Furthermore, this panel served to elaborate views and expert knowledge on societal relevance and strengths of various R&D priorities identified in quantitative and qualitative analyses. The outcome of the expert panel was documented in the national background report.

2. Regional Consultation Sessions

On the basis of the national background reports, regional consultation sessions were organised in seven thematic areas taking into account the national research priorities identified in the countries of the Western Balkans. The following scientific fields were addressed:

- Agriculture/Food/Biotechnology
- Energy
- Environment
- Health
- Information and Communication Technologies (ICT)
- Social Sciences and Humanities
- Transport

Eight consultation sessions took place in the region between December 2008 and April 2012 for the mentioned scientific fields; in the area of Transport, two sessions were arranged in order to refine the priorities identified in a first session in the frame of a follow up session. Stakeholders and experts nominated by the project partners discussed the priorities with the aim to commonly agree upon a set of priorities reflecting the most important topics and strengths in the area of R&D in the region.

3. Broadening the regional consultation process towards a European discussion process

After having organised the first consultation sessions (**ICT, Agro-Food, Health, Environment**), it was recognised that the impact and the visibility at European level of the regional consultation process could be improved in order to integrate it better into the European discussion procedures. This allowed also to the participants to gain more insight into European activities and developments.

Instead of “only” making available the results of the consultation sessions that took place in a rather isolated way, as it was organised in the first four sessions, the consultation sessions were then arranged in combination with big European conferences where research priorities were discussed in a European context. Furthermore, the sessions were organised back-to-back to a brokerage event targeting FP7 calls to be published. Also, European initiatives in the respective thematic fields were presented and discussed among the participants in order to broaden the horizon of the information given.

Thus, a follow up consultation session in the field of **Transport** was organised back to back with the Conference “SEETRANS 2011 - Transport Research Opportunities for South East Europe in the EU”, which was arranged in cooperation with ETNA (networking project for the National Contact Points for Transport), the Ministry of Transport of Slovenia and the Maribor University in Slovenia. Besides the coming FP 7 transport calls, European initiatives were presented such as the South East Europe Transport Observatory (SEETO), Transport Related European Technology Platforms (ETPs), and the European Rail Research Advisory Council (ERRAC). The national background reports were presented in a special side event of the Conference. More than 200 participants from 26 countries took part and around 60 project ideas and institutions were presented.

In the field of **Social Sciences and Humanities** (SSH), a consultation session took place in September 2011 back to back with the conference “Challenge Social Innovation” in Vienna/Austria. Over 40 participants - eminent scientists and high-level researchers, National Contact Points from the region and project partners as well as representatives from Science Ministries and Agencies - attended this WBC-INCO.NET pre-conference event.

The Conference “Challenge Social Innovation – Innovating innovation by research – 100 years after Schumpeter” including a Networking event pertaining to an FP7 Call for Proposals 2012, was attended by 370 participants from 54 countries. It was co-organised by NET4SOCIETY (the Network of Socio-eco-

conomic Sciences and Humanities National Contact Points), the European Commission, the Centre for Social Innovation, Vienna and the Dortmund University of Technology. Experts from the Western Balkan countries participated in the two-day-Conference discussing major topics of Social Innovation. A special session was organised by WBC-INCO.NET and dedicated to the topic of “Social Innovation for inclusion and integration” (see below). There were key-note speeches by renowned researchers and practitioners in the field, from Europe as well as from Canada, the USA, South America, and South-east Asia (Japan, South Korea). A series of sessions took place over three days, moving from policy discussion and debate to FP7 networking and engagement. WBC-INCO.NET co-organised a session on “Social innovation for inclusion and integration”; the national background reports were presented.

The participants developed a joint declaration called “Vienna Declaration – The most relevant topics in social innovation research”. It consists of 14 topical research questions that were voted by the whole of the conference participants in a digital voting procedure from a total of 56 themes suggested (e.g. ‘social entrepreneurship’, ‘society 2.0’, ‘measuring social innovation’, ‘demographic change’ ...). These 14 prioritised topics selected from a total of 56 (identified in 14 thematic sessions) are a starting point to specify crucial research topics in Social Sciences and Humanities, aiming at the identification, development and implementation of the most needed social innovations of the 21st century. In this context, the stakeholders, experts and scientists from the Western Balkan region were directly involved in European priority setting.

The Vienna Declaration was handed over to Máire Geoghegan-Quinn, European Commissioner for Research, Innovation and Science, and an Open Letter from the organisers was sent to her emphasising the content of the Vienna Declaration. In her speech at the British Academy in London on November 10, 2011, Máire Geoghegan-Quinn emphasised that “the Vienna Declaration is a major contribution to a future research agenda on social innovation”.

A focused networking session provided information on the upcoming SSH call for proposals launched in summer 2011. SSH researchers and stakeholders (universities, research institutions, civil society organisations and SMEs) had the opportunity to meet both potential coordinators and potential project partners in a structured networking environment. The participants from the western Balkans had the unique opportunity to get in contact with potential consortia for the next SSH call; in total, 280 bilateral meetings were held with 158 participants.

In order to identify the regional research priorities in the field of **Energy**, a consultation session was organised in the frame of the European Energy Conference “E2C” held in Maastricht/The Netherlands in April 2012. The Conference E2C provided participants with a view and a vision on how the future of energy in Europe could look like. It was a forum to define the role of energy science and research in the transformation process towards the future sustainable European energy system. In the Conference, around 350 participants were registered. WBC-INCO.NET contributed to the Conference by supporting the participation of 18 energy researchers from the Western Balkan countries that took part in all sessions and in the brokerage event organised back-to-back. Two side events were organised during the Conference:

- firstly a public session informing about cooperation possibilities with the region and research excellence; the Energy NCP-Network C-Energy+ contributed to this session by presenting funding possibilities in the frame of the FP7 and the CIP-Programmes; and
- secondly a closed consultation session for the participants from the Western Balkan countries on the identification of regional research priorities; this meeting targeted an FP 7 call based on the background reports provided for the meeting as an input to regional specialisation and to strategy development.

Furthermore, information on WBC-INCO.NET was provided at an exhibition stand to showcase energy research excellence in the region.

The Example of the Energy Consultation Session

For the meetings of the consultation sessions, experts were nominated by the project partners from the Western Balkans (mainly the Ministries in charge of Science/Innovation/Energy) and comprehensive background reports on the energy S&T systems of the WBC were prepared by the nominated experts. The reports are available at the project’s website¹. In these background reports, the national priorities of the Western Balkan countries are presented. Table 1 gives an overview on the priorities on the basis of the country’s readiness and on the country’s future potential on the example of energy research.

1 <http://wbc-inco.net/object/document/9828>

Table 1: Overview of the national priorities of Energy research in the Western Balkan countries

Country	Priorities on the basis of the country's readiness	Priorities on the basis of the country's future potential
AL	<ul style="list-style-type: none"> • Strengthening the international dimension of Albania to the European Research Area (ERA) • Improving the framework conditions for international S&T cooperation • Widening the ERA and making it more open to the world, especially to our neighbours and key international partners. • Ensuring coherence of policies and complementarities of programmes by contributing to the EU's main policy objectives such as fighting climate change or securing energy supplies. • Fostering strategic S&T cooperation with key third countries to guarantee a critical mass of resources. • Developing the attractiveness of Europe as a research partner. • Launching results-oriented partnerships on information society regulation. 	<ul style="list-style-type: none"> • establish a strong voice for university energy research and education at the European level; • ensure that characteristic university attributes such as fundamental research and training, and collaborative activities with industry partners, are properly included in forthcoming EU energy activities in the next Research Framework Programme, entitled Horizon 2020; • facilitate competitive European university groupings to participate in the realisation of the Strategic Energy Technology Plan (SET-Plan) in cooperation with the European Energy Research Alliance; • bind more strongly the various disciplines ranging from natural sciences, engineering to social sciences and arts/humanities to best fulfill the needs of society in energy research; • speak for long term thinking in European research agendas and initiatives, with due consideration given to a balance between top-down and bottom-up research strategies; • to develop environmental technologies and eco-design to design products, services competitive with low environmental impact, if any, throughout their life cycle; • to invent models of buildings and sustainable cities by rethinking the architecture and planning and developing the technologies of energy storage. • The future carbon-free energy with a balance between energy research and research on renewable energy in order to preserve the environment; • enhance the whole plant, not just the edible portion in the new methods of producing bio-fuels in order to avoid harmful competition in the use of agricultural land; develop services and technologies cities and sustainable energy, • improve engine combustion vehicles and preparing the transition to the vehicles with low emitters of CO₂

BiH	<ol style="list-style-type: none"> 1. Establishment of a functional legal framework in the field of energy on the state and entity levels in accordance with the <i>EU Acquis</i> - fulfilling obligations under the Treaty establishing the Energy Community: <ul style="list-style-type: none"> • Energy Sector Development Strategy of Bosnia and Herzegovina • Law on Gas • Law on compulsory stocks of oil 2. Clean Development Mechanism 3. Attracting investment to Bosnia and Herzegovina 	<ol style="list-style-type: none"> 1. Energy Efficiency 2. Structural reforms 3. Renewable Sources of Energy 4. Modernisation of the Coal Sector 5. Natural Gas Sector progress 6. Oil Industry Sector Promotion 7. Resolving open questions with neighbouring countries
KO	<ol style="list-style-type: none"> 1. Energy security 2. Renewable electricity generation 3. Renewable fuel production 4. Renewable for heating and cooling 5. CO₂ capture and storage technologies for zero emission power generation 6. Clean coal technologies 7. Smart energy networks 8. Energy efficiency and energy storage 	
FYROM	<ol style="list-style-type: none"> 1. Knowledge tools for energy related policy making 2. Flexible use of coal 3. Energy efficiency 4. Renewable energy sources 5. Smart grids 	<ol style="list-style-type: none"> 1. Innovative R&D addressing specific components or technologies 2. Developing interconnections among national systems of network energies
MN	<ol style="list-style-type: none"> 1. Renewable electricity generation 2. Innovative Integration of Renewable Energy Supply and Energy Efficiency in Large Buildings 3. Renewables for Heating and Cooling 4. Solar energy 	<ol style="list-style-type: none"> 1. Coal for cogeneration 2. Fossil fuels from domestic sources 3. Cogeneration and gas 4. Energy efficiency in the building sector

RS	<ol style="list-style-type: none"> 1. Energy security improvement 2. Environmentally friendly Thermal Power Plants <ul style="list-style-type: none"> • Co-combustion of selected renewable fuel SRF (selected industrial and municipal waste) and biomass in coal fired Thermal Power Plants • Energy efficiency and environmental impact improvement of the existing low quality coal fired TPP by co-combustion of pre-dried lignite 3. Sustainable renewable energy - Developing new technologies in using renewable energy sources and clean technologies with zero emission <ul style="list-style-type: none"> • Small hydropower plants • Biofuels • Renewables for heating and cooling 4. Increasing the efficiency of energy production, distribution and usage, with special focus on the efficiency of buildings <ul style="list-style-type: none"> • Energy efficiency improvement in the manufacturing industry • Energy Systems Optimization in Smart Cities • Zero net energy building 5. Smart grids and Information technologies implementation in the energy sector 	<ol style="list-style-type: none"> 1. Energy efficiency 2. Renewable energy 3. Smart grids and Information technologies implementation in energy sector 4. Environmentally friendly Power Plants 5. Energy storage systems 6. Power generation in the low temperature range
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Based on these national priorities, the discussion was focused on the identification of and the agreement on regional research priorities of common interest for the Western Balkan Countries. The meeting was attended by national expert delegations from Albania, Bosnia and Herzegovina, the FYR of Macedonia, Kosovo*, Montenegro and Serbia, as well as representatives of WBC-INCO.NET and from the C-Energy + project (network of Energy-NCPs). The specific interest and the strengths of the Western Balkan countries to the priorities were highlighted.

As a result, the following regional research priorities identified during the consultation session in the field of Energy were identified (no preference is given by the order):

- Integral management of river basins
- Bio gas production from waste
- Second generation bio-fuels
- Small hydro-grid connection, system integration, operation and control
- Geothermal heat-pumps in energy efficient buildings
- Zero energy buildings

Cross-Cutting Priorities:

- Coordination of national R&D projects – regional R&DD Fund according to Era-Net model
- RCC – WBIF coordination

Furthermore, the participants of the meeting discussed projects ideas and possibilities of participation in the Energy calls that were included in the draft Work Programme and to be published in July 2012 by the European Commission in the frame of the FP7 Cooperation Programme. Five topics were identified and follow-up coordinators among the participants chosen to continue on possible consortium building and potential proposal submissions.

Impact Assessment: The Example of the Transport Follow-up Consultation Session

In order to evaluate the outcomes of the Conference and the brokerage event, an impact assessment on SEETRANS 2011 was carried out by means of two surveys: a survey in form of a paper questionnaire presented at the SEETRANS 2011 event, and an online survey, which was distributed via e-mail. 40 paper questionnaires were filled in at the event, and 28 responses were received through the online survey, most of them with all statements fulfilled.

The results of both questionnaires showed that all the participants found the SEETRANS workshop useful and that they would like to participate in similar future events. They gained useful knowledge and managed to establish a relationship with other research organisations. The participants would welcome that the workshop be held on an annual basis. They would like to see future events like this, with more time for networking and greater involvement of research organisations from EU Member States.

The majority of the participants acknowledged to have received interesting ideas for their future research at the event and most likely obtained contact information from representatives of the idea(s). But not all of the participants were successful with networking and establishment of new relationships; 12% of those who responded confirmed that they have been involved in the formation of a new consortium that will submit an FP7 project proposal.

The conclusion is that at the event interesting project ideas were presented, along with the needed information about the 7th Framework Programme and other useful information. Some of the participants have been successful in forming a new consortium or becoming part of another consortium. However, it seems that not all of them were successful in networking and not all managed to establish new research collaboration to get involved in the new FP7 calls, but the participants managed to present their institutions and themselves and to connect with other research organisations or SMEs.

Summary of Results – Regional Research Priorities for the Western Balkan Countries

The outcome of the consultation sessions, which were held between 2008 and 2011, was a set of regional research priorities documented in Table 2.

Table 2: Regional Research Priorities for the Western Balkans identified in the consultation process in the thematic fields

Theme	Regional Research Priorities
Information and Communication Technologies	<ul style="list-style-type: none"> • ICTs for enterprises and e-Business • ICTs for Government and e-Government • Network technologies (internet and broadband technologies, mobile technologies) • ICTs for learning and e-Learning • ICTs for Health and e-Health • ICTs for environment and energy • Software engineering
Agriculture_ Food_ Biotechnology	<ol style="list-style-type: none"> 1. Food / feed safety and quality, food biotechnology <ul style="list-style-type: none"> • Preservation of indigenous species and traditional food products (in Western Balkan countries/South East Europe) • Combined exposure of food and feed to environmental pollutants 2. Biodiversity <ul style="list-style-type: none"> • Investigation of regional genetic resources in the WBC (plants, animals and microorganisms) • Interdisciplinary field: Land use impact in agriculture on biodiversity (Topic: renewable energy)
Health	<ul style="list-style-type: none"> • Oncology • Cardiovascular diseases • Public health • Mental health • Infectious diseases
Environment	<ul style="list-style-type: none"> • Biodiversity • Climate change • Sustainable management of natural resources • Cleaner production/Environmental technologies • Ecosystems • Cultural heritage
Transport	<ul style="list-style-type: none"> • Impact of surface transport on environment and safety <ol style="list-style-type: none"> a) Coastal seas b) Inland waterways c) Railways d) Roads • Advanced materials and structures engineering for safer and greener means of transport • Passenger and freight intermodal transport and optimal use of various transport modes • Application of advanced simulations in transport systems • Application of ICT in intelligent transport systems

Social Sciences and Humanities	<ul style="list-style-type: none"> • Employment / Employability (education/skills, labour market) • Economic clusters (WB specific) • Demographic challenges (ageing, investing into younger generation, migration, urbanisation) • Knowledge society (domestic knowledge, competitiveness (global / regional), link between education and competitiveness) • Social changes / Social inequalities and Transition • Social Science and Social movements (grass root movements) • Technology and Innovation, link between research and business
Energy	<ul style="list-style-type: none"> • Integral management of river basins • Bio gas production from waste • Second generation bio-fuels • Small hydro-grid connection, system integration, operation and control • Geothermal heat-pumps in energy efficient buildings • Zero energy buildings <p>Cross-Cutting Priorities identified are:</p> <ul style="list-style-type: none"> • Coordination of national R&D projects – regional Research &Development/ Demonstration Fund according to Era-Net model • Regional Cooperation Council (RCC) – Western Balkans Investment Framework (WBIF) coordination

Conclusions and Outlook

The regional research priorities identified in the consultation process are the result of an intensive discussion which has not been always very easy to perform. In the Western Balkans with its recent past, aiming at finding new identities and strategies for the new countries evolved, it was a challenge to discuss common priorities where all experts can agree upon. Another problem was the fact that the countries of the Western Balkans were almost all associated to the EU framework programme. They could therefore participate with the same rights and obligations as the EU Member States and no special programme of call topics were announced for the region as in FP 6. This made the objective of the consultation process very difficult, since the priorities identified had to compete with input from other big European initiatives and call topics discussed in the Programme Committees meetings. In other INCO-NET projects, which had performed similar tasks of priority setting, Specific International Cooperation Actions (SICAs) were foreseen for these Third Country regions in the Work Programmes; therefore, input on priorities from these INCO-NETs could be taken up much simpler.

Despite these obstacles, the results achieved in the priority setting exercise are very valuable (not only) for the countries of the region itself. The national

background reports draw a comprehensive picture of the S&T landscapes, and the priorities identified (at national and at regional level) constitute a good basis for the development of research and innovation strategies (at national and regional level). This outcome together with the networking effect of the consultation sessions also during the Conferences fosters not least the cooperation among researchers within the region but also of Western Balkan scientists with scientists from the EU Member States.

Commercialization of Research Results / Research & Industry Cooperation

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Introduction

The valorisation of research results is considered an important topic for innovation and competitiveness; in the Western Balkans, the awareness on the commercialisation potential of scientific findings needs to be raised in the scientific community and a closer cooperation between research institutions and industry is required to that end. As researchers are not always familiar with matters such as Intellectual Property Rights (IPR), standardisation, technology transfer matters, business plan writing and marketing, support mechanisms are important to guide them on their way to bringing products to market. A number of preconditions distinct the relevance of mechanisms set in the regional context. These would be most important the mind-set of the researchers, their self-understanding and motivation to co-operate with industry; the relation between researchers and their organisations; and the functionality of the existing networks with industry.

Concerning research attitude and academic culture, the research communities maintain the positive value of curiosity driven resp. strong theory driven basic research, and partially scepticism to applied research exists. The high value of basic research is undisputed, under the continuously scarce financing conditions, the valorisation of research results and the socio-economic impact of research has received more attention. The importance of internationally peer reviewed journals listed in one of the two main databases of SCOPUS or the Web of Science is undoubted, and the use of research results is well documented. For the commercialisation, the “socio-economic” valorisation and industry (or business) application of research findings, measurement is more complex. While in academic journals academic integrity and excellence are key success factors, commercialisation requests other skills and knowledge going beyond

the thematic field of research. With regard to measurement of commercialisation or enhanced academic-industry cooperation, a broader indicator set exists ranging from (worldwide, European, national) granted patents, patent applications, licensing deals or licensing income, development of new technologies or process innovations, spin-off firms on the market and others. There is no standard set of indicators one can apply to compare the performance of a research establishment, also the most commonly used R&D manuals, the Frascati and the Oslo Manuals do not put emphasis on the socio-economic utilisation of research results.

Within the regional context of the WBC one must - if looking on socio-economic utilisation and impact of research - put emphasis on the potential regional use and uptake, the scale and size of the economies, the structures and laws regulating the IPR.

The current article draws conclusions based on a few international projects and initiatives that provide exemplary (all containing investigative elements) insight in current processes. Beside the SEE-ERA.NET PLUS funded projects that are financed from funds originating from the WBC countries, the EU Member States and the EC, two further examples put emphasis on the food sector funding coming from IPA and ERDF funds, and from a European Technology Platform .

The paper does not explain the function of transfer measures e. g at universities in the WBC or provide analysis of measures set, but it provides an insight in current challenges and pilot actions that encourage researchers to share their visions and experiences across national borders and regions.

WBC-INCO.NET activity: How to commercialise research results in the Western Balkans?

In this regard, WBC-INCO.NET organised a Workshop in May 2013 together with the EU funded project SEE-ERA.NET PLUS (South East European Era-Net). In the frame of SEE-ERA.NET PLUS, a Joint Call for research projects was launched commonly by 14 European countries under which 23 multilateral Joint European Research Projects (JERPs) were funded involving 97 research teams. The topics for this Joint Call were set in the field of application oriented ICT and the field of Agriculture/Food, both identified as regional research priorities through a consultation process in WBC-INCO.NET (see chapters 1 and 1.2). The Workshop participants were mainly JERP coordinators or partners in the projects that were strongly interested in the commercialisation of their

results. Finally five projects, their results and potential for – and barriers to – commercialisation were presented.

As a first example, Natasa Golic from the Institute of Molecular Genetics and Genetic Engineering, Belgrade (Serbia) presented the concrete potentials for commercialisation of traditional dairy technologies and autochthonous starter cultures in WBC. As a result of her JERP “Conservation and standardisation of traditional technologies of fermented milk products based on autochthonous lactic acid bacteria” with partners from Croatia and Slovenia, she identified the aggressive marketing strategies of big companies as one problem in the commercialisation of the results from projects of research institutes in the WBC: Indeed the big companies usually prefer Dutch or Danish starters for producing cheeses instead of local starter cultures. No governmental support is given for the production of cheese or to stimulate large companies to produce cheese with starter cultures of geographical origin. Additionally many researchers do not think about IPR clarification prior to the publication or distribution of results. Another point would be the availability of seed money to maintain basic utilisation functions: Many research institutes have no resources to maintain the “value chain”, in the particular case that would mean to invest in clinical studies that cost around 300.000 €. So even if the motivation for commercialisation is vital, most of the time the environment is not supportive as only a large market would ensure adequate return of investments.

As a second example, Tanja Gotlin-Culjak, University of Zagreb, Faculty of Agriculture (Croatia) and Siniša Hrgović, Agricultural Advisory Service (Croatia) informed about the key results and the transfer of knowledge to producers through the agricultural extension service in their JERP “Impact of Oilseed Rape production on functional biodiversity of predators and decomposers – development of management strategies for conservation and improvement in Croatia, Germany and Serbia”. According to their view the commercialisation must be seen in a broader sense: the development of organic farming is also a kind of “product”. In this wider socio-economic view and context, integrated farming and other recent approaches would need more advice service and individual backstopping. Beside direct economic impact, the utilisation of research results can have high importance for society, a particular user group etc. The results of this JERP were presented to the Agricultural Advisory Service of Croatia (ASS). The ASS has existed for about 20 years with 112 offices and 230 employees and informs farmers via TV, radio, info days, web etc. In 2012, the high share of 88% of all activities refers to advisory visits to farmers. According to Siniša Hrgović, one of the biggest challenges is the traditional thinking of farmers, which pre-

vents them from using new knowledge. In some research projects funded in SEE-ERA.NET PLUS, the agricultural advisory organisations providing service to farmers were integrated (Serbia, FYR of Macedonia)¹.

The two examples show the very specific and field specific way of sharing research results with a specific societal impact, not limited only to socio-economic impact but with relevance for the wider society where one must look for other notions and indicators than increased turnover or license income.

An important fact is also the challenge of international cooperation. Where the IPR rules need to be clarified in advance, the limited finances provided would not have had triggered effects one can explore at the end of that multilateral funding activity. It was f. ex. not expected that a patent will be filed, when funding of 150.000 € had to be shared in consortia of 3 to 11 partners².

During the workshop organised, complementing the experiences and views of the researchers, external experts provided specific and detailed information on issues such as Intellectual Property Rights (IPR), and the contribution of research to standardisation. Representatives of the Intellectual Property Office Serbia, the Enterprise Europe Network and the Croatian Agricultural Advisory Service (ASS) gave detailed insight in their professional work for European and national supporting structures. Funding programmes such as CIP, COSME, EUREKA and COST were presented to encourage the scientists and demonstrating financial support possibilities. The industry perspective was presented by a representative of a regional Serbian state-owned forestry company.

The Workshop was arranged back-to-back to the most important regional agricultural fair to give participants the opportunity to meet up with industry representatives.

To wrap up the discussions of five attending JERP-projects, the most important topics and conclusions raised were:

- Intellectual Property Rights are a very important issue for the researchers; but it is also difficult for researchers to approach this issue since they are not experts and need professional support and advice; the national IPR offices can be consulted; some universities also provide guidance and assistance when it comes to the commercialisation of research results.

1 Advisory services and companies offering services to farmers, the advice is free, but soil testing etc. has to be paid by farmers.

2 One must consider the purchasing power parity to estimate the importance of such funding.

- There is a need for a change in the people's mind-set (for researchers, entrepreneurs, but also farmers/researcher's clients) to be more open to innovation issues and to the valorisation of research results bringing products to the market.
- There is currently a change of values in the scientific world: the old "currency" (scientific publications and citations in journals) is being replaced by a new "currency" such as patents, licenses and innovations, but clear measurement and documentation is limited.
- Support structures for the valorisation of research results exist but they are perceived to be insufficient. Helpful institutions supporting the utilisation of practical results are e.g. the Agricultural Advisory Service (ASS); commercialisation efforts are supported by the IPR offices, and at international level by the Enterprise Europe Network. The existing structures could develop more activities directed to research organisations and the researchers.
- Considering the relatively small and regionally focused markets in the WBC and the size of the countries in the Western Balkans, much emphasis should be on regional support structures. Regional Technology Transfer Offices would maintain a basis support function in that regard. Cross-country learning and intensive exchange about current practice of utilisation and communication of research results must be supported to establish sufficient and useful practice. Particular support instruments to enable utilisation and commercialisation must enable and facilitate the learning and exchange function.

Within the field of agriculture and food, two recent European initiatives should be showcased, as they focus directly on national, regional, institutional and research organisations. The first initiative starts from regional circumstances and preconditions and puts forward capacity building and public awareness.

- CAPINFOOD ("Improving the enabling environment and public awareness for innovation in the South-East-European food sector through transnational collaboration")³; this project supports capacity building of institutions supporting innovation in the food sector and promoting public awareness of the benefits of innovation; commu-

nication between stakeholders should be improved. The aim is to facilitate sectoral innovation through transnational cooperation of the national food technology platforms and related institutions. Another objective is developing or upgrading national food innovation strategies and drafting guidelines on collective innovation generation services.

The second initiative originates from the idea of establishing stronger internal links of students and their university professors in the academic food sector through direct joint activities with industry. As learning tool, it demonstrates at practical level the potential of better alignment and cooperation in the sector, moreover the embeddedness in a European Technology Platform gives the activities further impetus:

ECOTROPHELIA EUROPE – a service platform for eco-innovation in food⁴. Ecotrophelia Europe is a flagship competition in order to encourage creativity and innovation in the development of new food products. The target group are eco-innovative student teams of scientific and/or commercial higher education establishments. It is part of the strategy developed within the European Technology Platform “Food for Life”⁵.

Conclusions

Concluding with a positive outlook on future activities on bridging the gap between the academic and industry world, the authors would like to address the following important issues:

A number of Technology Transfer offices have been set up at WBC universities⁶, support structures that facilitate further industry cooperation. A change in the mind-set of researchers and industry representatives is necessary as regards bringing products to market. Nevertheless, academic and applied research can support the public services like the Agricultural Advisory Service (AAS). Nevertheless direct income for the researchers and the research establishments can be presumably low, practical research questions will lead to a more application-oriented attitude of researchers. A key point for future action will be the estab-

4 <http://www.ecotrophelia.eu/>

5 <http://etp.fooddrinkeurope.eu/asp/index.asp>

6 See also the benchmarking of TTO implemented in the course of the TEMPUS project WBCInno on: www.wbc-inno.kg.ac.rs

ishment of favorable IPR rules being acceptable for external parties and within the academic organisations. A clear internal IPR policy taking into consideration also the costs e. g of patenting can increase internal awareness and facilitate learning in case adequate exchange with support structures can be established.

For the utilisation aspects in the wider sense, better understanding of functions of research results is needed for the society beyond socio-economic impact like regulations, standardisation and – directly addressed to the field agro-food - the ecological impact.

The authors are aware that the topic of utilisation of research results and the commercialisation aspects are complex and develop fast. According to our experience, the following effects would deserve more investigation in the WBC:

- Are support structures systematically developed, that put emphasis on utilisation, commercialisation or the IPR protection, and what would be a transferable practice across Europe or across the Western Balkan countries?
- Along the Bologna process, universities have developed a closer relationship with the future employers; to what extent has a similar process been triggered with the industry or the public service sector?
- Should the notion of ‘commercialisation to be primarily linked with industry’ be put in question or must the definition of “industry” in the regional context be reconsidered as service industry? Support for public authorities can be considered as well as important societal impacts of research that do not increase turnover or employment but ensure better lives in society.
- The question whether public owned Regional Technology Transfer Offices (RTOs) or universities perform better with regard to the utilisation of research results would be an interesting point of investigation. Moreover, the mission of newly established higher education establishments does not include research as prominent field of action.

Analysis of Opportunities to Access S&T Infrastructure in the Western Balkans

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Introduction

Research infrastructures (RIs) provide unique opportunities for world-class research and training as well as for stimulating knowledge and technology transfer. They help develop human resources and knowledge and reverse brain drain. Research infrastructures attract the best researchers, thus creating a long-lasting impact on Europe's socio-economic foundations. In this context, access to research infrastructures and specialised services remains a priority for the research community and it is also a key pillar of the European Research Area (ERA).

Already 10 years ago, in 2004, ESFRI (the European Strategy Forum on Research Infrastructures) included 35 Pan-European projects in the first roadmap and these are treated as the cornerstones for the development of pan-European research infrastructures. In parallel, the need to further strengthen the quality of the European research area, innovation, and education systems is further documented in the Commission's Annual Progress Report on the Strategy for Growth and Jobs. The development of the European research infrastructure was further strengthened through the Seventh Framework Programme (FP7) calls and it continues to be enhanced with the new European Framework Programme Horizon 2020. The creation of a European roadmap, ESFRI, and active participation in FP7 has prompted debate also in the Western Balkan Countries (WBC), countries that are fully eligible to participate in the new Horizon 2020 Framework Programme.

Examination

We are able to consider that the term "research infrastructure" refers to the tools that provide essential services to the scientific community in order to be able to execute basic or applied research. This means that RIs concern the whole

range of scientific and technological fields, from natural sciences, through ICT, biotechnology, nanotechnologies, and all the way through social sciences and humanities. Starting from this consideration, WBC-INCO.NET had a special dedicated task to perform an “Analysis of opportunities to access S&T infrastructure”¹.

The methodological approach used was first to develop a questionnaire which was then used to collect data from individual respondents from the EU and the WBC. The general goal was to obtain an overview of the state of the art and cooperation aspects between EU RIs and WBC institutions and to examine cooperation ties and possibilities where researchers from WBC countries can more closely cooperate with EU RIs. Finally, the results and a list of crucial aspects were compiled in one unique summary. Under this task, we managed to obtain 117 responses from EU and WBC research institutions.

Results relevant for WBC research infrastructures and researchers

Today, the importance of a pan-European infrastructure is well established, in particular in areas such as fusion energy, biotechnology, ICT, space, and particle physics. It is rapidly increasing in other areas, which, until now, were mainly supported by national institutions. For example, light and neutron sources, databases for genomics or social sciences, observation networks for environmental sciences, centres for development of new materials or nano-electronics are now at the core of world-class research. The results of our investigation show that research infrastructures cover major equipment or sets of instruments as well as knowledge-containing resources, such as big synchrotrons, large material testing facilities, natural collections, important archives, databases, etc. Answers from our respondents also proved that RIs are often structured as information systems related to data management – enabling information and communication. These include technology based infrastructure such as grid, computing, software and middleware which is allowing also very easy virtual access of all interested research institutions and individual researchers (including researchers from WBC) to easily access them.

Another important group of answers from our respondents shows that most research infrastructures are in operation for more than 26 years, and about 47% have a global dimension. More than 98% of RIs are open to external users, and

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Task 3.4: An analysis of opportunities to access S&T infrastructure was part of Work package 3 of WBC-INCO.NET.

the same results are repeated for RIs that are open to researchers from the WBC. When the respondents from individual research infrastructures talked about different access policies for target groups, they did not specifically mention geographical differences. They mentioned only that there is a difference if the partners come from private as opposed to public organizations. The main difference reported was that researchers from EU MS can be paid, non-EU MS researchers cannot always be funded and supported and they need to have their own budget to stay and work at their institution. But if we consider researchers from the WBC, the respondents underlined that many programmes give opportunities of free access for users from EU member states, including associated and candidate countries, by which we also mean WBC. In this way, we can say that there is no different access policy for researchers from EU Member States and researchers from the WBC. Western Balkans researchers are on an equal footing with regard to formal access policies.

Almost all investigated cases show that the majority of considered infrastructures apply an Open Access policy for research that is open to all interested researchers. Selection is based on the expression of interest, competition, and the selection of proposals, which are evaluated on their scientific excellence by international peer-review. In most cases, the effort and resources required to build new infrastructures or to participate as an active member in already existing pan-European RIs are well beyond those available to single institutions from the WBC. Therefore, there exists a clear need for a proper international approach, including the prerequisite to ensure long-term sustainability of open access with an aim to assure low or no costs to researchers from the WBC.

Respondents from the EU also replied that they have only loose contact with WBC research institutions and that they are lacking proper information about research facilities and research expertise available in the WBC. EU RIs therefore face the problem of whom to contact at research institutions in the WBC. The survey pointed to the very practical problem that all EU RIs respondents were unaware that all WBC are already associated to FP7. Another obstacle that prevents closer cooperation between the EU and the WBC is the fact that there is not yet a consolidated expertise in particular scientific fields (e.g. LIDAR field, DHI Shallow Water Basin), even though specific support actions are needed for these fields also in the WBC.

And what are the main obstacles for EU researchers in accessing research infrastructures in the Western Balkans region? Respondents noted that the main obstacles are differences in policy and financial regulations, lack of contacts and interest from the EU side, limited capacities and facilities in the region, lack

of administrative support, complicated procedures, and language barriers. The poor state and level of infrastructure in the region was most frequently emphasized as the main obstacle in the process.

The analysis also tried to determine the level of governmental financial support for the development of research infrastructure, to obtain opinions on, for example, the correlation between EU and national research programmes, as well as EU and regional networks, and to determine the level of awareness on running regional RTD dialogue, etc. Structural or national funds to support RI activities or investments in the WBC seem to be available in every country. However, in several cases, additional comments stated that these funds fall short of actual needs to efficiently execute RTD activities. The survey showed that problems for research institutions and researchers from the WBC are very basic indeed. There are very limited opportunities to manage intensive cooperation links with important European medium and large-scale research infrastructures. The main reason for this is insufficient financial support of research institutions in the WBC and the absence of excellent infrastructure in the WBC that would enable them to form links with EU RIs. Respondents from the EU replied that they are aware that national research systems in the WBC are lacking sufficient funding, and they also recognized a lack of strength in the specific scientific community and a fragmentation of the WBC research community.

This clearly shows that research infrastructures in the WBC are still not sufficiently developed to meet all the needs of the modern European research environment and to exploit to the full extent the existing human capacities. Still, the main reason for the unsatisfactory level of modernization of infrastructure in the WBC is insufficient funding, since most of the institutions within the survey are funded publicly.

For the WBC, the analysis showed that these countries are sometimes also at different levels of development of their research infrastructures, which results in different levels of involvement in international cooperation. Clearly, there are big differences between, say, Serbia on the one hand and Bosnia and Herzegovina on the other. However, regardless of its current potential in this respect, the WBC research infrastructure institutions are open for cooperation with external users, and scientists are eager to deepen existing cooperations, establish new contacts, and start working on joint projects and initiatives with their colleagues from abroad.

Economically speaking, developed European countries are clearly in a much better position to establish strong cooperation links and networks than the WBC countries. Still, there are some centres of excellence in the WBC, and

they are already able to establish very strong and successful RTD cooperation links with EU RIs through bilateral or joint European projects.

The majority of respondents (from both EU and WBC) stressed that the development of European infrastructures in general would have a very positive effect on existing and future research infrastructures as well as on forming new networks with the WBC. In general, development of and participation in new EU-funded projects opens up new research potential, e.g. hiring of more staff and providing funds for new research equipment, which in the end will also enhance international cooperation. These kinds of activities also contribute to the improvement of research policy and standards, raising the WBC research potential. Often, wider international cooperation brings together different interests from different national and international RTD stakeholders, from the WBC and beyond. Active participation of different stakeholders at the Steering Platform on Research for the WBC has already proved that.

Raising awareness through the WBC-INCO.NET portal

All these findings call for action to be taken in order to raise awareness on the EU level and at the same time to raise awareness also at the national level of the WBC. EU and WBC research institutions need to see where researchers from both groups of countries have opportunities to establish new scientific links and to increase cooperation.

The possibility to provide input to the Research Infrastructure directory which contains information from universities, institutes, faculties, technological centres, and private companies about their research infrastructure, facilities, and important research equipment is open for the lifetime of WBC-INCO.NET and accessible through the WBC-INCO.NET web page: <http://wbc-inco.net/object/infrastructure>.

The information service is structured into the following main sections:

- Data about respondent
- General information about RI and important research equipment
- Operation and upgrade of RI or important research equipment
- Staff, internal, and external users of RI
- Funding of RI

- Scientific impact
- Research services provided to users and researchers

A structure which is based on the RIportal (The European Portal on Research Infrastructures Database) which makes it possible to share data with other European databases that include a mapping of research infrastructures. Currently, there are 117 institutions available in the database².

Conclusion

The accession to the already concluded FP7 framework programme was an important step that was completed for Albania, Bosnia and Herzegovina, the FYR of Macedonia, Montenegro, and Serbia. Croatia became the 28th member state of the EU in 2013. The new framework programme Horizon 2020 that was launched at the beginning of 2014 offers new opportunities and financial support also for the WBC countries. Another important prerequisite for better integration of WBC researchers into ERA is modernisation and investment in research infrastructure and providing the resources for maintenance of scientific equipment. This is a prerequisite for all WBC research institutions which will have also better chances to access EU RIs. Facilitation and networking of existing research infrastructures and building up new research facilities at the interregional level can help strengthen the mobility of WBC and EU researchers even further as scientists will be able to jointly use infrastructures.

Results from the analysis proved that governments from the WBC need to find the right balance between restrictive economic policies that are necessary for macroeconomic stabilization purposes and other types of policies and activities with long-term effects which can contribute to improving national systems of research.

The investigation also proved that ties between the WBC and EU RI institutions have already been established, but a lot of the European institutions are aware that the WBC have very limited possibilities to manage intensive cooperation links with important European medium-scale and large-scale research infrastructures. The main reason for this is a lack of sufficient national funding for RIs, sometimes also a lack of excellence in specific scientific domains and the fragmentation of the WBC research community itself.

The support to gain access to medium-scale and large-scale RIs is of great importance to all WBC. Furthermore, the opening up of the world-class research infrastructure in Europe to the researchers coming from the WBC is therefore an important aspect. At the same time, promoting centres of excellence in the WBC and encouraging visiting researchers from EU member states to come to the WBC is an important action to be taken. Also, the integration of the WBC into existing networks of research infrastructure in Europe is still an important task that needs to be further strengthened through joint research activities (ERA-NETs, INCO.NETs, and JPIs) and policy actions. The Steering Platform on Research in the WBC therefore plays a crucial role in continuing to enhance the development of new actions, strengthen cooperation, and improve research infrastructures in the WBC countries.

Cooperation Patters in the Framework Programmes with a Focus on ICT

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The term ‘cooperation pattern’ refers to several dimensions, such as thematic priorities and fields, different funding instruments, and the cooperation with different partner countries, and is based on the formal relations between countries through shared project participations.

The analytical work of WBC-INCO.NET has included extensive work on cooperation patterns of the Western Balkan countries (WBC) in the international research cooperation programmes FP6 and FP7. Additionally, SEE-ERA.NET, a specific programme for South Eastern Europe, was analysed.

The cooperation patterns of the WBC show general similarities in each of the programmes, such as the high relevance of the field of Information and Communication Technology or the field of Food Quality and Safety. Although the thematic priorities have been re-arranged or re-named, there is continuity in the thematic orientation and priorities when comparing FP6 and FP7.

The smaller WBC have a less balanced profile regarding their representation in different thematic priorities and fields than Croatia or Serbia. For smaller countries, cooperation within the Western Balkans region as well as with partners from the wider region (Central, Southern, and Eastern Europe) is still more important, whereas Croatia shows a clear orientation towards the main cluster of EU 27 countries and a cooperation pattern which is independent from the regional context. Serbia, in contrast, takes an intermediate position. Compared with Croatia, it is still more involved in regional cooperation.

We chose to benchmark the different countries against each other within different programmes, and one also has to note that some aspects of the patterns are influenced by the programme and its specific conditions at a given time, e.g. the existence of the specific “INCO” or “REGPOT” projects which targeted the region, the EU enlargement in 2004 and 2007 respectively, Serbia and Montenegro who still formed a state union during part of the programme implementation, or Kosovo*, which is not listed as a separate geographical unit, etc. The approach to international cooperation in FP7 was more open and the Western Balkan countries, as well as a long list of so-called “international cooperation partner countries” were eligible to participate and were actively invited.

The WBC chose to associate to the Framework Programme when a good possibility was offered. The “entry ticket” for FP7 was partly supported through funds from the Instrument for Pre-Accession (IPA). Associated countries have the same rights to participate in the programme as Member States. The different timing for the association to the Framework Programme has to be considered when benchmarking the countries.¹

The study included a dataset of approximately 70,000 projects of the 6th Framework Programme (FP6), which ran from 2002 to 2006. All Western Balkan Countries had the status of third countries, except Croatia, which was associated to FP6 in the final year of its implementation. The 7th Framework Programme (FP7) ran from 2007 to 2013 and was active at the time of analysis in the WBC-INCO.NET project (the cut-off date was July 30, 2009). The FP7 dataset only included projects with participants from the region. The constructed FP7 network therefore doesn't entail information on the overall cooperation pattern of non-WBC countries, so there was no possibility to compare the complete network with the WBC network. But on the other hand, it included information on proposals and proposal status, which enabled us to compare proposals and actual contracts for the WBC. The study on SEE-ERA.NET included the whole universe of all projects presented under the calls.

The WBC-INCO.NET deliverables provide a detailed overview for all three programmes in three different parts. For the purpose of this report, we focus on the Framework Programmes and on the specific priorities tackling information and communication technologies. Furthermore, we provide a short update on FP7 cooperation patterns.

Table 1 below shows the distribution of project participations for the WBC in FP6 for the three specific programmes “Thematic priorities”, “Strengthening the ERA” and “Structuring the ERA”. It immediately reveals a characteristic that prevails throughout FP6 and FP7: Among the WBC, Croatia takes the leading position, closely followed by Serbia / the state union of Serbia and Montenegro. The number of project participations from Albania, Bosnia and Herzegovina, and the FYR of Macedonia in the thematic priorities is similar and sets this group clearly apart from the two bigger countries both on the level of total participations and in specific thematic priorities.

1 Croatia, the FYR of Macedonia, and Serbia: the MoU were signed on 13 June, 2007, the provisions are applicable as of 1 January 2007. Albania and Montenegro: the MoU were signed on 17 December 2007 and 25 January 2008, respectively, and the provisions of both association instruments are applicable as of 1 January 2008. Bosnia & Herzegovina: the MoU was signed on 24 November 2008, and the provisions of this association instrument are applicable as of 1 January 2009.

In the category “thematic priorities”, all countries under study have their highest proportion in “Information Society Technologies (IST)”, followed by “Sustainable development”, “Food quality and safety”, and finally “Citizens and governance”. “Life Sciences”, “Nanotechnologies”, and “Aeronautics and space” remain rather marginal in this perspective – with the exception of the relatively high Croatian participation in the field of “Life sciences”.

The countries of the second group are not represented in all of the thematic priorities. They show very weak or no participation in the fields “Life sciences”, “Nanotechnologies”, and “Aeronautics and Space”. Albania is not represented in the field “Sustainable development”, and the FYR of Macedonia is interestingly not represented in the otherwise rather well-occupied category “Citizens and governance”.

Table 1: Number of projects in FP6 in all thematic priorities and fields

PROJECTS	Albania	Bosnia and Herzegovina	Croatia	FYR of Macedonia	Serbia and Montenegro	
THEMATIC PRIORITIES						SUM²
1. Life sciences	0	0	11	1	6	18
2. IST	9	8	20	12	19	68
3. Nanotechnologies	1	0	2	0	4	7
4. Aeronautics and space	0	0	0	0	1	1
5. Food quality and safety	2	2	10	1	7	22
6. Sustainable development	0	1	15	4	11	31
7. Citizens and governance	2	3	9	0	7	21
SUM:	14	14	67	18	55	168
STRENGTHENING ERA						0
Horizontal research (SMEs)	0	0	3	0	0	3
Policy support	0	3	10	0	2	15
International cooperation	14	20	26	22	37	119
Coherent development	0	0	1	0	1	2
Coordination of activities	1	1	2	1	1	6
SUM:	15	24	42	23	41	145
STRUCTURING ERA						0
Research and innovation	1	0	6	0	1	8

Human resources and mobility	0	0	8	0	1	9
Research infrastructures	4	3	8	4	4	23
Science and society	1	1	3	0	2	7
SUM:	6	4	25	4	8	47
TOTAL SUM:	35	42	134	45	104	360

The smaller differences in the general category “Strengthening the ERA” are due to calls often being aimed specifically at strengthening the ability to participate in European and international research – the projects have a network aspect to them in trying to integrate the national and European institutional landscape and to foster cooperation. “Support of international cooperation” is consequently the thematic field with the highest WBC participation.

Projects in which the research institutions e.g. of the FYR of Macedonia or Bosnia and Herzegovina are participating are usually specifically targeted towards the region, i.e. projects in which more partners from the region participate (“internal WBC cooperation”). The dominance of certain instruments is striking but not surprising: Specific Support Actions (SSA), Specific Targeted Research Projects (STREP) and Coordination Actions (CA) make up for most WBC participations in FP6. All of the WBC countries show high activity with regard to these instruments, which were already available in FP5 and are aimed at developing potential for research and development and comprise the organisation of conferences, seminars, and research as well as establishing networks and at coordinating joint actions. Primarily Croatia and the state Union Serbia and Montenegro could achieve a participation in the new and more demanding instruments in FP6, Networks of Excellence (NoE) and Integrated Projects (IP).

The overall numbers for coordinators from the region are very low as well and restricted to a small number of thematic fields, including “Life Sciences”, “IST”, “International cooperation”, and “Research and innovation”. The thematic field with the highest number of WBC coordinators is “Specific measures in support of international cooperation”, where participants from third countries were invited to present proposals specifically targeted at them so that this thematic field has a very unique structure with particularly strong connectedness

between the WBC, while the EU27 and other countries (with few exceptions) play a less significant role.

The overall participation pattern in the European framework programme clearly shows a centre-periphery structure with a similar group of countries dominating in all thematic fields. This group consists of the established member states of the European Union with Germany, the United Kingdom, France, and Italy at the forefront, followed by a second group of Central, Northern, and Southern European countries. Cooperation is oriented towards this main cluster – which means that a success in participation is tantamount to building relational ties to this cluster.

Thus the WBC are located in a regional cluster, in which only Croatia is not that much integrated, but oriented towards the main cluster of EU Member States. In contrast, 31.8% of all Albanian project partners are from other WBC. Western and Central Europe – the regions which comprise the most successful FP6 participants – add up to about the same proportion (31.6%) followed by Southern European and South-Eastern European partners. The most important Albanian EU27 partner is Greece and interestingly, Belgium takes the second position even before Germany and Italy. Albanian participation is particularly strong within the thematic priority IST.

The high percentage of WBC partners is even more pronounced for Bosnia and Herzegovina with 37.1%. Despite the general similarities between Albania and Bosnia and Herzegovina, cooperation with EU27 partners reveals some differences, in particular the strong presence of partners from the United Kingdom who concentrate on a relatively small number of projects. Bosnia and Herzegovina is more oriented towards central European partners than Albania, with many partners from Slovenia, Austria, and Germany. Again, IST shows by far the highest number of shared participations (total sum of 107) while the other thematic priorities remain on a very low quantitative level.

When looking at the regional cooperation patterns, the picture changes completely for Croatia. Cooperation partners from the WBC only make up for 11.7% of all Croatian partners. Croatia is oriented towards the main FP6 cluster consisting of Germany, Italy, the United Kingdom, France, and Spain. Croatia is connected to nearly all the EU27 in every thematic field. Croatia still shows considerable activity in the thematic field “Specific measures in support of international cooperation”, where the interconnectedness with the other WBC is strong.

The FYR of Macedonia is well connected with Southern Europe. Greece has established its role as the most important regional cooperation partner for the WBC, in particular for the smaller countries. Furthermore, the role of smaller

EU27 countries such as Austria and Slovenia that have a clear political focus on cooperation with the region becomes evident. The FYR of Macedonia shows the least diversified profile among the WBC with regard to the distribution of projects across thematic fields.

In comparison with the Croatian distribution, the state union Serbia and Montenegro is much more integrated with the WBC and it is clearly set apart from the smaller WBC due to its stronger integration with Western and Central Europe. The distribution for EU27 research partners clearly indicates an orientation towards the main FP6 cluster with Germany and United Kingdom showing the highest proportions.

For the WBC-INCO.NET deliverable, overall nine thematic fields have been selected for further analysis, here some results for the domain of IST (Information Society Technologies) are presented, which is the densest network among all thematic networks. The network has 90 participating countries and is in this regard the third largest FP6 sub-network. It is at the same time the network with the highest number of WBC participations.

The general characteristics of the IST network suggest that this thematic priority offers possibilities of participation for a wide range of countries – including non-EU members and geographically distant international participants. The thematic priority IST is at the same time strongly occupied by the established EU27 members including Germany, France, the United Kingdom, Italy, and Spain. The total shares of the top 15 countries amount to 78%, whereas the remaining 75 countries together share about 22% of the total degree sum (= overall sum of connections between countries). Consequently, the countries in the “periphery” of the main cluster are clearly separated with regard to the density of their cooperation networks, including the WBC.

The highest ranked WBC is Croatia (rank 36), closely followed by the state union Serbia and Montenegro (rank 38), the FYR of Macedonia (rank 40), Albania (rank 44), and finally Bosnia and Herzegovina (rank 46). Thus, the WBC achieve rankings in the middle field of IST. They are relatively successful in the IST thematic priority regarding their “connectedness” within the network. Throughout all thematic priorities the WBC – and even Croatia – are part of the periphery and in several cases they rank below other non-EU members, in particular large countries like the Russian federation or China.

Network analysis and visualisation clearly illustrate the differences among the WBC. EGO networks show all projects with participants from one WBC and the respective participants from other countries as connected through different projects.

For example, the Albanian network shows that important links in FP6 in the field of IST have been established through two projects, namely CALIMERA and IDEALIST7FP, which are characterised by a relatively large number of different national partners.

Albania has not been partner in the initial IDEAL-IST project that covered FP6 but has been integrated in the follow-up project that was launched at the end of FP6 to support the ICT priority in FP7. IDEAL-IST³ addresses ICT companies and research organisations worldwide wishing to find project partners for participation in FP7. CALIMERA⁴ supported cultural institutions and libraries and ended in 2006.

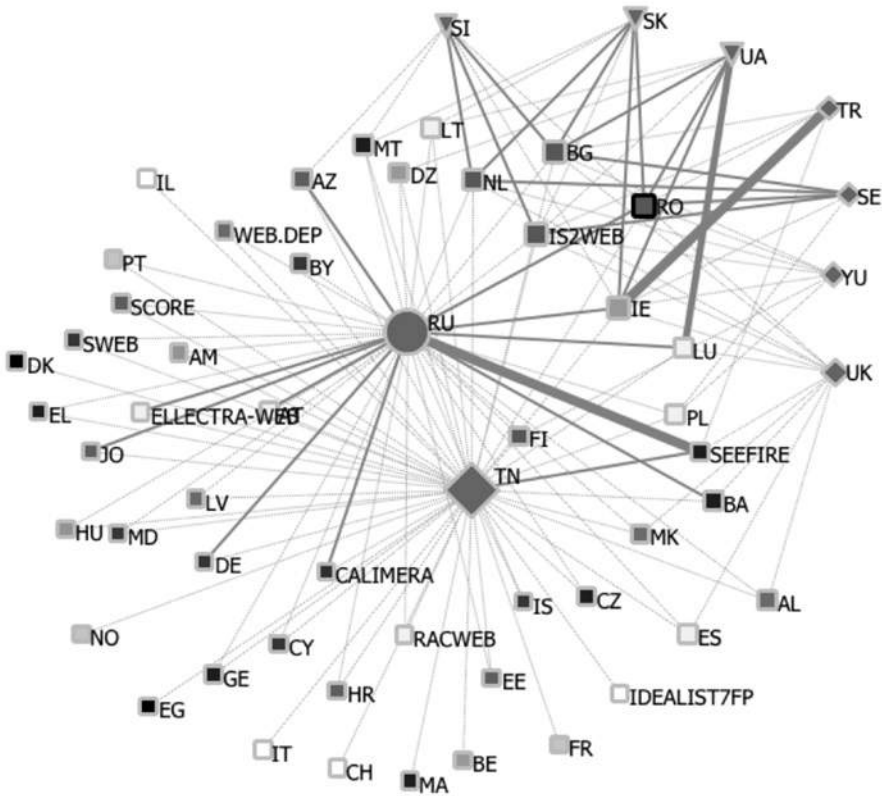
Albania was a partner in several other projects, but one can see that those were mainly projects with a specific focus on the region of South East Europe or the Western Balkan countries. Besides WBC partners, these projects were predominantly joined by Central European countries such as Germany, Austria, Slovenia, and the Czech Republic, which were also partners in CALIMERA and IDEAL-IST and thus bridging the regional oriented projects with projects more integrated with the EU27 and international participants. Also Italy and in particular Greece, which is strongly represented in the smaller IST projects, had a similar bridging function. Thus the importance of Greece as an Albanian cooperation partner is even more pronounced when considering the high level of institutional involvement (not simply shared participations on national level) and the indicated bridging function.

Furthermore, Albania is represented in four projects with more than one national institution (CALIMERA, RACWEB, SCORE, SWEB).

3 <http://www.ideal-ist.net/>

4 <http://www.calimera.org>

Figure 1: Visualisation of the Albanian EGO network in the thematic field IST



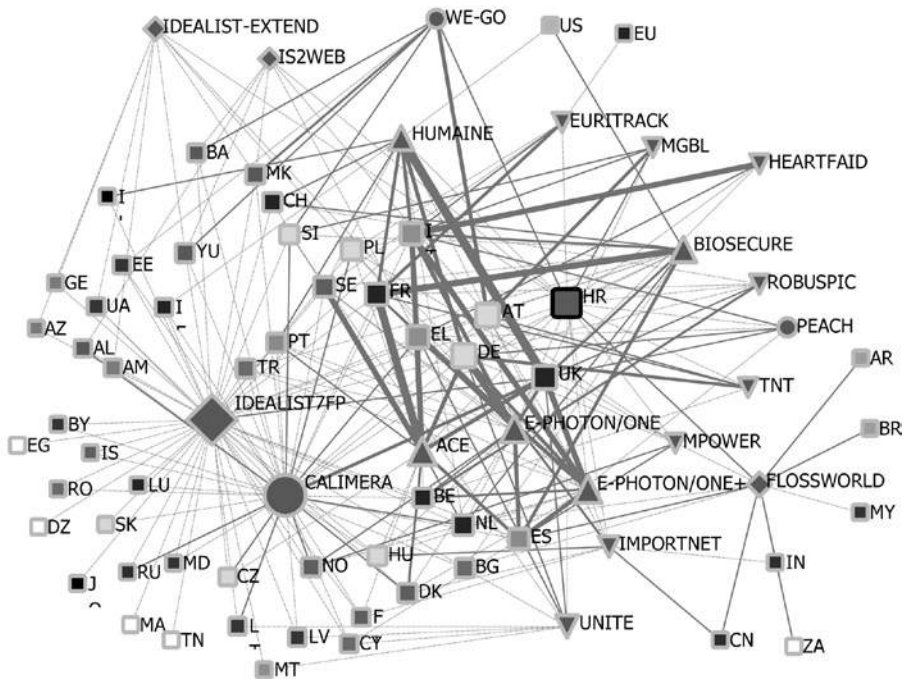
Bosnia and Herzegovina shows a network structure very similar to that of Albania. The two countries show a considerable overlap in project participations, both being represented in the large EU 27 oriented projects CALIMERA and IDEALIST7FP as well as in several “regional” WBC-dominated projects.

In contrast to the other smaller WBC, the FYR of Macedonia clearly shows a more extended cooperation network in the IST thematic field, whereas the structure remains very similar. The network comprises 12 different projects (6 SSA, 2 CA, 4 STREP). The bridging function of Central European countries becomes even more evident with the additional project IDEALIST-EXTEND and XPERO, which has participations from Germany, Austria, and Slovenia.

The Croatian network in IST is one of the densest and largest WBC networks within all thematic fields. Due to this density, the visualised structure is much more difficult to capture. Despite the still observable overlap compared to the networks of the smaller WBC, the Croatian network features several additional projects, in particular Networks of Excellence (NOE), which are build-

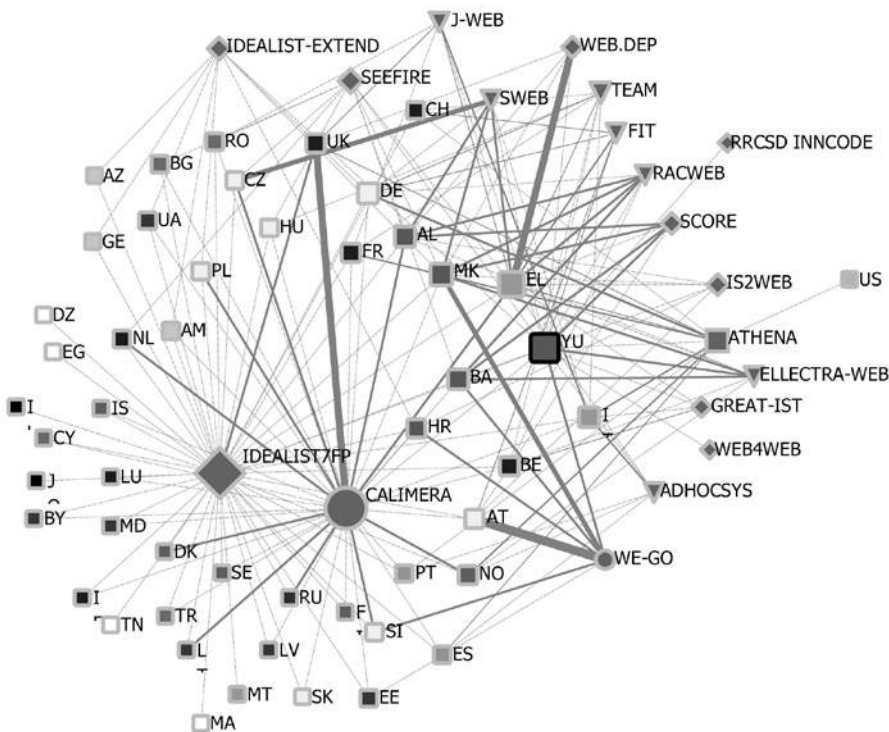
ing a strong cooperation network among Central and Western European countries and Croatia, including Germany, France, the United Kingdom, Italy, Spain, Greece, Austria, and Slovenia as the projects' participants with relatively high institutional involvement (thick links in the centre of Figure 2). The institutional participation of Croatia in these NOE is significantly weaker compared with the EU 27 countries, but the NOE participation is anyhow responsible for the much stronger cooperation with the main FP6 cluster of EU 27 countries compared to the smaller WBC. Thus, NOE can be interpreted as an “entry gate” to the main cluster, which at the time of FP6 was still rather closed for the smaller WBC, which were not participating in any NOE. The visualisation also confirms that Croatia is not really associated with the other WBC anymore. Furthermore, the Croatian network also includes more international cooperation partners and has a wider periphery in comparison with other WBC.

Figure 2: Visualisation of the Croatian EGO network in the thematic field IST



The IST network of Serbia and Montenegro resembles the structure observed for the smaller countries to a higher degree than that of Croatia (see Figure 3). The difference to the smaller countries is rather quantitative in terms of the number of project participations. However, Serbia does not participate in any NOE and thus is significantly less integrated with the main cluster than Croatia. Furthermore, it is observable that the Serbian and Montenegrin network is missing the extended periphery we observed in the Croatian case. There is no significant increase in the number of cooperating countries compared with the FYR of Macedonia or even Albania and Bosnia and Herzegovina. Interestingly, the state union is the only WBC which participates in an IP (ATHENA) with several of the FP6 main cluster countries, e.g. Germany, the United Kingdom, Greece, etc.

Figure 3: Visualisation of the Serbian and Montenegrin EGO network in the thematic field IST



In a second part of the WBC-INCO.NET deliverable, the Seventh Framework Programme on Research and Technological Development (FP7) was in the focus. But based on the timing of the analysis, which was done in 2010, only general conclusions could be reported.

In 2014, the European Commission provided an analysis of FP7 participation which can be used here as a brief update. While for example in the 2010 analysis, only 52 projects with Serbian participation could be included, the overall record after FP7 finished is 292 participants from Serbia who received €52.17 million. Consequently, the conclusions drawn are based on a rather small initial sample.

Table 2: FP7 participation as presented at the Horizon 2020 Launch Conference, Budva, 4. March 2014

Data	AL	BiH	MK	ME	RS	XK
Number of participants	32	42	98	51	292	5
Total EU financial contribution in million Euro	1.96	2.46	10.73	4.06	52.15	0.29
Number of applicants	280	363	594	194	2059	28
Top collaborative links	1. EL 2. IT 3. FR 4. ES 5. DE	1. ES 2. DE 3. IT 4. RS 5. RO	1. UK 2. IT 3. DE 4. EL 5. BG	1. FR 2. EL 3. RS 4. BG 5. TR	1. DE 2. UK 3. IT 4. ES 5. FR	1. IT 2. AT 2. EL 4. DE 4. BG

In the 2009 analysis, the following grouping could be observed: Croatia and Serbia at the forefront followed by the FYR of Macedonia, which shows an intensified activity, and finally a block of smaller WBC, including Albania, Bosnia and Herzegovina, and Montenegro. FP7 also features few participations from Kosovo*, which is now also an independent actor in the European framework programme.

“Information and Communication Technologies” (ICT), formerly “IST” was continued as one of the ten thematic fields of the Coordination sub-programme, and is still the dominating thematic priority for WBC participation.

The distribution for the specific programme CAPACITIES in general resembles the FP6 structure. The strongest thematic fields, REGPOT (research potential) and INFRA (Research infrastructures) show the highest shares within the programme, in particular REGPOT, which is the thematic field with the highest number of projects, as specific calls for the region have been launched and intensively promoted.

With regard to funding instruments, participation of the WBC concentrated on CPs (Collaborative Projects), which are research projects aimed at the development of new knowledge, new technology, products, demonstration activities, or common resources for research, and CSAs (Coordination and Support Actions), which aim at coordinating and supporting research activities and policies (networking, exchanges, trans-national access to research infrastructures, studies, conferences, etc.)⁵. In addition, there is a mixed category CP-CSA, which features combined characteristics from both funding instruments. The distribution resembles the one we found for FP6 when assuming continuity between CP and STREP (Specific targeted research projects, instrument type in FP6) as well as CSA and SSA (Specific Support Action) respectively CA (Coordination Action).

The participations of the smaller WBC Albania, Bosnia and Herzegovina as well as Montenegro and Kosovo clearly concentrate on projects funded under the CSA scheme and indicate a continuing effort to establish the prerequisites for fostered international research. It is still difficult for research institutions in these countries to participate in the more competitive and predominantly research- and output-oriented projects. In contrast, the FYR of Macedonia is slightly better represented in projects under the CP funding scheme, which underlines the strengthened position of the country in relation to the other WBC.

The numbers for WBC institutions which coordinate FP7 projects is rather low and focused on REGPOT projects.

Cluster analysis – bearing in mind that it is an interim snapshot – shows that apart from Croatia, the WBC are associated with a cluster led by the Eastern European countries Bulgaria, Romania, and Turkey. Serbia is assigned to this cluster at a higher level than the other WBC, followed by the FYR of Macedonia and Montenegro. In contrast, Croatia was clearly associated with the main cluster of EU27 countries at a very high level. Regional cooperation partners are still very important for the WBC (Bulgaria, Romania, Turkey) – a result that is also confirmed at the end of FP7 (see Table 2). As an example, Greece is still ranked first as a cooperation partner for Albania. While Italy and Greece were rather weakly represented in some EGO networks in KBBE, they were at higher positions in ICT.

Figure 4: Visualisation of the EGO network of Albania, Bosnia and Herzegovina, the FYR of Macedonia and Kosovo in the thematic priority ICT (2009 data)

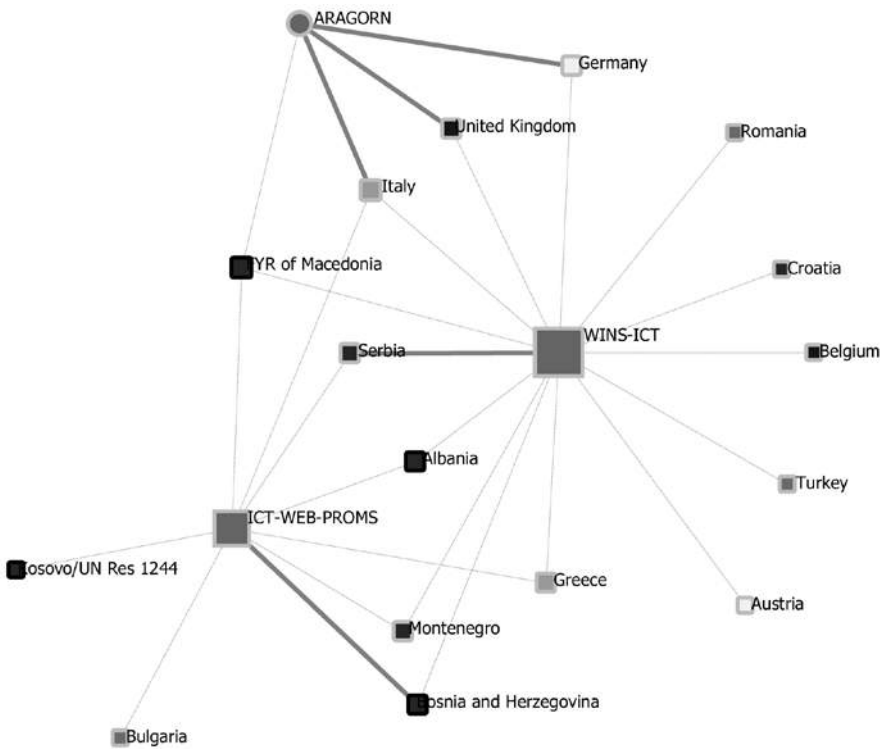
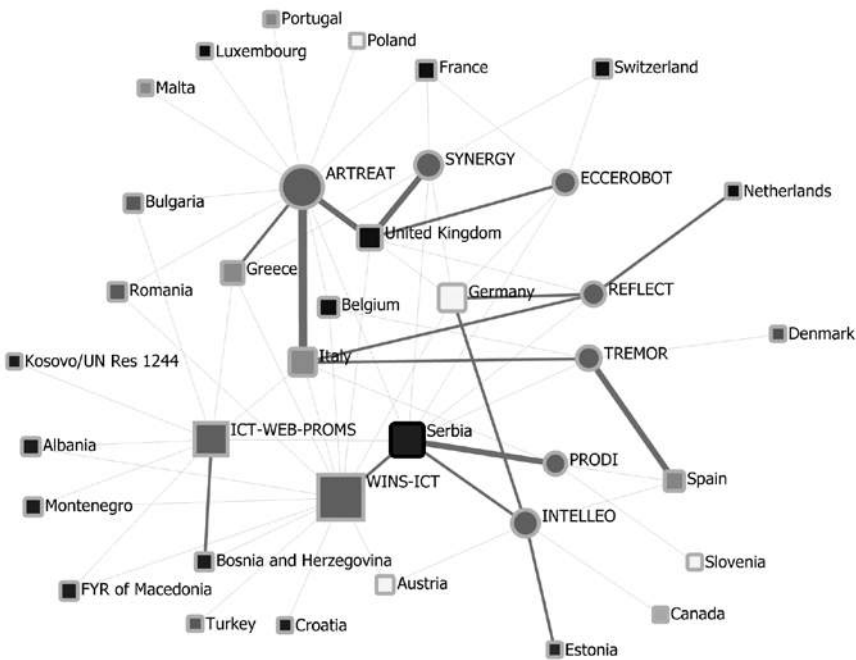


Figure 5: Visualisation of the Serbian EGO network in the thematic priority ICT (2009 data)

The distribution of cooperation partners for several geographic regions shows that the smaller WBC – in particular Albania and Bosnia and Herzegovina – remain oriented towards regional cooperation and specific calls for the region. The FYR of Macedonia and Montenegro show slightly lower values, and only Croatia is strongly oriented towards the EU27. Serbia is still a bit more integrated with the region but has made the change from regional to European cooperation.

These general differences in regional/international cooperation are of course reflected in the ranking of most relevant partner countries. For the

smaller WBC, these were in 2010 – besides generally dominating participants such as Germany, France, Italy, and the United Kingdom – in particular coun-



tries from the wider region, such as Greece, Bulgaria, and Romania. For Bosnia and Herzegovina, the Central European countries Slovenia and Austria still play a very relevant role. An interesting feature is the strengthened cooperation with Italian partners compared with FP6. For all WBC apart from Croatia and Serbia, Italy is the most relevant partner in terms of shared proposal participations.

Furthermore, the WBC cooperation patterns and clusters differ in the different thematic priority networks. Croatia for instance is connected with Germany and France in KBBE, whereas it joins a cluster with Slovenia, Hungary, the Czech Republic, Sweden and the Netherlands in ICT. In ENERGY the cluster with Croatia consists of Austria, Greece and Slovenia. Similar differences can be observed for Serbia, which is also part of different clusters depending on the thematic priority. In contrast, the smaller WBC are more often assigned to a weakly integrated regionally oriented cluster.

The WBC-INCO.NET partners concluded that the analysis of cooperation patterns is worthwhile and provides further important data which can lead to recommendations and further actions. A regular update is necessary, and stepping up efforts in all directions of regional and international cooperation is required.

Obstacles to Co-Operation in the Framework Programme

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Introduction

In the process of economic, social and political integration of the Western Balkan Countries (WBC) with the European Union (EU), the cooperation and mobility in R&D is considered as an important factor of facilitating and accelerating the transnational cohesion processes. Following this line, the European Union has made considerable efforts to foster the integration of WBC with the EU and address its cohesion policy primarily to capacity building for integration through pre-accession structural funds like TEMPUS, CARDS and the IPA programme. Research cooperation between WBC and member states was performed partly through bilateral project agreements with individual countries and partly through the Framework Programmes (FP) of the European Research Area (ERA), starting from its fifth project cycle.

It is well known, however, that the R&D capacities of WBC have been greatly affected by the transition processes, economic slowdown, war damages in some countries, brain drain and underinvestment in research. Despite the scientific and technological lagging of WBC their inclusion in ERA is nowadays an imperative for them, not only because of the mere globalization of science and technology but primarily because of the current style of organization and governance of scientific activities in Europe. FP constitutes in itself a 'research system' of undisputable strategic importance for all EU member states and determines all the other countries in spatial or socio-economic proximity to take part in the system. EU's decisions on research programs, institutions and funding dictate the dynamic and direction of research and technological trajectories of all countries in the region. In short, expansion of scale and scope of FP makes national scientific systems weak if they are not integrated into FP programs. Although WBC have gained the opportunity to become peer partners in European research networks, there is a threat that various obstacles will seriously slow down or jeopardize this process.

Analysis

Driven by knowledge about the lack of empirical research on barriers that hinder international research cooperation of researchers from WBC, the WBC-INCO.NET project has initiated, among other complex tasks, a study on barriers which inhibit researchers from WBC from international R&D cooperation, primarily from EU FP. The survey was conducted by an online questionnaire at the beginning of the project, in 2008, and included 7715 researchers. A total of 809 questionnaires were received in which WBC and member states are equally represented (47% from WBC and 53% from member states). Such a sample enabled also a comparative analysis whose results were recently published¹.

The survey reveals that the dominant type of international projects of WBC are projects funded by the EU Framework programmes (64%) while inter-regional cooperation (bilateral projects with the member states) counts for 27% and intra-regional (bilateral projects with WBC make 9% of all projects (Table 1). Croatia and Serbia are the most attractive partners in bilateral projects within the region, while Slovenia significantly predominates in bilateral projects with WBC among the member states. Slovenia had (at the time of survey) as many projects with WBC as all the other countries together, like Austria, Italy and France.

Table 1: Projects by type of R&D cooperation

	TOTAL		WBC		MS	
Projects funded by the FPs	504	100%	178	35%	326	65%
		71%		64%		76%
Bilateral projects with WBC	62	100%	23	37%	39	63%
		9%		8%		9%
Bilateral projects with MS	137	100%	75	55%	62	45%
		20%		27%		14%
TOTAL	703	100%	276	39%	427	61%
				≈100%		≈100%

¹ Švarc, J., Lažnjak, J., Perkovič, J. (2013), Integration of the Western Balkan Countries and Turkey in the Framework Programmes: some empirical evidence; Journal of European Integration, Vol.35, No.1, 53-73.

Researchers from WBC significantly lag behind researchers from EU member states in intensity of research cooperation and in research mobility. The mobility of WBC researchers is rather low since almost half of respondents (43%) have declared no visit abroad in the last ten years. It calls for concerned actions of policy makers at the national and EU level. The dominant obstacles to mobility, at the time of survey implementation, are visas followed by residence permits and health care insurance while the least important obstacle is related to intellectual property rights.

The analysis of motives for participation in FPs reveals that the international research cooperation is driven by scientific motives since the three most important motives involve: /1/ building up new research partnerships and networks, /2/ access to new sources of knowledge and technology and /3/ professional challenge. The “availability of research equipment was also one important motivational factor for researchers from WBC, by contrast to researchers from member states, which points to the lack of adequate research infrastructure in WBC.

It is interesting that “professional prestige” and “meeting criteria for personal scientific career” are not perceived as very important motives for participation neither in FPs nor in bilateral projects. It could indicate that evaluation criteria for researchers’ promotion into the higher scientific grades within the national science polices do not recognise participation in international projects as an important element of researchers’ activities.

Barriers to cooperation were operationalized through 58 items which were grouped, based by factor analysis (extraction method: Principal component analysis and Varimax rotation) into the six scales of barriers (Table 2).

Looking at the means for each barrier scale, we can see that the most important barriers are the *Project management capacities* (mean=3.8917) and the *Bureaucratic barriers of the European Commission* (mean=3.6349). The barriers related to the *National scientific capacities* are relatively important for WBC (mean= 3.424) and not so for the member states (mean=2.607). The barriers related to *Institutional weakness*, *Financial gain* and *Personal competitiveness* all have a mean below 3, which means that respondents neither from the member states nor from WBC evaluate them as important barriers.

The *Project management barriers* stem from the researchers’ incapacities to manage the projects in terms of finding appropriate call, finding research partners/building consortium, accounting and financial rules, understanding the application procedures (technical knowledge on how to submit project) and co-financial obligation of institution.

The Bureaucratic barriers of the European Commission encompasses different obstacles that stem from modus operandi of European administration such as payment delays, constant changes in rules and procedures imposed by the European Commission, changes in project objectives, deliverables, budget or duration of project evaluation, etc. It is reasonable to suppose that constant changes in rules and procedures diminish the ability of researches to understand, learn and easily apply the procedures for project establishing and submission. The essence of the *EC bureaucratic barriers* could be expressed in the barrier formulated as ‘small acceptance rate of project proposals in relation to invested efforts’. This barrier received the highest score among all 58 items. It is worth noticing that experienced researchers with more intensive cooperation in the Framework Programmes perceived these barriers as more important.

Table 2. Scales of barriers with scales’ means

Scales	Cronbach's Alpha	Mean	Std. Deviation
Scale: Bureaucratic barriers of the European Commission	.871	3.6349	0.845
Payment delays by the funding organization Constant changes to rules and procedures of project submission and monitoring Differences in legal status of research institutions Differences in tax regimes Changes in project objectives, deliverables, budget or partners Duration of project evaluation Co-financial obligation of my institution Time to respond to various technical questions from the European Commission or national administration			
Scale: Institutional weaknesses	.871	2.7125	1.071
My institution does not provide adequate professional and advisory support for international cooperation My institution does not provide adequate professional assistance in project managing My institution lacks skilled accounting professionals for bilateral projects and projects within the Framework Programmes The leadership is not engaged in finding appropriate calls, scientific partners or niches There is a lack of competent collaborators at my institution			
Scale: National scientific capacity	.772	2.9904	0.931

My country has a low overall international reputation and scientific “image” We are suffering from parochialism – low national openness to the international collaboration The lobbying skills of my country at the level of European administration (with other national governments) are rather low There are difficulties with researchers’ mobility exchange (legal rules and procedures)			
Scale: Project management	.794	3.8917	0.936
Finding appropriate calls or frameworks for cooperation Finding appropriate partner/building consortium Understanding the application procedures Technical knowledge on how to submit project proposals (e.g. online submission)			
Scale: Personal competitiveness	.696	2.000	0.903
My currently established networking and personal contacts in the international scientific networks are not sufficient for my participation in international research projects My personal scientific status is not high enough for my participation in international research projects			
Scale: Financial gain	.808	2.5828	1.090
The financial gain for me and my research team is negligible The financial gain from international cooperation for my institution is negligible			

Note. The values in the Table refer to both the WBC and the member states. The means of the scales for WBCs are slightly higher for each of the scale.

The next barrier by importance is the *National scientific capacity* which includes hampering factors such as: low international reputation and scientific image of the country, parochialism and difficulties in research mobility. This barrier is of medium importance (mean = 2.9904) when respondents from both WBC and member states are concerned. However, this is the only type of barrier which is estimated by respondents from WBC as important (mean = 3.4248) by contrast to member states which estimated it as not important (mean = 2.6076).

The *Institutional weaknesses* concerns barriers which involve lack of capacity of research institutions to provide researches with adequate assistance for international cooperation such as advisory services for financial and legal matters and project management in general. It is interesting to notice that institutional capacities of research organisation are not perceived as important barriers for research cooperation although institutional support could seriously harm (or advance) the engagement in international cooperation. However, it turned out

that researchers are quite satisfactory with the engagement of leadership in finding appropriate scientific partners and research niches, competences of domestic collaborators, strategic orientation of research institutions towards research cooperation, ICT capacities, etc. They are less satisfied with the assistance they receive in accounting matters and project management. Since it is known from practice that engagement of research institutions in the promotion of international cooperation in WBC is rather poor, it seems that researchers are satisfied due to the lack of their awareness of what kind of assistance could be provided by research institutions and their management. For example, leadership should act pro-actively in finding calls and partner suitable for their institutions. They should also stimulate international projects by intra-organisational measures such as financial rewards, public announcements of success stories, awarding research novices who participate in international projects and mobility, etc. The evaluation of participation in international research projects could be a useful tool for establishing a system of evaluation and funding research institutions².

Finally, *Financial gain* and *Personal competitiveness* have a mean below three, which means that respondents do not evaluate them as important barriers. More exactly, financial gain is a rather encouraging factor since the majority of respondents were satisfied with the financial resources they received for their research teams and institutions from funding agencies.

Conclusions

The *Project management barriers* and *EC Bureaucratic barriers* as the most significant barriers to cooperation of researchers from WBC in FP. It illustrates that capacity building to administer and to manage projects according to the rules and procedures of the European Commission is the most critical part of cooperation. Surprisingly, *Institutional weaknesses* in providing professional assistance and support for cooperation in the FP are not perceived by researchers from WBC as an important barrier. We assume that such reasoning comes from their lack of experience in the FP cooperation and their consequent lack of awareness of what such institutional support should provide. We believe that more intensive cooperation within the FP will significantly increase the dissatisfaction with the present institutional support. It follows the previous finding

2 Such a system is implemented in Croatia in 2013 within a new funding system based on the institutional performance indicators of scientific activity

that experienced researchers from the member states perceive *EC Bureaucratic barriers* as a greater difficulty for cooperation than researchers with less intensive cooperation in the FP.

The next important finding of the research is that the pattern of barriers (type and level of importance) to research cooperation within the FP are similar for both WBC and the member states. It points to the universal character of scientific activities regardless of socio-economic, cultural and political differences. However, the analyses of differences among the WBC and the member states revealed that the same barriers present much greater difficulties to researchers from WBC than from the member states. Therefore, the policy measures should be tailored according to the specific needs of WBC as scientific followers.

Cooperation of WBC within FP is still not focused so much on scientific research but largely serves to support national capacities and regional cohesion and networking in science and technology predominantly through the FP coordination and support actions such as INCO, REGPOT, SEE-ERA.NET and the WBC-INCO.NET project. Participation in FP is very important for transnational cohesion processes in scientific research that provide not only research funds but also involvement in scientific trends, standards, culture and know-how for conducting high-level scientific research.

Therefore, the upgrading administrative and managing capacities for participation in FP and incentives for more intensive participation of researchers in research programmes of FP should be devised by the national governments. The latter could include a range of measures from direct financial contributions to evaluation criteria which take into account the international research cooperation as an important element of the performance and quality of research institutions and individual researchers.

S&T Statistics and Data Availability in Western Balkan Countries

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Introduction

Science and Technology (S&T) statistics play a central role for most national statistics offices in the Western Balkan countries (WBC), thus representing a crucial part of the national infrastructure aimed at collecting data and providing decision-makers with the information necessary for managing a country's S&T systems. The study "*Report on missions / study visits to National Statistical Offices including assessment of the current situation in S&T statistics and recommendations*" (WBC-INCO.NET deliverable D4.21) presents the results of an analysis of the situation, the stage of development, and on-going activities towards the improvement of this part of the national statistics in the WBC in the years 2008-2009. The text itself is organized in the following three parts:

1. 1. The first part presents a short description of S&T systems in the WBC:
 - a. Structural overview
 - b. Main R&D funding institutions and mechanisms
 - c. Legal framework for S&T
 - d. S&T indicators as instruments for decision-making processes in S&T policy in the WBC
2. 2. The second part presents an analysis of the usage of international statistical standards in national practice in statistics offices in the WBC
3. 3. The third part is an analysis of the organization of R&D statistics in national statistics offices in the WBC.

The main aim of the analysis presented herein is the assessment of national statistical practice in the WBCs in terms of the necessary statistical activities

for the development of the ERA set of indicators, proposed by EUROSTAT and developed under methodological instruments created by the OECD, UNESCO, and EUROSTAT. The analysis is based on a twofold procedure:

1. 1. Collection of information through a questionnaire;
2. 2. Visits to national statistics offices in several WBC as an on-site peer review of the present situation.

This study was not intended to propose activities towards changes in national statistics offices in the WBC in the area of S&T statistics. As such activities are internal national issues, the study's findings can only support decision-makers with information about the present situation and advise them with respect to possible improvements. Bearing in mind that this analysis was completed in 2008-2009, the presentation of the main findings and the conclusion should be considered a baseline for comparison with the situation in 2013 (activity performed in another project) and, eventually, for evaluation of efforts, projects, and interventions organised in the period between these two analyses, i.e. between 2009 and 2013.

Collection of information in 2009

The questionnaire used for collection of information about S&T systems and national statistical practice in the area of S&T statistics in the WBC was developed by the coordinator of the WBC-INCO.NET project, Centre for Social Innovation, ZSI, Austria, and kindly provided to "Mihajlo Pupin" Institute researchers for use within the framework of this analysis. The questionnaire was combined with study visits and in cooperation with partners from ministries responsible for S&T in each of the WBC, requested information, data and answers were collected from April to December 2009.

Study visits in 2008 and 2009

Study visits were made to statistics offices and/or ministries responsible for S&T system and S&T statistics in:

- **Montenegro** – Podgorica (MONSTAT) – July 30th and December 9-10, 2009
- **Serbia** (RZS) – several visits in 2009 and 2008 (more than 6 visits were organized not only for evaluating the situation in this statistics office

but also as a pilot mission during the preparation phase and for testing the questionnaire);

- **Croatia** – two visits in 2009 and 2008, mainly for discussions with the responsible authorities about the success of restructuring the national statistics office, years before WBC-INCO.net was launched;
- **FYR of Macedonia** – two visits: in 2008, within the framework of WBC-INCO.net, and in 2007, within the framework of a UNESCO project on Science, Technology, and Innovation Indicators.

During the workshop on ERA indicators held in Belgrade on October 2 and 3, 2008, the present situation of, and ongoing activities in, all statistics offices in the WBC were presented and discussed (please see **D4.21 Report on ERA indicators workshop** – deliverable within WBC-INCO.NET). Subsequently, due to the not existing statistics systems in 2008/09 in the area of S&T statistics, visits to Albania, Bosnia and Herzegovina and Kosovo were abandoned.

State of the art of S&T systems in the WBC in 2008-2009

The structure and functioning of S&T systems in the WBC is not the subject of the analysis here. Nevertheless, a brief presentation of S&T systems in the WBC will illustrate the general framework and conditions for collection, data processing, information analysis, and building and use of S&T indicators in the region. Keeping these assumptions in mind, the main findings related to the study's purpose and tasks are as follows (conclusions as of 2009):

1. An S&T system is being established in Albania with strong international support. It is reasonable to conclude that in the near future, an S&T system as well as statistics system in the area of S&T will be fully compatible with EU/OECD/UNESCO standards and practice. In 2009, there is not enough information for a more detailed description of the present situation in the area of S&T in Albania;
2. The S&T system in Bosnia and Herzegovina is rather complex because of the country's political organization. S&T activities are under each district's jurisdiction; therefore, there is no one integral S&T approach for the entire country. As in Albania, there are a number of ongoing activities supported by international organizations directed at re-organizing the S&T sector as well as the statistics system in the area of S&T. Given this situation, there is a certain number of institu-

tions and programs which support S&T activities in the country, but without adequate statistics support in this field.

3. The S&T system in Croatia is well developed, with a number of institutions, agencies, funds, programmes, etc. whose aim is to manage, finance, and develop S&T activities in the country. The statistics system in the area of S&T is fully in line with international standards and offers data, information, indicators, and analysis of crucial importance to the management of the S&T system in the country.
4. The S&T system in the FYR of Macedonia is well developed, has significant international support, is in line with international practice, and adheres to international standards. The statistics system in the area of S&T is similarly well developed.
5. The S&T system in Montenegro is formally well developed, although further improvements are being implemented with significant international support and within national development programmes and schemes. The statistics system in the area of S&T is being restructured, partly as a result of WBC-INCO.net activities. The first R&D and innovation surveys, fully in line with EUROSTAT methodologies, are expected to be conducted in 2010.
6. The S&T system in Serbia is well developed, with a number of institutions, funds, programmes, etc. whose aim is to manage, finance, and develop S&T activities in the country, although the process of restructuring is part of further activities proposed by the Ministry of Science and Technological Development. The statistics system in the area of S&T is fully in line with international standards and offers data, information, indicators, and analysis of crucial importance for the management of the S&T system in the country.
7. The S&T system in Kosovo* is in the process of being established, with strong international support and supervision. The statistics system in the area of S&T is on its way to being organized to work according to international standards.

Main findings on the usage of international statistical standards in national practice in the WBC in 2009

The main findings of an analysis of the use of international statistical standards in the area of S&T in national statistics offices, as well as in decision-making processes in the WBC, can be summarized as follows (as of 2009):

1. The situation in Bosnia and Herzegovina, as well as in Kosovo*, can be evaluated as critical because of the absence of an established statistics system for the collection, processing, and use of data in the area of S&T. Nevertheless, not only the awareness of the situation but also ongoing activities towards radical changes in this regard in Bosnia and Herzegovina, as well as in Kosovo*, provide room for reasonable optimism.
2. Albania is making first steps towards the establishment of S&T indicators, as well as data gathering, based on international standards as set out in the Frascati Manual and other standards used on regional and EU levels. As part of this effort, the responsible institutions are being identified. A project supported by the UNESCO office in Venice is going to implement a system of data gathering, elaboration of data, and reporting, to be used by policy makers, government, and interested institutions and to build up the infrastructure for collecting data-indicators on a national level. The preliminary results of data collected by different questionnaires (led by the MoES) from different research institutions (public and private ones) are prepared.
3. Additionally, a similar project was launched in Montenegro in order to improve the statistics system in the area of S&T. It is planned that in 2010 Monstat, the national statistics office in Montenegro, will be able to conduct R&D and innovation surveys based on international standards, using EUROSTAT methodology and instruments. International statistical standards in the area of S&T are in use in national statistics offices as well as in practice in Croatia, in the FYR of Macedonia, and in Serbia.
4. Internationally comparable S&T data are used in the S&T policy discussions in Croatia, the FYR of Macedonia, Montenegro, and Serbia.
5. The main sources usually used for international S&T comparisons in Croatia, the FYR of Macedonia, Montenegro, and Serbia are: EURO-

STAT, the OECD, and UNESCO, as well as other international organizations (mostly UN-based organizations) relevant for specific analytical purposes.

6. Regional as well as competitor countries are of greater importance in Croatia, the FYR of Macedonia, Montenegro, and Serbia, from the point of view of the geographic coverage of international S&T data.
7. Types of R&D (basic research, applied research, development) and socio-economic objectives, defined by international organizations, are applied in national statistical practice in Croatia, the FYR of Macedonia, Montenegro, and Serbia. This is not the case in the use of classification of sectors of performance in Montenegro, of sources of funds in Serbia, of fields of science in Croatia, of product groups in Montenegro and Serbia, and of occupations in Montenegro.
8. Most of the data for R&D indicators concerning R&D personnel—researchers in particular—are collected in Croatia, the FYR of Macedonia, Serbia, and only partly in Montenegro.
9. Most of the data for R&D indicators concerning R&D expenditure are collected in Croatia, FYR of Macedonia, Serbia, and only partly in Montenegro.
10. Practically all necessary data for R&D indicators concerning capital expenditure on R&D are collected in Croatia, FYR of Macedonia, Montenegro, and Serbia.
11. All necessary data for R&D indicators concerning R&D fixed assets are collected in Croatia and Serbia, are missing in Montenegro, and no information about these issues is available for the FYR of Macedonia.
12. All necessary data for R&D indicators concerning government budget appropriations on R&D (GBOARD) are collected in the FYR of Macedonia and Serbia, missing in Croatia, and are only partly available for Montenegro.

Concluding remarks on the position of R&D statistics in the WBC in 2008-2009

The analysis of positions of the WBC towards collecting data and producing R&D indicators, as well as of use of R&D indicators in process of decision mak-

ing in the area of S&T leads to the following conclusions (see also the findings above):

1. **Statistics systems in the area of S&T** in Croatia, the FYR of Macedonia, Montenegro, and Serbia are able to produce R&D statistics and indicators. In Albania, they have just started with such activity.
2. R&D statistics and indicators for the **government sector** are available in Albania, Croatia, and the FYR of Macedonia using general surveys, and in Montenegro through census data; they are missing in Serbia.
3. R&D statistics and indicators for the **business sector** are available in Albania, Croatia, and the FYR of Macedonia using general surveys, and in Montenegro and Serbia through census data.
4. R&D statistics and indicators for the **higher education sector** are available in Albania, Croatia, and the FYR of Macedonia using general surveys, and in Montenegro and Serbia through census data.
5. R&D statistics and indicators for the **private non-profit sector** are available in Albania and Croatia using general surveys, and in Montenegro through census data; they are missing in Serbia and in the FYR of Macedonia.
6. All these statistics are based on regular annual collection of data in Albania (starting from this 2009), Croatia, the FYR of Macedonia, Montenegro, and Serbia. The agencies responsible for collecting R&D data and for producing R&D statistics in general and by sector of performance in Albania, Croatia, the FYR of Macedonia, Montenegro, and Serbia are the national statistics offices, with additional activities organized by the responsible ministries in Serbia and in Montenegro.
7. Statistical data on the groups of indicators for **R&D expenditure, R&D personnel, GBOARD, and Funds from Abroad** are available in Albania, Croatia, the FYR of Macedonia, and Serbia and mostly missing in Montenegro.
8. Statistics systems differentiate **R&D data per fields of science** in Albania, Croatia, the FYR of Macedonia, Montenegro, and Serbia. Such data for all sectors are available in Croatia and for most of the sectors in the FYR of Macedonia, Montenegro, and Serbia; they are missing for the business sector in Albania and Serbia and for the private

non-profit sector in Albania, the FYR of Macedonia, Montenegro, and Serbia.

9. **R&D administration and other support activities** are included in R&D statistics in Albania, Croatia, and the FYR of Macedonia; they are missing in Montenegro and in Serbia. R&D administration and other support activities are included in R&D statistics in Croatia in all sectors; in the FYR of Macedonia, they are only missing for the private non-profit sector; in Albania and Serbia, except for the business and private non-profit sectors; they are completely missing in Montenegro. Consultants, Clinical trials, and R&D coverage at the industry level are not included in R&D statistics in Croatia, the FYR of Macedonia, Montenegro, and Serbia.
10. The **functional distribution of R&D expenditure** by source of funds, by type of costs, by type of R&D, by socio-economic objectives, and by field of science as well as for different sectors is available in different size and scope but present in statistics systems in Croatia, the FYR of Macedonia, and Serbia; it is mostly missing in Montenegro. The functional distribution of R&D personnel data in FTE, in headcount, by occupation, by qualification, by field of science, and by gender as well as for different sectors is available in different size and scope, but present in statistical systems in Albania, Croatia, the FYR of Macedonia, and Serbia; it is mostly missing in Montenegro.
11. **Use of secondary sources for R&D data** is present only in Serbia, through National accounts and budgetary information for comparing financial data for R&D, and in Albania through National censuses, labour force surveys, and budgetary information.
12. None of the mentioned WBC carries out estimations in compiling R&D data.
13. Correspondence of national statistics with the Frascati Manual in terms of national definitions and concepts has been achieved completely in Croatia and the FYR of Macedonia. The Statistical Office of Montenegro (MONSTAT) and the National institute of Statistics (INSTAT) in Albania have just started in 2009 to improve their R&D statistics according to the European standards, and they are working at defining the differences between their national definitions and the

Frascati Manual; in Serbia, full correspondence has been achieved for data from 2007 onwards.

14. All mentioned WBC collect comparable data; there is no need for calculation for adequate comparability with EUROSTAT data.
15. The organizations responsible for the production of R&D statistics in Albania, Croatia, the FYR of Macedonia, Montenegro, and Serbia are the national statistics offices.
16. The national statistics offices in Albania, Croatia, the FYR of Macedonia, Montenegro, and in Serbia cooperate with the ministries responsible for science and technology in order to produce S&T statistics.

Conclusions for the baseline period of 2008-2009

The main findings of the analysis of the situation and the stage of development as well as on-going activities towards improvement of national statistics in the WBC in the area of R&D statistics and indicators in the years 2008-2009 are as follows:

1. The WBC can be divided into two groups of countries:
 - The **first group of countries**, whose S&T system is rather well developed in accordance with international standards and practice: Croatia, the FYR of Macedonia, Montenegro, and Serbia; and
 - the **second group of countries**, whose S&T system is in the process of being established (with international support): Albania and Bosnia and Herzegovina. The situation with the S&T system in Kosovo* is similar to that of the second group.

Regarding international statistical standards in the area of S&T are, practically, in use in national statistical offices as well as in practice in most of the WBC:

- International statistical standards in the area of S&T are in use in national statistical offices as well as in practice in Croatia, FYR of Macedonia and Serbia. In Albania they started in this direction in 2009.
- Internationally comparable S&T data are used in the S&T policy discussions in Croatia, the FYR of Macedonia, Montenegro, and Serbia. In Albania they started in this direction in 2009.

- Statistical systems in the area of S&T in Croatia, FYR of Macedonia, Montenegro and Serbia are able to produce internationally comparable R&D statistics and indicators. In Albania they started in this direction in 2009.

Overall, this study and analysis can be concluded with the following messages, addressed to international S&T community:

1. Although there is a group of countries with rather improved situation in the area of S&T statistics, all WBC need strong international support and presence during the process of integration into the EU in order to develop statistics systems fully compatible with EU/OECD methodologies and practices. Differences in stages of development as well as in resources available for statistics activities in the area of S&T should result in different approaches, different measures, and programmes, with permanent monitoring of such developments and evaluation of achieved results, as well as evaluation of quality of collected data and generated information and S&T indicators;
2. The inclusion of the WBC into EU will be, and it is in reality, followed by integration of the WBC's S&T systems into ERA. This is additional reason for international support, not only for development of S&T systems in countries in the Western Balkans but also for the development of adequate S&T statistics systems in the WBC.

The situation five years later

The WBC-INCO.NET project was extended until the spring of 2014—which could have been an opportunity to launch a similar survey and evaluate the situation in the area of the production of STI statistics in the Western Balkan countries during 2012-2013 in order to support decision-makers with adequate quantitative information about S&T systems in responding countries before the starting year of the programme Horizon 2020. However, in order to avoid overlapping with similar activities within other initiatives (e.g. WBRIS-TA - see below) the project consortium decided to focus on other priorities of relevance for the region.

In June 2011, the World Bank signed an agreement with the European Commission (EC) to provide technical assistance for the development of a **Western Balkans Regional R&D Strategy for Innovation** (WBRIS-TA). The Strategy

aims at strengthening the region's research capacity, enhance intra-regional co-operation, promote collaboration with business sectors, explore possibilities for financing R&D from EU funding schemes and other external sources, and help integrate the region with the European Research Area (ERA) and Innovation Union. The WBRIS-TA was implemented between December 2011 and February 2013 under the joint coordination of the Regional Cooperation Council, the European Commission, and government representatives from Albania, Bosnia and Herzegovina, Croatia, the FYR of Macedonia, Kosovo*, Montenegro, and Serbia. This team was then joined by representatives of leading universities, research institutes, and the business sector. This larger group met in four workshops, organized as structured and fact-based consensus-building exercises, to discuss and develop the Strategy.

In addition to activities for realisation of the WBRIS-TA, number of analytical work and country assessments has been done and one among them is analysis: “**Quality of R&D Data – evaluation of R&D in Western Balkans**”, prepared by UNESCO Regional Office for Science and Culture in Europe-Venice Office, with objective to give: a review and assessment of statistical systems and quality of R&D data in the WBC; identification of critical issues (SWOT analysis) and elaboration of strategies and specific proposal to improve the situation. The final document delivered by UNESCO Venice Office is deliverable 5: “Quality of R&D and Innovation (RDI) Data in Western Balkans”.

This Report was prepared by the UNESCO team led by Mario Scalet (Senior Programme Specialist, Venice Office), Djuro Kutlaca (Consultant, Venice Office), Rosanna Santesso (Programme Specialist, Venice Office), Davide Polletto (Project Officer, Venice Office), Martin Schaaper (Programme Specialist, Institute for Statistics-UIS), Rohan Pathirage (Assistant Programme specialist, UIS), Luciana Marins (Assistant programme specialist, UIS), and Oula Hajjar (Statistical assistant, UIS). Basic information, findings, and conclusions derived from this analysis can be obtained from the World Bank and UNESCO. For the purpose of this book, it is necessary to mention that the critical review of activities in the area of production of STI statistics in WBC has been a relevant input for the elaboration of the concept paper on potential strategies to move the STI statistical systems in the WBC towards EU/international standards. It has contributed to this final report with a proposed **strategy** to improve the statistics situation in the WBC. In addition, two more messages should be carefully considered from this WB project:

1. Different levels of development, differences in national support for the production, and national needs for the use of STI statistics in the Western Balkan countries as well as a number of missing STI indicators in practically all countries (except Croatia) are factors that call for international attention and support.
2. The development of statistics systems in the area of S&T in the WBC should be organized with more bilateral and multilateral cooperation between countries in the region, profiting from being in similar development phases and profiting from each other's experience in dealing with problems implementing such systems. Such cooperation should be supported and monitored by the international S&T community in order to avoid possible misunderstandings and mistakes.

NCPs Systems in WBC – Results, Lessons Learned & Recommendations for Horizon 2020

Irina Slosar

Austrian Research Promotion Agency (FFG)

The National Contact Points (NCPs) play a crucial role in successful participation of researchers in European RTDI Programmes; they are major sources of information for national research communities and on-site available advisors. Only NCPs can be close to researchers and signpost them through the complex procedures and broad scope of the calls of the European Commission. In recent years we could observe that NCPs are a very important political agent as well as the part of the strategic intelligence in the process of programming and implementing European and national RTDI strategies. NCPs are also important links in integration of national research communities into the European Research Area. Therefore, setting up an NCP system of well-educated and competent people demands systematic and strategic approach and national support commitments.

Although the Guiding Principles for Setting up Systems of National Contact Points for FP7 and Horizon 2020 foresee the same roles, services and tasks to all NCP systems – the NCP Systems diverge from country to country across Europe. In Europe we can find central and decentralised NCP systems, different organisation types carrying out NCP activities (governmental bodies, agencies, universities or research organisations, NGOs), large differences in number of people involved, also diverse forms of employment (full time vs. part time), and the availability of national co-funding or not, etc.

It isn't surprising to discover the same degree of diversity in Western Balkan Countries. In Croatia we will find one central NCP organization placed at the Agency for Mobility and European Programmes, which is dedicated solely to various EU programmes for science and education. In Albania the search for synergies with national programmes resulted in placing the NCP system at the national Agency for Research Technology and Innovation. Montenegro, Bosnia and Herzegovina and Macedonia were looking for synergies between RTDI actors and NCP activities, distributing the roles between Universities and Ministries, while in Serbia the NCP system is centralized and placed at the Ministry for Science and Education. The national NCP systems for FP7 were set up with different ambitions and intensity.

Considering the fact that Western Balkan countries were and are facing a lot more of structural problems than EU-Countries – significant brain drain, decline of R&D expenditures, depreciation of research infrastructures, dispiritedness of research community and long term political and economic crisis – it is difficult to derive direct indicators for success regarding the work of WBC NCPs.

Nevertheless, when the participation in FP7 increased, like in Montenegro, the key of success was easily assigned to NCPs. Minister of Science, Sanja Vlahovic, in interview with www.horizon2020projects.com explains Montenegro's success: *“After signing the memorandum of understanding on the association of Montenegro to FP7, the ministry set up the NCP structure and nominated the members of the FP7 programme committees, which started with their activities immediately... The fact that contact persons were readily accessible to provide all the information required on FP7 and to help with application procedures, not only through e-mails and telephone, but also in face-to-face, was very important for improving the quality of applications. The NCPs also developed extensive mailing lists with almost all members of the Montenegrin scientific community and consequently it was easy to reach relevant stakeholders.”*

In the frame of the WBC-INCO.NET project several actions were undertaken to strengthen and support the WBC NCPs.

A two-day workshop was organized on **Benchmarking of NCP Systems** on 22-23 January 2009 in Vienna with the goal to present and compare different NCP systems in selected WBC and EU countries.

Two strategic workshops on **Performance Goals of WBC NCPs** were organized in September 2009 and June 2010 in Vienna. Led by the idea that neither NCPs systems nor working conditions can be copy-pasted from one country to another, the main goal of these workshops was to offer an instrument and methodology to shape the NCP work. Those tools should enable WBC NCPs to develop the objectives, measures, targets and actions based on the analysis of their particular situation and according to the needs of their customers, stakeholders, contracting bodies and internal processes.

In both workshops the Balanced Scorecard was used as concept for translating an organization's strategy into concrete performance indicators. The Balanced Scorecard helps to link performance by looking at objectives from different perspectives in order to develop a vision and overall strategy. The workshop introduced following perspectives: financial framework, customers, stakeholders, learning and growth perspective and internal processes. In the next step were defined: objectives, indicators, targets, actions and initiatives.

The workshops mobilized 25 NCPs from all Western Balkan Countries. Developing the Balance Scorecard concept for each country made evident which performance goals and measures can be reached in each country. The goals were distinguished in overall goals, the organization's mission, the needs and expectations of the customers and stakeholders and the strategy (direction) of the organization. Measurement of the performance provided a way to see if the strategy is working, allowing measurement of results, not just of the work performed.

Representatives of four WBCs (B&H, FYROM, Montenegro, and Serbia) elaborated and delivered draft Balance Scorecards (with defined Strategic Objectives, Measures, Targets and Actions) which were revised and finalized within the group, lead by FFG. The initial enthusiasm slowly turned down and after two years we had to admit that the method was too ambitious and that people and organizational and political priorities changed during the time.

The Seminar on ***Innovation Management*** held in June 2011 in Ohrid provided a clear view on the expectations from the European Commissions side towards the EU's growth strategy Europe 2020 (Antonio Balestrieri, EC), on current innovation management and technological changes in the WBCs (Zoran Aralica, The Institute of Economics Zagreb) and on innovation as such, with all its facets including the need for innovation management (Maria Tagwerker-Sturm, DOKA).

The insights into the Europe 2020 strategy, especially the Innovation Union and its structure, objectives and key measures, as well as the need for a Common Strategic Framework lead to important recommendations for regional and national authorities (NCPs can be seen as part of them) by the European Commission. One of them is the need of awareness rising about the importance of research and innovation investment strategies with priorities being aligned with the EU research and innovation strategy.

The workshop on innovation and innovation management outlined clearly that product and service development shall go hand in hand with innovation management. The final discussion between the participants and speakers resulted in the finding that NCPs have to be aware of the importance of innovation and the structure of the innovation management system when dealing with their clients in order to be able to tackle requirements of the future EU.

One **webinar** was organized in June 2012 on **Writing an ERC Starting Grant Proposal**. This webinar was dedicated not only to the WBC-NCPs but also to the researchers directly, because several WBC countries don't host an ERC NCP. The webinar received large interest (137 registered users) and also a

large audience (77 participants), most of them in preparation of the proposal. FFG's ERC NCP was answering several questions after the given presentation.

The two-day Workshop *Are you puzzled with ERA?* was held in November 2013 in Krems. It offered an outline of the European Research Area funding opportunities, with special focus on Horizon 2020 and multilateral programmes. WBC NCPs had the opportunity to learn the training methods to present ERA contents in an interactive and playful way and apply those in the trainings with their customers in the respective country.

The project offered also opportunities to WBC NCPs to exchange information and experiences with their counterparts from the EU.

Three thematic WBC NCP meetings (KBBE (Knowledge-Based Bio-Economy), HEALTH and ENVIRONMENT) have been organized, in combination with the regular NCP meetings, to provide WBC NCPs an additional platform to present themselves and raise specific topics. The bi-regional information exchange on thematic NCP level aimed at stimulating the participation of WBC NCPs and researchers in potential future RTD projects.

After 2011 it became clear that the most WBC NCPs are able to visit such events without any support of the WBC-INCO.NET project and that the project should offer another kind of support activities in order to increase capacities of the WBC NCPs.

Twinning was chosen as the best instrument for additional and tailored learning on the job. Twinning is a learning setting which allows one-to-one support and on-the-job training between mentor and mentee. In contrast to the NCP-training the twinning allows to the participants to create tailored objectives according to the needs of the mentee and to ask for very specific advice. In the frame of the twinning it was demanded also to propose also marketing-activities for the research community of the respective region in the European Union. The goals of the twinning were to cover specific needs of WBC-NCPs and to deepen relationships between EU and WBC NCPs. Twinning was offered in a competitive way – the NCPs were invited to write the proposal based on their personal needs. Rather the response to this activity was surprisingly low.

Since the beginning of the project in 2008 the demands of research community in Western Balkans changed – from information and awareness activities that the most WBC countries are executing on regular basis via websites, newsletters and information events – to more specific advisory services like cost calculation, reporting, negotiation with the Commission etc. Above such specific advices there is also the need for support measures from Ministers and co-funding sources.

- WBC-INCO.NET organized also a Workshop Surviving the EC Audit – Pitfalls and Problems, Survival and Success Stories in September 2013 in Belgrade to meet at least some of these expectations. The workshop addressed the needs of financial project managers and successful researchers in FP7. Financial NCPs and Auditors from KMPG presented the practical advices, researchers from the EU and WBC reported about their experiences and the private consultations were offered. The discussion which followed the workshop pointed at several structural and political knots in implementation of FP7 projects in the WBC: To some extent there is an incompatibility of employment policies and administrative rules at the universities and FP7 rules
- The scientist coordinating projects mostly expect direct financial benefit from the project, if there is no possibility to increase the (miserable) salary, there is no motivation to carry out additional research activities.
- The salary gap between western and WBC scientist is perceived as social injustice. People with same qualifications doing the same work with the same output are treated differently because of the country of origin.
- Participation in FP7 projects was not perceived as an opportunity to employ new scientists neither at institutional nor at policy level

Although the workshop didn't provide the proper framework for such kind of discussion, public authorities are advised to set actions to turn FP7 into sustainable source for developing high quality research and research conditions in their respective countries.

Although the European Commission's *Guidelines* will not change a lot, the Horizon 2020 brings a lot of new challenges for NCP systems. Horizon 2020 emphasizes innovation, commercialization of research results; stronger involvement of companies is desired. To reach these goals NCP organization should adopt their services to new target group.

NCPs will need to gain knowledge on multilateral programmes and initiatives related to Horizon 2020. In several programmes national co-funding will be needed. NCPs should gain the outlook on the national funding portfolio.

Many opportunities could rise from linking Horizon 2020 with the European Structure and Innovation Fund, therefore it is of great interest to empower WBC NCP to make the best use of both funds.

NCP support system has to be coherent and strategically coordinated in order to take a full advantage of the diverse opportunities of Horizon 2020.

Improving Project Administration and Management Capacities in the Western Balkan countries

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One of the aims of the WBC-INCO.NET project has been to train financial managers in the WBC with regard to the diverse financial aspects of the 7th Framework Programme (FP7)¹. This task has focused on the calculation of costs, accounting principles and cost statements, audits, and other relevant issues. Several workshops targeting different audiences have addressed the preparation of budgets, financial operations and financial management, different cost categories, book-keeping, cost recording, accounting records, financial reporting, and experiences of auditing.

The target group for these activities has included financial **managers** from public and private research organizations, universities, private companies (incl. SMEs), chambers of commerce, innovative structures, municipalities, non-governmental organisations (NGOs), and other relevant structures that were involved in previous projects either as partners or coordinators or actively interested in participating in the future, **National Contact Points (NCPs) on legal and financial issues** and representatives from the Ministries, including **financial officers**, responsible for research and innovation, already involved in the coordination of EU programmes.

Seminars of the WBC-INCO.NET project have been held in Serbia, FYR of Macedonia, Albania, Kosovo*, Bosnia and Herzegovina, and Montenegro. Further events in Croatia and in Austria have focused on the training of project partners.

One of the lessons learnt was that an identical programme for all WBC could not be implemented. In the course of the preparatory work for each seminar, the programme was reshaped and adjusted to the specific needs of the participants, bearing in mind their different experience in the Framework Programme participation and status. For example, the seminar in Bosnia and Herzegovina was

¹ The article builds on the WBC-INCO.NET deliverable D4.22 "Report on the financial audit road show" prepared in 2010 by Lora Pavlova (Bulgarian Ministry for Education and Science), Carmen Siller, Elke Dall, Silvo Korez (Centre for Social Innovation), and Kelly Vavasi (General Secretariat for Research and Technology, Greece) and updated in 2011.

held at a time when the country had not yet signed a Cooperation Agreement with the EU for association to FP7, so issues of third-country participation had to be addressed. FP7 has been widely open to participation of non-EU Member States, through the association process and through the promotion of international cooperation in general, but the approach in Horizon 2020 will be a bit more nuanced and strategic. So it has to be seen again for the new programme, which will run from 2014 to 2020, whether (and if so, when) the association procedures will be finished.

A general pattern, seen in all WBC, is that there is considerable interest in financial issues. Changing the status of these countries from INCO-targeted participants to fully associated partners led to a striking need for information on the management of project-based funding of research activities. However, a key concern that was shared among the participants is the difficulty of getting access to the thematic calls, resulting in underperformance in the targeted research projects. This is mainly due to fierce competition, lack of sufficient capacity in project preparation, and to a still not well established “image” of researchers from WBC in the European Research Area (ERA).

Based on the feedback of the seminars, it was clear that a series of similar information days is required due to the complexity of the financial and administrative rules for preparation and follow-up effective implementation of the projects. In particular, it was emphasised that a one-day information event does not ensure thorough understanding of complex issues, that practically oriented trainings are needed, e.g. focusing on a concrete ongoing project and dissecting the stages of its implementation. Furthermore, administrative and financial officers face language difficulties, and even if the European guidelines are translated by official interpreters into the national languages, the EU jargon is often misunderstood.

The cooperation with other INCO-NET projects² showed that the difficulties shared are often linked to differences in the internal administrative systems of the beneficiaries. The simplification measures implemented in Horizon 2020 will eliminate some of these obstacles, such as choosing an indirect cost method adequate to the participating organization. Still, the beneficiaries will need internal procedures and an understanding of the rules, e.g. the necessity to record

2 See M. Muñoz, C. Siller, M. Bossi, F. Le Meur, K. Pohl: Financial, legal and administrative management of INCO-NET projects. Difficulties, solutions and recommendations for the future. In: Morini, R. Rodriguez Clemente, R. Arvanitis, R. Chaabouni (eds.): *Moving forward in the Euro-Mediterranean Research and Innovation partnership. The experience of the MIRA project.* IAM Bari: CIHEAM (Centre International de Hautes Etudes Agronomiques Méditerranéennes), 2013, p. 185-191.

work-time dedicated to the project broken down, for example, by Work Package and by staff member. Furthermore, information on the use of tools such as the Participant Portal needs to be shared, in particular in those countries with less experience.

It has also been noted in the WBC as well as in the frame of other INCO-NET projects that *“having a system that is unfit or unfamiliar with the management of international projects can cause more difficulties to the project’s life, such as the lack of flexibility in having the budget received from the coordinator at their disposal. In this respect, due to their internal administrative procedures, some beneficiaries may need too much time to identify, allocate and use this budget, thus jeopardizing the correct development of project activities.”*³

In some Nordic countries, the establishment of national networks of research managers and administrators has helped professionalize the development of proposals as well as reports. Also on an international level, such networks exist, e.g. the European Association of Research Managers and Administrators (EARMA), which represents the community in Europe and the wider International Network of Research Management Societies (INORMS).

While efforts in the WBC are put into improving the know-how around the research project, the profession of the research manager and administrator has not yet been acknowledged and addressed. The necessary skills and competences of staff members dealing with the daily management are often lacking, resulting in the unproductive reinvention of administrative procedures, missing of deadlines, time-consuming management practices, and actual mismanagement. With reference to the experiences of WBC-INCO.NET and the other INCO-NET projects⁴, Muñoz, Siller, Bossi, Le Meur and Pohl (2013) also state that collaboration gives a boost to project managers and administrators to solve common questions and problems thanks to the exchange of experiences, to keep updated about the latest novelties implemented by the EC, to share the difficulties and solutions found during the management of the projects, and also to get a similar treatment from the EC officers.

To provide training and guidelines for financial management at the beginning of new projects, in particular if they involve less experienced partners from non-EU Member States, is one of the lessons learnt from the work on WBC-INCO.NET. Further recommendations include involving the NCPs on legal and

3 Muñoz, Siller, Bossi, Le Meur and Pohl (2013), p. 187.

4 CAAST.NET, SEA-EU.NET, ENLACE, EULARINET, PACE-Net, INCO CA/SC, INCONET GCC, EUCARINET and MIRA

financial issues in due time and establishing a network of research managers and administrators, e.g. through a mailing list. Additionally, participation in international networks should be aimed at. When publishing this report, a COST Action focusing on these issues has been implemented (called BESTPRAC⁵), and WBC administrators have the opportunity to receive travel grants to gain experiences and to exchange know-how with international peers. Acknowledging the importance of the back-office for the successful implementation of large-scale projects is an important step to be taken towards the professionalization of the capacities in administration and management of research and innovation projects.

Dissemination Strategies and Tools for Promoting WBC Excellence and Research Collaboration

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Throughout the years, the European Union has been promoting research activities and international collaboration with the purpose of strengthening the scientific and technological basis of the EU itself. Research initiatives for and in coordination with other countries have been implemented to facilitate European integration and the harmonization of approaches. In this way, the Union has generally envisioned fostering sustainable growth, more and better jobs, and industry competitiveness. Strengthening the Western Balkans R&D landscape and its eventual integration in the European Research Area (ERA) have long been important priorities at both Western Balkan and EU levels, believed to be critical for the stability and economic competitiveness of the region as well as for the potential accession of the individual Western Balkan countries to the European Union. This and similar views have been shared by all important political stakeholders in the WBC, who have repeatedly expressed their commitment to improved RTD cooperation at both regional and EU levels.

Against this backdrop, the WBC-INCO.NET project, starting in 2008, has been intended to steadily improve the positioning of WB research organisations in the Framework Programme, enhancing their ability to lead joint initiatives with other EU organisations in the development of project ideas and the submission of proposals. The project has therefore followed an overall policy-oriented approach to spread awareness among the research communities in the Western Balkan countries about FP cooperation opportunities, and to locally enhance those research areas being priority for scientific integration into the ERA. At the same time, WBC-INCO.NET has also worked to step up the responsiveness among the research organisations of the EU Member States (as well as the Diaspora researchers) about the research excellence available in the Western Balkans region.

In such a complementary method, the project communication and dissemination strategy has targeted different stakeholders both in the WB region and in the EU, among which are the political actors in the WBC, EU Member States and Associated Countries, the EC Directorates and other Multilateral Initiatives and Programmes, the scientists, researchers as well as the business actors and

innovators in the WBC region, the financial managers as well as the National Contact Points in the WBCs, and the appropriate relevant research stakeholders in the European Union.

The ultimate aim has been to integrate researchers from the region into networks of FP-active EU organizations and enable their related research organisations to submit their own project proposals. This is why WBC-INCO.NET has deployed different types of dissemination and communication actions, some inspired by traditional practices in EU projects (website, newsletter, database of WB excellences), some based on more targeted forms of support based on specific needs of the beneficiaries' community. Capacity building measures, as well as other networking and brokerage activities have been indeed largely carried out throughout the years while strong and frequent synergies were also created with other initiatives at EU or regional level, specifically to combat further fragmentation in the WB region and optimise the policy framework.

WBC-INCO.NET eventually managed to enable a communication platform with different stakeholders and has created a real impact on the level of the individual researchers in the region providing a podium of targeted information of relevance for the regional S&T actors. In several circumstances, the project was indeed acknowledged by the regional stakeholders as a powerful tool to support their own dissemination efforts and to spark the interest of many European researchers and stakeholders to disseminate information towards the region.

A strong dissemination focus has been progressively established where, in addition to the traditional means of dissemination such as promotion at conferences, project flyers, and posters, the main communication instrument put in place by WBC-INCO.NET is certainly its online portal www.wbc-inco.net and interconnected information services and channels.

Building on the platform by the Information Office of the Steering Platform (<http://see-science.eu>), this website, with its user-friendly and appealing design as well navigation features, is a well-established provider of high-quality targeted information on research, moreover suitable to contribute to the dialogue on S&T issues between the EU and the Western Balkan countries and the integration of the research and innovation systems of the WBCs into the European Research Area (ERA). The website encompasses several databases such as news, calls for funding, documents, links, events, research organisations, and infrastructures, while the information flow is also ensured by the production of a half-yearly professionally designed and reviewed journal and the dissemination of a e-newsletter every 2-3 weeks. More interactive communication has been pursued via social media such as Facebook and LinkedIn. Both have helped

keep the members of the consortium and all other interest groups on the same page with respect to what is going on in the project.

Now, at the end of its activity, WBC-INCO.NET can boast to have mobilised a consistent segment of the research stakeholder community in the WBC region and beyond. Actually more than 10,500 are the subscribers to its e-newsletter; the WBC-INCO.NET Journal has been sent to 10,000 stakeholders. The number of users who registered at the website is about 4,000, while the number of organisations that have been entered (both by the WBC-INCO.NET team and by the organizations based on their own initiative) into the correspondent online database is around 1,700. The online research infrastructures number over 118 RI. Monthly visits to the portal have reached 15,000 in December 2013, and the information amount that has been channeled online throughout the years explains this data: almost 7,000 items among news, links, events, projects, documents, etc. were posted. On the social media side, the Facebook page dedicated to the project counts about 1,000 Fans, while the LinkedIn members number 150.

WBC-INCO.NET has had a positive impact also as for the involvement of “newcomers”, that is companies or research organisations that had had no exposure to participation to the FP7 before. In a way, WBC-INCO.NET managed to broaden the WB research base with potential for integration into the ERA (European Research Area). WBC-INCO.NET has indeed invested on the “mobilised stakeholders” basis to involve individuals and organisations in parallel activities and assisted them with respect to their needs for capacity building or for networking, to foster inclusion in consortia aimed at submitting project proposals in current calls as well as to get promising contacts in view of future funding possibilities.

Though relevant efforts have been carried out to encourage better knowledge of, and more skills about, EU funding instruments as well as the participation by the WB research organisations in related research activities, the role of old Member States has been central to most of the research projects in all the FP research areas. The EU Member States (in particular the EU 15) have been and still are a driving force. This is mainly because of the strong experience in, and history of, successful participation in European research funding programmes, more widespread management cultures in companies, universities, and research centres, participation in consultation mechanisms or in policy-setting bodies, closer links to the market, and clearer innovation perspectives than it is usually the case in the Western Balkans region.

Consequently, it is unrealistic to think that successful WB participation in the recently launched H2020 programme could do without linking up or es-

establishing strong cooperation links with the different research communities in the EU Member States. The presentation of research excellence from the WB region that could be integrated into projects led by EU Member States (mainly EU 15) organisations has contributed to raise the number of participation in FP projects, but as yet in many cases with marginal roles.

New forms of support to dissemination of WB research excellence in the future should go in the direction of “empowerment” of the researcher’s communities to show their capacities to European counterparts. This is probably the best modality by which EU-funded projects can provide services for the benefit of given categories of researchers. If the main mission is to support WB visibility within the EU arena and their ability to establish promising contacts with EU research organisations, keeping concepts like dissemination, support, coaching, or the organisation of events totally separate does not make much sense.

Part III:

WBC Innovation Systems in Focus

Mapping of Innovation Infrastructures

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Seven exhaustive reports¹ have been prepared by the WBC-INCO.NET consortium together with external experts on the mapping of innovation infrastructures in summer 2011², covering several important aspects of the National Innovation Systems (NIS) and presenting the status quo of innovation institutions and programmes in Albania, Bosnia and Herzegovina, Croatia, the FYR of Macedonia, Kosovo, Montenegro, and Serbia, respectively. The aim was to develop a kind of directory presenting a comprehensive status quo of innovation institutions and programmes in the Western Balkan countries. So, at least for the time of writing of the reports, the main actors forming the NIS have been identified and described:

- Innovation-related key government institutions and
- Key programmes as well as
- Key innovation infrastructures, such as
 - Technology and Innovation Centres (TICs),
 - Clusters,
 - Technology and Science Parks (TSPs),
 - Business Start-up centres (BSCs),
 - Technology Incubators (TIs),
 - and other related organisations.

The mapping is based on extensive desk research carried out by the Centre for Social Innovation (ZSI) with input from local project partners (relevant ministries and agencies), complemented by a review of national experts who updated the institutional descriptions, contact details, etc. based on their knowledge and

1 These reports are accessible at <http://www.wbc-inco.net/object/document/121802.html>

2 The activity was carried out by the Centre for Social Innovation (ZSI) in cooperation with all partners from the region and expert subcontractors. We would like to thank all contributors.

additional interviews they carried out. Draft reports have been circulated to all mapped stakeholders for review and additional input – and so we believe that we have arrived at a reasonably complete list. Despite the utmost effort of the authors to provide an accurate picture at the time of writing, some contact and content information may have become obsolete in the course of time. But also the historical perspective is of interest, and other projects are invited to build upon the results and to update the mapping, just as WBC-INCO.NET has also built on a previous exercise. Similar reports have been prepared during the FP6 project SEE-SCIENCE.EU in 2007, and therefore a comparison over time can be made between the data available from 2007 and from 2011, as outlined in the table below.

**Table 1: Nr. of mapped innovation infrastructures 2011
(and change compared to 2007)**

	Albania	Bosnia and Herzegovina	Croatia	FYR of Macedonia	Kosovo*	Montenegro	Serbia
TICs	2 (±0)	7 (+5)	9 (+3)	7 (+1)	1 (+1)	2 (+2)	5 (+1)
Clusters	2 (-2)	5 (+2)	7 (-4)	13 (+5)	1 (-2)	1 (+1)	30 (+14)
Technology and Science Parks	0 (±0)	2 (+2)	5 (+2)	3 (+3)	1 (±0)	0 (±0)	5 (+1)
Business Incubators / Start-up Centres	2 (±0)	17 (+4)	25 (+1)	4 (-6)	5 (+1)	3 (+1)	17 (+4)
Total	6 (-2)	31 (+13)	46 (+2)	27 (+3)	8 (±0)	6 (+4)	57 (+20)

Hence, the Western Balkan region overall shows a positive tendency in the development of innovation infrastructures. The countries with the fastest growing innovation landscape between 2007 and 2011 were Bosnia and Herzegovina and Serbia. The FYR of Macedonia, Montenegro and Croatia achieved a slight increase. While the increase in Montenegro does not seem to be notable in absolute terms, compared to 2007, when a total of only two innovation infrastructures were active, the increase can be described as a significant improvement. While the development in Croatia is rather stable, innovation infrastructures in the FYR of Macedonia showed significant volatility with 10 establishments being closed down and 13 emerging from 2007-2011. Despite this positive tendency in general, Albania and Kosovo* could not enhance their innovation systems with additional infrastructures.

Based on the mapping, which was done country by country, providing titles, short descriptions, contact data, contact persons, and keywords characterising the innovation infrastructure, the newly opened innovation infrastructures have been one of the foci of the analysis.

Technology and Innovation Centres are traditionally closely linked with the universities and their primary focus lies on technology transfer between different stakeholders such as the university, research, and business sectors. As such, TICs may also provide incubation services and other management services for companies. Croatia was the country with the largest number of technology and innovation centres in the WBC, followed by Bosnia and Herzegovina, the FYR of Macedonia, and Serbia. Countries particularly successful in strengthening these institutions are Kosovo*, Albania, and Montenegro.

Business clusters are associations of manufacturers or service providers from a certain field that, by means of mutual cooperation and collaboration with research institutes, educational providers, or management service providers, aim at achieving synergy effects. In the WBC, clusters orientated towards wood, fruit and vegetable processing, agriculture, or tourism have a long tradition. In recent years, the trend has shifted towards industry fields with a higher added value, such as mechanization, the automotive industry, or ICT. Clusters that stand out are characterized by a bottom-up structure, proximity to the market, and a strong business affiliation. The countries with the strongest clustering initiatives are Serbia, the FYR of Macedonia, Croatia, and Bosnia and Herzegovina. Albania, Montenegro, and Kosovo* are countries with a less developed cluster scene. Croatia is again the WBC forerunner in the transition towards sectors with a more sophisticated value chain. The FYR of Macedonia is also experiencing this shift, with 4 out of 9 clusters dealing with mechanization or ICT.

Technology and science parks provide facilities for innovation projects such as business support and knowledge transfer services that involve a wide range of actors such as businesses, education institutions, industry and financial support services. For this purpose, physical facilities as well as infrastructures are made available. Croatia and Serbia both have five operating technology and science parks, followed by the FYR of Macedonia with three, Bosnia and Herzegovina with two parks, and Kosovo* with one park, while there are no technology and science parks in Albania or Montenegro. There are numerous models of financing in place. Whereas usually, the investment is being provided by the

local authorities, national ministries, or universities, private business parks or national and international donor-driven parks are being set up as well. Due to the size of the projects, a combination of numerous financial strands is common practice as well.

Business start-up centres or technology incubators hope to attract small start-up companies that, for a limited time period, enjoy free or reduced rents. Apart from use of office space, they have the option to use business infrastructure as well as intellectual or business services. After a certain time, the start-up companies are expected to become independent and leave the protected area of the incubator. There are 25 business incubators and start-up centres located in Croatia and 17 each in Serbia and Bosnia and Herzegovina. Five facilities have been mapped in Kosovo*, four in the FYR of Macedonia, three in Montenegro, and, lastly, two in Albania.

But when scrutinizing the infrastructures that were closed during the period of observation, further facets can be observed: Of all innovation infrastructures, business clusters, as the easiest facility to set up, are also the most prone to closure after the provided assistance from donors is over. In total, 16 out of 45 clusters operating in 2007 had to be closed. Croatia, Albania, Kosovo*, and Bosnia and Herzegovina are the countries with the most volatile business cluster environment. More than 45% of the incubators have been closed from 2007 onwards.

Business incubators and start-up centres rank second in this category. 15 (14 incubators and one start-up centre) out of 66 business incubators and start-up centres have had to be closed down since 2007. Kosovo* has closed all three of its business incubators (only one start-up centre has remained open). The FYR of Macedonia also stands out in this respect, as six out of ten operating business incubators and start-up centres (in particular, eight incubators and two start-up centres) were closed down from 2007 to 2011.

Technology and science parks, as the most capital-intensive facilities, exhibit relative sustainability in their activities in general. After the bulk of requirements is overcome, and once the projects are up and running, they succeed to fulfil and pursue their mission. Moreover, technology innovation centres that are commonly linked to universities show sustainability in their actions as well.

The current state of the innovation infrastructures has to be seen in the broader context of the national policy settings. With national strategies and subsequent action plans that are favourable and backed with efficient resources for implementation, it is possible to achieve the goals and contribute to estab-

lishing a healthy innovation environment. The legal framework in the Western Balkan region has advanced and became more mature from 2007 to 2011. As a supportive measure, in countries that are still struggling with a lack of innovation facilities, numerous international donors are offering funding schemes for businesses.

The national mapping was complemented by a regional comparison and conclusions, such as:

- A number of donor-driven initiatives perish after the donor withdraws their funding from the project. Therefore, it is recommended to conduct measures that would foster the sustainability of the project's results and impact.
- Involvement of national actors in donor-driven initiatives feeds local knowledge and ownership into the project, which seems to have positive effects on the sustainability of the facility. As indicated by our experts, local knowledge cushions the first phase of a facility's existence, when a donor-driven facility is still trying to find the right direction, sustainability, and a market.
- Bottom-up initiatives, after they reach the level of financial stability, prove to be very appropriate models for facilities to survive. Clear business affiliation from the start is another factor that has positive effects on sustainability.
- National programmes aimed at enhancing the numbers of different innovation infrastructures also positively affect and encourage the growth of the sectors. Moreover, it proves to be a good practice to include different categories of innovation facilities (incubators, clusters, TSPs) in the national action plans so as to develop a diverse and comprehensive innovation system.
- Ministries responsible for innovation are key actors that encourage, through their strategies and various funding models, the development of innovation infrastructures. However, due to the financial crisis, they were forced to cut back the budget for these activities. To create a healthy and stimulating national innovation landscape, however, substantial initial investment is needed. Therefore, it is recommended to provide an adequate financial framework for setting up innovation facilities. It is also important to have enough well-educated staff man-

aging the innovation policy who are capable of driving the process forward.

- In a few cases, co-ordination and co-operation between different innovation-relevant ministries at the state level seems to be limited. It is recommended to enhance the level of this cooperation so as to formulate a comprehensive and well-functioning strategy and to have a collaborative and effective network in place when it comes to implementation.
- Numerous international programmes are present in WBC when it comes to business development and innovation infrastructures. These programmes vary greatly in size, scope, and programming. Next to that, the general lack of awareness of the programmes, their regulations, and frameworks hampers the participation rate of WBC organisations. Therefore, awareness campaigns accompanied by relevant trainings seem to be crucial to fully exploit the potential of the programmes by national actors.

Conclusions of Innovation Dialogue Fora

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Introduction

WBC-INCO.NET established the Innovation Dialogue Forum (IDF) series of meetings as a means to facilitate a dialogue between stakeholders across the Triple Helix of innovation (Government – Research – Industry) and across borders in the WBC Region¹, on supporting regional and local development through innovation. Participants in the Innovation Dialogue Fora were WBC-INCO.NET partners, especially policy makers and the WBC Innovation Group of Experts, but also representatives of innovation program managing authorities from national and international funding agencies, and other experts at regional, national and EU level plus representatives from business associations and individual companies who could contribute to the innovation policy development. During the three meetings (in Becici on 8-9 November 2010, Ohrid on 25 May 2011 and Tirana on 12-13 June, 2012) participants surveyed the innovation landscape of the WBC, discussed specific initiatives (such as the SEE-ERA.NET PLUS project and the World Bank led “Western Balkans Regional R&D Strategy for Innovation”) and exchanged ideas for Regional actions to increase innovation activities and to enhance research-business relation, including inter-sectoral mobility

In the 1st IDF at Becici the participants examined and discussed the innovation system in each WBC and then went on to discuss Regional prospects and relevant experiences. The aim was to obtain an overview of the national innovation systems and mostly of the Regional innovation demands and to arrive in a first set of recommendations through identification of potential innovation support actions at a Regional level. In the 2nd IDF at Ohrid the discussion focused on two pre-defined initiatives: the “Best Technological Innovation Competition”

1 The word “Region” is used here with a capital R to distinguish between the supra-national “Western Balkan Countries Region” and the sub-national NUTS 2 regions that each country of the EU consists of.

and the “Western Balkans Regional R&D Strategy for Innovation”. After these two initiatives were discussed in detail, participants engaged in discussion of four more specific ideas: the “Creation of a Regional voucher scheme”, the “Creation of Regional projects in the frame of existing schemes (e.g. EUREKA)”, the “Adoption of a Regional approach towards international institutions/programs” and the “Creation of a Regional training program on innovation management”. Finally in the 3rd IDF at Tirana the participants discussed and debated a series of ideas that were collected following a call to “submit concept notes contributing to a future action plan to increase Innovation Capacities in the whole Region of the WBC” and also surveyed the current situation in WBC related to Knowledge Transfer from Universities and Public Research Institutes.

The IDF series succeeded in bringing together experts and stakeholders from all the WBC and beyond and provide an opportunity to exchange ideas on Regional cooperation for innovation as well as discuss specific planned or ongoing activities and initiatives, allowing for better stakeholder engagement in their development. The following paragraphs summarize the main discussion points of the three Innovation Dialogue Fora.

On the current situation and the future of innovation systems in the WBC

The current situation in the WBC is characterized by the lack of policy coordination, the scarcity of statistical data, the difficulty of bringing innovation to society and the difficulty of bridging the R&D and market worlds. There are scarce established mechanisms to provide systematic links between research support organizations and the finance sector and the access to capital for SMEs and innovative start-ups is very limited. It is worth noting that a lot of these difficulties are shared with other countries (and most importantly with neighbor EU member states) although their intensity may vary. Despite the problems, the universities of the Region still produce goods students that need to be exposed to entrepreneurship and innovation and some local initiatives supporting start-up creation and innovation activities demonstrate existing capacity.

In order to facilitate the development of the national innovation systems it is important to coordinate mechanisms, initiatives and projects; to emphasize bottom-up approaches; to differentiate between R&D spending and innovation spending; to acknowledge and support social innovation and non-science based innovation and to bring together scientific and entrepreneurial/ managerial skills.

At a Regional level there is a need to improve coordination and synergies among policy makers and transfer good practices not by simple copy but by studying and taking into account the local conditions. Already established mechanisms such as Technology Transfer mechanisms, Science and Technology Parks and anti-Brain Drain schemes need to be studied, evaluated for their impact and transferred between countries and local communities taking into account the specific local conditions. Every current or future initiative should include build-in monitoring mechanisms with defined statistically measurable outcomes allowing market impact assessment. Specific skills are significant in this effort, so the Region should opt for the appropriate training programs that are particularly important for granting the right skills to young researchers. A Regional approach towards policy and program initiatives would help avoid the duplication of effort and would lead to a common and consolidated approach regarding barriers that freeze innovation support efforts. Political support will remain crucial for driving these efforts forward and the sustainability of all initiatives is regarded as a key element that would allow the time for the efforts to flourish and to bear fruits with a long-term perspective and benefit. Important issues that need to be addressed in the future include:

- The definition of the Regional dimension (what is the role of local initiatives; what is the role of neighbor EU countries; how to transfer knowledge from countries with complex systems to countries with beginner or infancy systems).
- The coordination of available funding (i.e. through national budgets, HORIZON 2020, IPA, other donors' contributions) in order to achieve multiplying effects and avoid duplication of efforts.
- Ownership of innovation initiatives and programs by the Ministries of Science and Technology, other public entities, academic institutions, business and society and enhanced stakeholder involvement in their development and implementation.

In terms of specific planned or on-going initiatives, the IDF discussed the planned “**WB Technology Fund**” which aims to create a 100M € equity investment fund focused on technology and will be managed by EIF (European Investment Fund). (According to the plan in the 1st phase 25M € will be drawn from IPA funds and € 10M will be contributed by the WBC). The discussion emphasized the need for commitment of the WBC governments and the need for the approval of IPA funds for the specific initiative. Participants agreed

that in order to succeed the initiative should emphasize private capital leverage and should guarantee the independence of the management and investment decisions.

The “**Western Balkans Regional R&D Strategy for Innovation**” was also discussed in all the three IDF meetings, which coincided with its period of preparation (the final Strategy was adopted on October 2013, about 1.5 year after the 3rd IDF). It was agreed by all participants that a Regional Strategy should reflect the vision of the WBC and should make reference to specific initiatives that would benefit the WBC. The expansion of the outreach of the Strategy would be possible by enhancing communication within the countries so as to better reflect the interests of more stakeholders. The significance of adopting a complementary approach with existing initiatives was emphasized so as to avoid duplication of effort. Initiatives should be headed towards the specialization of research through identifying concrete topics for follow-up. Another important issue was the management and implementation of the Regional Strategy that required formal, political commitment. Potentially, a Regional Body would be responsible for lobbying for commitment and for pushing related reforms. Sustainability dictated thinking on the benefits of the Regional approach and the next steps following the actual formulation of the Strategy. This meant looking for further funding sources and also securing the budget share at national level.

Suggestions for future activities

A large number of ideas for enhancing innovation at the national and Regional level were discussed during the three IDF. These came up as a result of round table discussions, brainstorming sessions, structured discussions on pre-defined topics and a series of proposals received as a result of an open call to submit ideas. The suggestions are summarized below in three thematic strands: on innovation policy; on supporting research/business cooperation and on strengthening business R&D and innovation.

Suggestions on innovation policy

- Adopt Smart Specialization Strategy approach to national and local planning for R&D and Innovation, even though this is not a formal requirement for WBC.
- Provide technical support to WBC in carrying out the self-assessment required under Innovation Union Annex I.

- Enhance knowledge on evaluation methodologies of innovation policies by organizing a specialized training workshop for WBC and carrying out peer review evaluations of innovation policy measures in WBC.
- Organise a systematic evaluation of Innovation Climate as a tool for policy decision making and as an indicator of innovation.
- Introduce innovation in Public Administration Reform (Open Government, Open Data) and modernize (governance in) the public sector with extensive use of ICT
- Initiate a Regional Foresight Exercise as a tool for Regional innovation planning
- Teach creativity and entrepreneurship at the secondary school level as a means to promote entrepreneurship and innovation to society.
- Explore power of the media including social media in new innovative ways in order to change public opinion on entrepreneurship and the relation between research and the market.
- Undertake capacity building initiatives towards social innovation and non-technical innovation.
- Use legislation to foster innovation i.e. tax incentives for companies to hire R&D personnel and Public Procurement to promote innovative products and service
- Improve IPR protection as a tool to increase marketing of innovations.
- Create Regional projects in the frame of existing schemes (e.g. EUREKA)

Suggestions on strengthening of research / business cooperation

- Create a funding mechanism for companies to submit projects to universities/ research centers (voucher type scheme)
- Develop a virtual laboratory for research innovation and entrepreneurship using a web platform and on-line services
- Introduce common PhDs in scientific topics of common interest with the potential for attracting business development and support.

- Support Joint European Research Projects/JERPs funded by the SEE-ERAnet plus program to prepare for introduction to market.
- Organize summer schools for young researchers on career in the knowledge society and international cooperation and on Innovation Management
- Create a Regional researcher mobility scheme for the WBC targeting intra WBC mobility as well as WBC – EU MS mobility.
- Establish dialog and communication between science and industry by using a variety of instruments such as thematic workshops, brokerage events, mobility schemes to foster science and industry cooperation.
- Organise a WBC-wide Best Technological Innovation Competition (based on the established experience of the University of Novi Sad)
- Initiate Blue Sky projects of academia – industry cooperation, without pre-defined outcomes, that will rely on the participants' creativity and interaction.
- Develop a Regional MSc training program on Innovation in South East Europe
- Create a Program to connect researchers in the WBC with WBC-researchers living and working abroad (diaspora)
- Provide seed money for start-up projects/companies. Engage EIB / EUREKA / EC Venture Capital Fund
- Twinning of best practices between innovative clusters in EU Member States, Associated Countries and the WBC
- Promote creation of spin-off companies within faculties

Suggestions on increasing business R&D and Innovation

- Create a Regional network of innovation officers. An Innovation Officer is as an employee that should operate within the SME as a driver of innovation.
- Provide strategic Innovation consultancy to SMEs and establish an innovation coaching scheme to train entrepreneurs on innovation management and problem solving

- Increase business development in incubated SMEs via international networking and co-incubation of companies with high growth potential in global markets.
- Develop business and innovation support structures through establishment of network of interdisciplinary business incubators that provide support to start-up companies and carrier development.
- Create a social Innovation fund in order to provide new, effective and innovative solutions to key socio-economic challenges.
- Create a Regional venture capital fund and a Regional business angels network
- Organize a Regional competition: on “Women in S&T and Innovation”
- Create a Regional inter-sectoral mobility scheme

Survey on Future Market Research and Innovation Needs in the Western Balkan Countries

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The article is based on the on the report by IPTS in collaboration with Institute Ivo Pilar available at: <http://wbc-inco.net/object/document/7423>

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Introduction

Within the WBC-INCO.NET project, a survey was developed to support innovation capacities in the WB region. The survey aimed to pinpoint both present and likely future research and market needs, as well as identify possibilities for collaboration in the region.

The survey was carried out in two rounds, the second building on the results of the first. Two questionnaires were jointly designed by JRC-IPTS and Ivo Pilar. These addressed, consecutively, market and research stakeholders.

The findings have supported other activities of the initiative and have contributed to provide a clear overview of the region's current situation and future needs with regards to innovation.

Methodology

The methodology employed consisted of five phases:

1. A literature review on innovation was undertaken to clarify the focus of the questionnaires. Such review led to focus the survey on the following aspects:
 - a. Importance of different stakeholders in the innovation process;

- b. Specific actions that can improve regional cooperation as well as innovation;
 - c. Factors necessary to stimulate regional cooperation divided in human resources, entrepreneurship infrastructure, expert assistance and cooperation between industry and research, fiscal and financial obstacles, and both national and local regulations;
 - d. Likely outcomes of enhanced regional cooperation.
2. The first questionnaire was submitted to selected firms in the WB region.
3. Building on the results of the first questionnaire and with the aim to compare results, a second questionnaire was sent to research stakeholders in the region.
4. A statistical analysis was conducted for both questionnaires, and results crossed with one another.
5. Results were circulated within the consortia for final refinements.
6. The response rate of the industry questionnaire (first round of the survey) was low. Only 20 firms replied (half of which from the IT sector). On the other hand the response rate for the researchers' questionnaire was higher.

Interesting results: Industry survey (first wave)

Given the low response rate, the results cannot easily be generalised. Nevertheless, some interesting features emerged from the exercise. It is important to notice that all the companies but one, were domestically oriented, in other words they served basically local customers.

The firms were asked their opinion in relation to the importance of 14 stakeholders' for firms' innovation capacities. Their responses indicate that, for the survey respondents the three most important stakeholders are:

1. Employees in the own enterprise or enterprise group
2. Professional and industrial associations
3. Universities and colleges

On the other hand, the three least important stakeholders are:

4. Cluster networks
5. Suppliers and customers from the WBC region
6. Venture capital firms/angel investors

These reflect the current level of development of the innovation system, where actors such as business angles, or systemic network interactions, are not perceived as relevant.

The industry survey also asked (through open questions), where the business saw potential for innovative development and interaction with the research sector to occur. The following areas appeared promising:

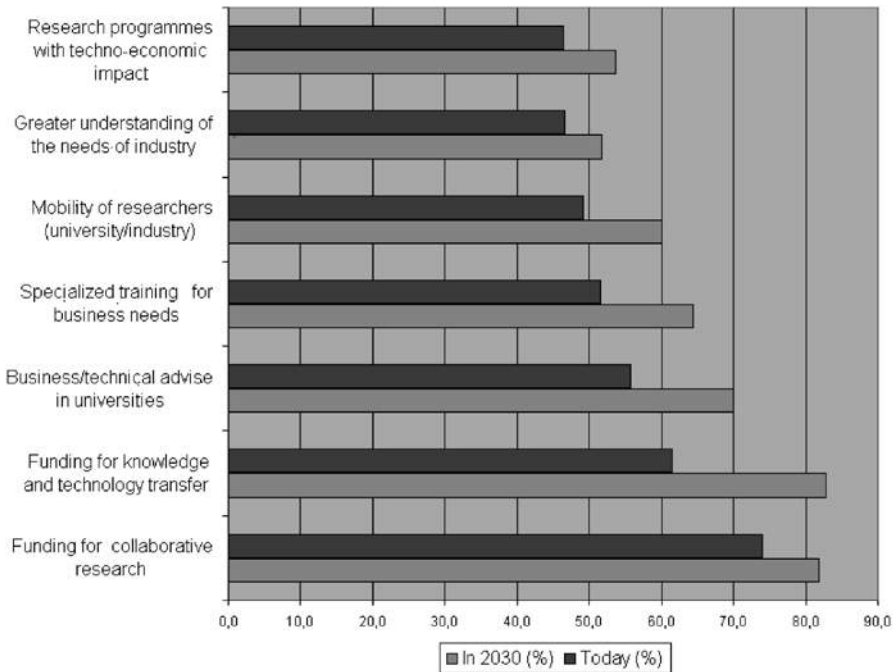
- Environment surveillance through ICT.
- Automation of information management systems through artificial intelligence and agent based software.
- Selling of goods and services through social networks and on-line data mining.
- Legal research to reach an agreement for trade of ICT services and products within the Western Balkans.
- Research on new approaches and frameworks to enhance FDI and cross-regional investments in the region

Interesting results: research stakeholders survey

The second wave of the survey has highlighted that funding as well as consultations and dialogue between stakeholders in the region is perceived as the most important action for improving cooperation between business and research in the region, both presently and in the future.

Skills and qualified personnel (i.e. scientists and engineers) are also perceived as critical to enable regional cooperation, whereas the quality of regional research institutions (i.e. technical universities and colleges) and communication infrastructure is perceived as needing improvement.

Respondents were also asked to assess the importance of various factors influencing university-industry collaborations at two points in time: now and in 2013. The graph reports the proportion of respondents that have classified each factor as *highly important*.

Figure 1: Important factors for university-industry cooperation today and 2030

Interestingly, all the factors assessed are perceived as important by more respondents in relation to the future than to the present, suggesting that researchers feel that other barriers need to be overcome in the short-term.

Industry and research: diverging views on the needs for research and innovation

Combining the results achieved through the double survey consultation, the following points can be highlighted:

- The most important actions for improving cooperation between business and research in the region, both presently and in the future are: (1) more funding for knowledge/technology transfer activities and expert consultations and (2) more funding for collaborative research between universities and businesses.
- Whilst state and local regulations as well as expert assistance, seem critical for innovative performance today, investment in human resources and in infrastructure emerges as crucial to enhance cooperation in the future.

- The answers given by industry and those given by researchers on the most important actions for improving regional innovation activities differ substantially. The three actions least important for industry are among the four more important for researchers, namely:
 - common programmes for mobility of personnel in the region between universities and business to establish
 - cooperation between science and industry, consistent legal framework aimed at facilitating foreign direct investments in the WB region, and a progressive
 - liberalisation and mutual opening of the service market within the WB region.
- The only action which comes as important for both business and researchers (ranking third for both of them) is that of developing regional initiatives for large infrastructural projects. Such an outcome highlights the need for enhanced communication and understanding between these two groups of stakeholder in order to achieve at a joint agenda.
 - Finally, from the research topics identified by industry as important to trigger regional innovation through collaboration, those that seem to appeal also to research stakeholders are:
 - Environment
 - Surveillance through ICTs, automation of information management systems
 - Through artificial intelligence and agent based software, and new
 - Approaches and frameworks to enhance FDI and cross-regional investments in the region.

Conclusions

A strong divergence between the views of industry and research in terms of present and future actions as well as areas for collaborations has emerged. This call for policy measures aimed at improving communication between the two types of stakeholders to facilitate the move towards a common agenda.

Presently, a strong need is felt also for policies providing more funding for knowledge/technology transfer activities and expert consultations as well as collaborative research between universities and businesses.

The critical issues emerged in the survey called for further analysis and discussion. In particular, it is suggested that industry and the research community gather to discuss the following aspects:

- Investment in knowledge and technology sharing, expert consultations and collaborative research
- Decrease in regulation
- Strengthening of human resources
- Improvements in infrastructure (including ICT)
- Building awareness on innovation benefits
- Fostering mobility
- Enhancing communication between different stakeholders

Comparative Analysis of the Innovation Capacities in the WBC with Emphasis on Joint Cooperation Needs in the Field of Innovation

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1. Introduction

The last enlargement of the European Union (EU) by two new members Bulgaria and Romania shifted the focus of the European Union from Southeast Europe towards the Western Balkan Countries (WBC) as the area where future integration is expected. WBCs are neighbouring countries to the EU and potentially its important partners for trade, investments, innovation development, etc. At the same time much of the Balkans lags behind the rest of the EU in technology accumulation and innovation capacities. That certainly calls, after two decades of transition to market economy, for application of the new growth models which would be more relied on innovation and research. One of the possibilities to foster innovation in the Balkan region is to intensify innovation cooperation following the concept of the regional innovation system. In order to provide a background analysis for better regional innovation cooperation, the WBC-INCO.NET project has initiated a comparative study of innovation capacities of the WBC and analysis of the factors which could improve the regional innovation cooperation.

2. Methodology and limitations

The comparative analysis of the WBCs' innovation systems and capacities is based on a complex analysis that includes a survey of innovation needs based on two on-line questionnaire targeted at entrepreneurs and researchers (from April to May 2011), mapping of the WBC Innovation Infrastructures carried-out by the Centre for Social Innovation¹, reports of national experts about the national systems, etc. Since the response rate on the on-line questionnaires was

1 ZSI (2011), Mapping of the WBC Innovation Infrastructures. Study carried out by the Centre for Social Innovation (ZSI) within the WP 8.1 of the WBC-INCO.NET-ENHANCED

rather low the results based on this survey are more indicative than conclusive. Yet, this is a first attempt if this kind of research in WBC.

It should be also noted that the main findings of the background analysis are certainly limited since a comprehensive comparative analysis of innovation systems of the seven individual countries would need much more human and financial resources, as well as *in situ* experience to understand the details of how the respective research and innovation systems work in practice.

3. Comparative analysis

The comparative analysis of the national innovation systems (NIS) includes the examination of four components: /1/ Research capacities; /2/ Innovation sub-system for entrepreneurship and non-research driven innovation; /3/ Innovation sub-system and policy programmes for research-driven innovation; /4/ Governance of innovation.

3.1 Research capacities and policies

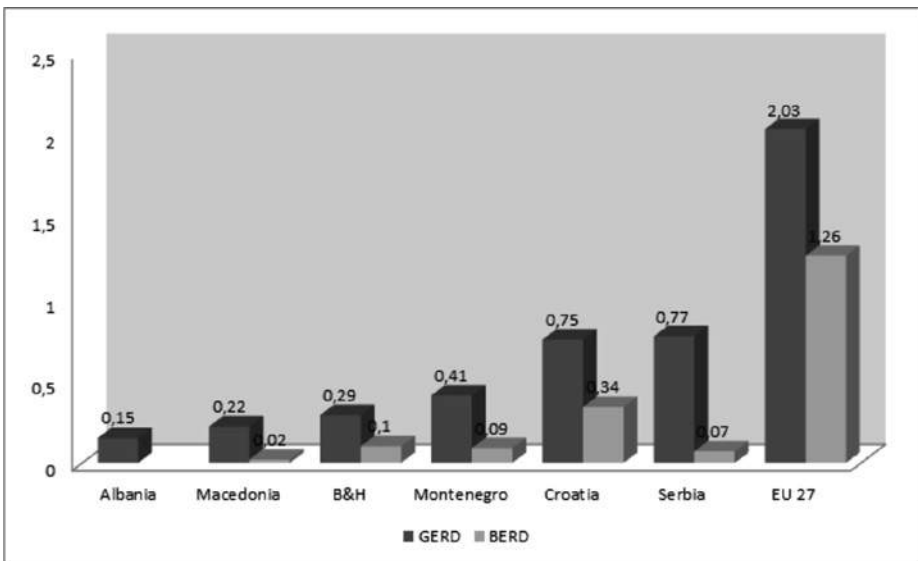
Science and research have a marginal role in the economic development of the WBCs, which is not only opposed to the goals of European Strategy 2020 for transition to the knowledge economy, but also threatens the production capabilities of companies and their absorption capacities of foreign knowledge and innovation that make the core of economic activity in the WBCs. The economic strategy and model of the WBCs with a strong reliance on capital inflows and external knowledge, de-industrialisation and excessive tertiarisation resulted in weak and, in some countries like Croatia and Macedonia declining research sectors characterised by the low R&D investments, innovation-deficient business sectors, brain drain, as well as limited ICT utilization

The WBCs' research systems significantly differ in research intensity, manpower, institutional complexity and performance abilities. The most developed systems are established in Croatia and Serbia, which have the highest investment in R&D, above 0.75% of GDP, but they are still significantly lower than the EU average (Figure 1). Although these countries have rather mature research and higher education systems inherited from ex-Yugoslavia, currently the systems require comprehensive reforms in order to achieve satisfactory levels of scientific excellence and involvement of the research sector in national economy.

FYR Macedonia, Montenegro and Bosnia and Herzegovina have rather small research communities, not exceeding 2,000 researchers, but have a good

perspective to catch up with Croatia and Serbia. Based on the analysis carried out within the WBC-INCO.NET project and other sources like ERAWATCH reports², it can be said that the institutional set up for R&D and higher education in these countries is mostly in place, as well as research policies and strategies. They are focused on increased investments in R&D, research excellence, international mobility, integration into ERA and connection between research and business sectors with the economy. By contrast, the research system of Albania and Kosovo are in an infancy phase, due to political and economic specificities. For example, according to the available data, the government of Kosovo invested in 2010, for the first time, €1m for research for public institutions, while the Albanian government undertook a deep reform of the scientific research system in 2006 to harmonize it with the European model.

Figure 1. The WBCs by Gross expenditure on R&D (GERD) and Business expenditure on R&D (BERD) in 2011 or closest (% of GDP)



The most critical part of the research systems in all the WBCs is the business research sector, where R&D investments are extremely low (Figure 1), illustrating a lack of interest for R&D and weak technological capacities. Although the

Croatian business sector invests in R&D incomparably more than other WBCs, this is far below the investments needed to create a critical mass of researchers and resources for technological accumulation and knowledge-based innovation.

Despite significant differences, the WBCs share many common problems in the research sectors, such as: lack of manpower, low international and sectoral mobility of researchers, low participation in the Framework Programmes, obsolete scientific equipment, weak abilities for university- industry collaboration and commercialisation of research results.

3.2 Institutions and policy programmes for fostering entrepreneurship and non-R&D driven innovation

Policy programmes and the institutional set-up for entrepreneurship and non-R&D based innovation are the most developed part of the innovation systems in all the WBCs due to the adoption of the European Charter for Small Enterprises in 2003, which recommended ten key policy areas of action to support SMEs. The implementation of actions was subjected to regular monitoring and evaluations resulting in two comprehensive studies of SME policy index carried out by the OECD³. As of 2010, all the WBCs have in place the basic legal and regulatory frameworks necessary for entrepreneurship and business development. In terms of company registration, for example, almost all of the WBCs have made significant progress in simplifying registration processes, and reducing the costs and time taken to register new firms. The development of more targeted enterprise support measures – for start-ups, export-oriented firms or those led by women – remains more uneven across the WBCs.

According to the level of implementation both SME Policy Indexes distinguish three groups of WBCs. The first group, made up of Albania, Bosnia and Herzegovina, and Kosovo, has an institutional and legal framework underpinning SME policy that is still largely reliant on ad hoc intervention and pilot projects, and is in need of further concretisation. A second group, made up of the FYR Macedonia, Montenegro and Serbia, largely completed the legislative and institutional framework supporting SME policy and entered the policy implementation phase. The third group includes Croatia alone, which was highlighted as the most advanced country in terms of SME policy and entrepreneur-

3 Policy indexes 2007 and 2009 - Progress in the Implementation of the European Charter for Small Enterprises in the Western Balkans, OECD 2007 and 2009

ship development. However, it was also stressed that there have been significant policy developments in Serbia across a wide range of dimensions. The country has moved rapidly from the phase of policy elaboration and definition of strategy objectives to policy implementation in areas such as support to innovative companies, start-ups, provision of business services and information dissemination through online services. The FYR Macedonia and Montenegro have made significant progress relating to human capital and provisions of business support services, while they are relatively weak in the key areas of supporting SME competitiveness and technological capacity.

These findings are supported by the mapping of the WBCs' innovation infrastructures carried out by ZSI which revealed that innovation infrastructures in the WBCs mainly include standard business and innovation supporting institutions like business incubators, entrepreneurial zones, clusters, technology and innovation centres, etc. Their operability and effectiveness significantly varies across countries, following the pattern already outlined in the SME policy indexes.

Although the INCO-NET study does not provide an estimate of the number of different innovation institutions, there are certainly several hundreds of them in the WBCs. Only Croatia counts for more than 200 different institutional entities to support business innovation. It is interesting to note that business incubators and clusters are the most spread innovation facilities in the WBCs. Business clusters are the easiest facility to set-up, as well as to close down, after the assistance from donors is over. Similarly, it leaves wide scope for interpretation due to its fuzzy, polycentric and hybrid nature. The great difficulty is to assess which of these clusters are really operational and which exist only formally.

3.3 Institutions and policy programmes for fostering R&D-driven innovation

Innovation policies for R&D-driven innovation usually involve specialised institutions and programmes for strengthening the interaction between different innovation sectors and involve tailored-made programmes for science-industry cooperation and commercialisation of R&D results. Such supporting programmes for R&D based innovation and science-industry interface institutions like technology transfer centres, technology parks, science parks, etc. are the weakest component of the innovation systems in the WBCs.

Only Croatia has devised so far a complex set of such institutions and programmes, due to the comprehensive innovation policy introduced at the begin-

ning of 2001. It resulted in several funding institutions (e.g. Business Innovation Agency-BICRO, Unity through Knowledge Fund), various programmes for university-industry cooperation (RAZUM, TehCro, IRCro, KonCro, PoC, TEST, etc.) as well as programmes funded by the European Union and the World Bank (SIIF, STP) focused on transfer and commercialisation of university research. Although Serbia has not developed a similarly comprehensive system for supporting research-based innovations as Croatia, it has created some highly successful programmes, such as the competition for the Best Technological Innovation in Serbia focused on the creation of university spin-offs at the University of Novi Sad. It has created more than 60 spin-off companies within last the 5-6 years. FYR Macedonia has made a significant progress in 2012 when the Innovation Strategy for the period 2012-2020 was adopted, as well as some other initiatives like legislation for university spin-off companies, etc. In B&H, such programmes are mostly in a pilot phase, while in Albania, Kosovo and Montenegro they are at a very early stage of policy elaboration.

The most common type of intermediary institutions is the technology park (in some places named science or industrial park). Croatia and Serbia have around five operating technology and science parks each, followed by FYR Macedonia with three, B&H with two, and Kosovo with one (Industrial park in Drens). Albania and Montenegro have no technology/science parks at the moment. However, the first initiatives for a technology park in Montenegro were launched in 2012. Technology transfer centres are mostly developed in Croatia, followed by Serbia and FYR Macedonia.

The development of the wider institutional context needed to support R&D-driven innovation such as financial tools for investing in research commercialisation (e.g. venture capital), intellectual property regulations in academia or technology foresight exercises are poorly developed in the WBCs. Only Croatia and Serbia established advisory services for intellectual property rights achieved by universities. According to the available data only Croatia and Montenegro launched fiscal (tax) incentives for fostering research in companies. Only Croatia has launched a programme on venture capital (VenCro), but the initiative was stopped due to the lack of interest of potential stakeholders. However, the Croatian network of business angels and private investors interested in investing in innovative companies (CRANE) is rather active. Technology foresight exercises are not carried out in any of the WBCs.

3.4 Innovation governance

WBCs' innovation systems are highly centralised, “top-down” systems coordinated by the line ministries, primarily the ministries of science/education in the domain of R&D-based innovation and the ministries of economy/entrepreneurship for supporting business infrastructure and innovation. This strong hierarchical governance model is typical for less developed countries and technological followers that suffer from a lack of market forces and established relationships between innovation stakeholders for driving technological development by the “invisible hand” of business interests and mutual co-evolution.

The lack of a co-evolutionary process between technologies, institutions and businesses requires high-policy level interventions to foster entrepreneurship and innovation. However, a strong “division of labour” and competences within the line ministries exists even in the countries with the most developed innovation infrastructure (like in Croatia) and points to the lack of cooperation and synergy between the government bodies. Although all the WBCs, except Kosovo, have the strategic documents related to research policies in place, they are not coordinated with innovation policies and do not have much influence on the economic strategy in general. The most ambitious countries in the utilisation of knowledge for economic development are Croatia, which has been running university-industry cooperation programmes for about a decade, and Serbia, which perceives academic institutions as a primary source of new knowledge production and innovation.

The main difficulties with strategic documents in many WBC countries are related to the:

- Large number of strategic documents in different areas with a low-level of implementation;
- “Europeanisation” of innovation and research policies, which does not have much in common with solving the problems of national or local economy.

For example, Serbia has produced from 2005 to July 2011 around 90 strategic documents on innovation, SMEs, research and technology. On the other hand, many strategic documents, at least in Croatia, present only a copy the European schemes and approaches, while lacking a down-to-earth analysis of national competences, national innovation needs and corresponding strategies. It is symptomatic that industrial policy is very poorly represented in the strategic plans of the WBCs, although it should have an important role in strategic

development concerning the backwardness in technological accumulation of the companies and a modest role of research for economy. During the transition period, industrial policy in the WBCs has focused on the financial rehabilitation and privatization of traditional industries that have lost their technological dynamism and have dragged entire economies into structural crisis and unemployment (e.g. shipbuilding sector in Croatia). From the available data, only FYR Macedonia, Croatia and Serbia have adopted some sort of industrial policies, but without action plans for the implementation.

4. Summing up

In the last 10 years, the WBCs made significant progress in innovation policy, in terms of infrastructures and supporting programmes for SMEs and entrepreneurship, while supporting programmes and institutions for research based innovation are rather modest. As expected, the former programmes and institutions are more common in the WBCs with less developed innovation systems, while the latter programmes are mainly limited to Croatia and Serbia. The WBCs have not, except Croatia and Serbia, initiated/developed specific policy programmes and supporting measures aimed at supporting inter-sectoral knowledge flows and interactivity, such as programmes for science-industry cooperation, research commercialisation, academic spin-offs, intellectual property rights in academic community, etc. The most common measure for supporting science-industry links is reduced to establishing intermediary institutions like technology parks and technology transfer centres, but with no evidence about their achievements.

It is rather difficult to estimate performance and efficiency of the WBCs' innovation systems due to their current instability and fluctuation, and lack of transparent and systematic data.

Based on their experience in establishing institutions and supporting programmes for innovation, the following characteristics of the WBCs can be identified:

- Kosovo – lack of innovation structure, strategy and programmes for both research-based and non-research based innovation;
- Albania and B&H – beginners in establishing supporting measures, policy elaboration and definition of strategy for non-research based innovation; intermediary institutions in the phase of infancy;

- Montenegro and FYR Macedonia – familiar with establishing and implementation of innovation infrastructure for SMEs and entrepreneurship (non-research based innovation);
- Serbia – complex innovation infrastructure for SMEs/ entrepreneurship, while programmes and intermediary institutions for science-industry cooperation are moderately developed;
- Croatia – complex innovation infrastructure for SMEs/entrepreneurship and developed policy-mix for science-industry cooperation, yet with the modest influence on economic development.

In conclusion, the comparative analysis of innovation performance in the WBCs tentatively distinguishes three groups of countries (Table 1). Croatia and Serbia belong to first group which develops complex innovation systems, yet not fully functional in all parts. Their role and activities will be crucial for the development of regional cooperation within the WB region. B&H and FYR Macedonia and Montenegro form the second group of countries which have a good perspective to catch up with Croatia and Serbia. They are rather familiar with the development of some innovation system components (e.g. R&D systems), but they are beginners (or moderate) in other components especially those related to science-industry cooperation. The third group of countries are small and geographically isolated economies (Albania and Kosovo) whose innovation systems are in the beginning phase (Albania) or infancy (Kosovo).

Table 1. A tentative categorization of the WBCs by innovation performance

	Research system	Entrepreneurship and SMES (non-R&D based innovation)		R&D-based innovation	
		Programmes	Institutions	Programmes	Institutions
Croatia	Complex	Complex	Complex	Complex	Complex
Serbia	Complex	Complex	Complex	Moderate	Moderate
FYR Macedonia	Familiar	Familiar	Familiar	Beginner	Moderate
B&H	Familiar	Moderate	Moderate	Beginner	Moderate
Montenegro	Familiar	Beginner	Moderate	Beginner	Beginner
Albania	Beginner	Beginner	Beginner	Beginner	Beginner
Kosovo	Infancy	Infancy	Infancy	Infancy	Infancy

Infancy-almost no experience; Beginner-establishing a few institutions/ programme; Moderate-establishing several institutions/programme; Familiar-there is a track record in institutions/programmes; Complex-existing system of institutions and programmes

Due to the different development levels of innovation systems in the WBCs, different measures or specific policy mixes need to be put in place. For example, in Kosovo and Albania important measures should be directed towards setting up the R&D system, while in Serbia and Croatia reforms of R&D and higher education systems are needed to achieve both scientific excellence, international recognition and deeper involvement of universities in the local and national economies.

5. The analysis of joint cooperation needs for better innovation and science-industry cooperation

This analysis is based on on-line questionnaires targeted at entrepreneurs and researches. Only several results will be presented here while the detailed analysis is provided in the project report.⁴

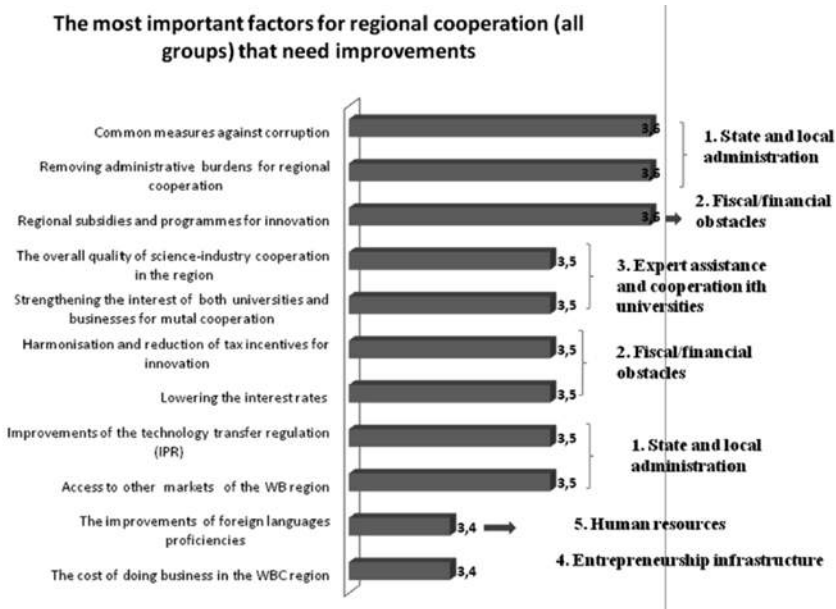
1. Companies estimate that **the most important factors for their**

4 Švarc, J., Aralica, Z., Lažnjak, J., Perković, J., Račić, D., Bečić, E., Poljanec-Borić, S. (2011), Comparative analysis of the innovation capacity in the WBC with particular focus on joint cooperation needs, Deliverable, D8.51, Institute of Social Sciences Ivo Pilar, Zagreb, December, 2011.

innovation capacity are the employees of their own enterprise or enterprise group and the professional and industrial associations. The third place is shared between the conferences/trade fairs/exhibitions and universities/ colleges. The least important are the venture capital firms and the companies from the WBC region;

2. As far as **outcomes of regional cooperation** are concerned, the entrepreneurs perceive WB region as the opportunity for gaining the new markets and for upgrading the efficiency of their companies by lowering the cost of businesses. They estimate that they would benefit the most from three equally important factors: /1/ access to new markets, /2/ availability of the possible regional financial initiatives (e.g. Regional Investments Bank, e.g. Western Balkan Investments Fund), and the /3/ lower costs of doing business (e.g. the cost of real estate, utilities, lower labour costs, etc.);
3. The **most important factors which need improvements** for better regional innovation cooperation are classified as “State and local administration” and the “Fiscal/financial obstacles” which include: /1/ common measure against corruption at the national level, /2/ removing administrative burdens for regional cooperation and /3/ more subsidies and programmes for innovation at the regional level (Figure 2).

Figure 2. The most important factors for regional cooperation that need improvements



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

4. The **science-industry cooperation** is also recognised as an important factor for strengthening the innovation capacities and regional cooperation. The three factors for better science-industry cooperation are recognized as particularly important: /1/ more funding for collaborative research between universities and businesses; /2/ more funding for knowledge/technology transfer activities and expert consultations and /3/ greater understanding by researchers of the needs of business companies and industry. The least important is the “Introduction of regular business/technical advising services at universities for the needs of businesses”. It might indicate that companies already have experienced such advising activities without an impact on their businesses.
 - When comparing the answers given by companies and those given by researchers on the most important actions for improving regional innovation cooperation, they seem to differ substantially (Table 2). The three actions least important for companies are among the four most important for researchers.

They include /1/ the common programmes for mobility of personnel in the region between universities and business to establish cooperation between science and industry; /2/ consistent legal framework aimed at facilitating foreign direct investments in the WB region; /3/ progressive liberalisation and mutual opening of the service market within the WB region. By contrast, companies prefer funding and financial support for improving regional innovation cooperation such as the regional venture capital fund. However, both the parties recognized the need for large infrastructural programmes as the driver of regional innovation cooperation (ranked 3rd).

Table 2. Importance of regional innovation actions for improving regional innovation cooperation

	Companies	Researchers - today	Researchers in 2030
Establishing regional venture capital fund	1	6	11
Creating a regional financing programme for innovation	2	4	6
Developing regional initiatives for large infrastructural projects	3	8	3
Common large scale technology programmes	4	12	9
Joint regional approach towards international funding institutions (WB, EU)	5	10	7
Harmonisation and opening of the government's procurements markets	6	5	5
Strengthening regional innovation clusters in selected sectors	7	11	12
Common apprentice (trainee) programmes of young experts	8	7	10
Common educational programmes for technical skills, innovation management,	9	9	8
Common programmes for mobility of personnel in the region between	10	3	1
Consistent legal framework aimed at facilitating foreign direct investments in the	10	1	2
Opening and liberalisation of the service market within the WB region	12	2	4

6. Conclusions

The analyses reveal that WBC differs significantly in overall development and related innovation capacities. For example, there is almost a four-fold difference in per-capita income between the richest (Croatia with €10,246 GDP p/c) and poorest (Kosovo with €2,650 GDP p/c) country in the region⁵ as well as in performance of the national innovation systems (NIS) and governance abilities to advance innovation competences.

Despite the differences, WBC share many similarities that provide a platform for mutual cooperation and possible development of the regional innovation system. One of the most substantial similarities is a nature of their competitive advantages which refers to non-research based innovation and technology efforts that include absorption of foreign technologies and mastery of production capability. Science and research is a residual of their present economic models and not a vital element of development. It calls for policy measures and instruments for strengthening innovation capacities at national and regional level and productive use of research and education.

Due to the different level of development of NIS in WBC the different measures and policy mix should be put in place. For example, in Kosovo UN Res.1244 important measures should be directed towards setting up the research system while in Serbia and Croatia the reforms of research system are needed in order to achieve scientific excellence and involvement of research sector in national economy.

The survey-based studies on regional innovation needs reveals that entrepreneurs and researchers recognised two factors as the most important for fostering regional cooperation:

- removing the state and local administrative burdens and procedures for regional cooperation including the measures against corruption;
- improvements of science- industry cooperation which include, among others, strengthening the interest of both companies and universities for mutual cooperation; more intensive science-industry cooperation assumes more subsidies for technology transfer programmes at the national and regional level.

It is worthwhile noticing that entrepreneurs, unlike researchers, think that the biggest obstacle to science-industry cooperation is the lack of understanding of researches of the needs of businesses. It points to the communication barriers between entrepreneurs and scientists, lack of understanding of each other needs. It demands establishing of different forms of dialog and communication channels among these two spheres.

The concrete joint actions to be taken for better regional innovation cooperation perceived by entrepreneurs include establishing of the regional venture capital fund and the regional financing programme for innovation. In contrast, researchers perceived mobility, legal framework for fostering direct foreign investments) and liberalisation of service market (probably for R&D services) as the most important.

Finally, both parties recognised the lack of the large infrastructural projects for fostering regional innovation cooperation. It calls for identifying and creating infrastructural projects that are sufficiently large and capital intensive to involve several all interested countries and stakeholders in the region like ICT, transportations, energy resources, clean technologies, etc.

Is the Triple Helix model relevant for innovations in WBC?

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1. Introduction

The Triple Helix model of university-industry-government relations (e.g. Leydesdorff 1997, 2000; Etzkowitz, 2008) was perceived as mostly irrelevant to the WBCs because of well-known deficiencies of the three “helices”, such as low scientific capacities both in the private and the public sectors, low R&D investments, absence of cutting-edge technologies and the lack of strategic innovation governance. The recent “Triple Helix Systems of Innovation” concept (Ranga and Etzkowitz, 2013) introduces a new vision by bridging key features of the Triple Helix model with the innovation systems theory (Carlsson and Stankiewicz, 1991; Carlsson et al., 2002; Carlsson, 2003; Edquist 1997). A Triple Helix System is defined, similarly to an innovation system, as a set of components, relationships and functions that generate and promote innovation. The components include institutional and individual players that can be further differentiated into R&D and non-R&D innovators, the relationships consists of five different types of activities among which technology transfer, collaboration and collaborative leadership are particularly salient, while functions are realised through a set of activities in the Knowledge, Innovation and Consensus spaces. The concept of spaces provides a framework for assessing the efficiency of Triple Helix interactions based on the performance, interaction and co-evolution of institutions within and among the spaces. The new model recognises the role of “non-R&D innovators” and acknowledges that a large part of the innovation process is not technology- and R&D-driven. Due to these features, the Triple Helix systems concept offers a new perspective for analysing innovation in the WBCs and strengthens the argument that Triple Helix innovation can exist also in technology laggards like the WBCs, albeit in incipient forms. Additional arguments in favour of using this approach include:

- Existing measures to stimulate economic growth based on mere encouraging entrepreneurship and non-R&D innovation have not

proved to be successful, at least judging by the general economic indicators

- WBCs' competitiveness in the long-run is not sustainable without increasing their abilities for absorption and creation of new technologies, including application of radical innovation and disruptive technologies; this is due to the restructuring of global economy which shifted the traditional labour-intensive manufacturing typical for WBCs to the Far East making the key industries of WBC uncompetitive on world markets;
- In countries with a weak business R&D sector, the university is the main generator and disseminator of knowledge, as well as a promoter of advanced and disruptive technologies that may bring changes in the economic structure;

Adopting a Triple Helix Systems perspective of innovation in the WBCs also brings us closer to EU policies that give growing recognition to the importance of industry and re-industrialization (EC, 2012a) and smart specialisation (RIS 3, 2012) all over Europe. Smart specialisation, in particular, follows the same theoretical foundations as Triple Helix and innovation systems (e.g. the triad of research, business and government sector) to support industry needed for Europe to reverse the declining role of industry and compete with USA and Asia (EC, 2012). Industry has important spill-over effects because it is based on constantly emerging new technologies and innovations and encourages therefore, scientific research, technological accumulation and learning. It also embodies the results of university research, providing them with social and economic relevance. The basic dilemma is about the drivers of industrial development and research in less developed countries: is entrepreneurship sufficient or university research plays also an important role?

2. Impediments to and perspectives of Triple Helix systems in the WBCs

The *pros* and *cons* for the Triple Helix in WBCs starts from the basic assumption that perspectives of Triple Helix innovation in the WBCs are strongly correlated with the performance of their innovation systems, which build the Triple Helix Knowledge, Innovation and Consensus spaces. In other words it assumed that impediments and perspectives of implementing Triple Helix systems in the WBCs depend on the performance and maturity of the main components of

the WBCs' innovation systems which provide the inputs for the Triple Helix system. The analysis of the WBCs' innovation performance is based on a comparative study of the WBCs' national innovation systems carried out within the FP7 WBC-INCO.NET project (Švarc et al., 2011). It identifies the three main findings regarding the WBC's abilities to implement Triple Helix Systems for strengthening their innovation capacities. First, the constitutive elements of Triple Helix systems are still incipient in all the WBCs, with significant differences between countries in the degree of development. Serbia and Croatia are the most advanced, due to the relatively developed research systems, more sophisticated production capacities and experience in governance of R&D and non-R&D based innovation. Montenegro and B&H have medium capacities according to their innovative performance, while FYR Macedonia is somewhere in the middle of these two groups, having made good progress in improving its R&D system and fostering non-R&D based innovation. Albania and Kosovo are way behind because of the immaturity of structural components of their innovation systems, and their main concern is to establish an efficient R&D system, improve the innovative capabilities of companies and overall innovation management of system. Second, the differences among WBCs in Triple Helix implementation are due to disparities in the performance, maturity and efficiency of the main components of the innovation systems, which provide at the same time the "inputs" for the Triple Helix spaces, components and relationships that enable the functioning of a Triple Helix system. Thirdly, considering these country differences, the prospects for the development of Triple Helix systems need to be also differentiated.

Due to the variability of available data on innovation performance in the WBCs and complexity of Triple Helix systems which requires more financial and human resources for detailed analyses, a clear and straightforward systematization of countries by their perspectives to developing Triple Helix systems is not possible at this stage. However, by analogy with the differences in the development of the main components of the WBCs' innovation systems, a tentative classification is made to classify the WBCs by the development level of the Triple Helix spaces and the overall perspectives to establish Triple Helix systems (Table 1).

Table 1. A tentative categorization of WBCs by potential for developing Triple Helix spaces

	Knowledge space	Innovation space (non-research based innovation)	Innovation space (research based innovations)	Consensus space	TOTAL Statist regime of TH
Croatia	Very good	Very good	Good	Modest	GOOD
Serbia	Very good	Very good	Good	Modest	GOOD
FYR Macedonia	Good	Good	Moderate	Weak	MEDIUM/ GOOD
B&H	Moderate	Moderate	Modest	Weak	MEDIUM
Montenegro	Modest	Modest	Modest	Weak	MEDIUM
Albania	Weak	Modest	Very weak	Very weak	LOW
Kosovo	Weak	Modest	Very weak	Very weak	LOW

The analysis revealed that all the WBCs, even the most developed in terms of Triple Helix interactions, are under a statist regime of Triple Helix model (Triple Helix I) (Etzkowitz and Leydesdorff, 2000), where government plays the lead role, driving university and industry, and even this regime is patchy. A move towards a Triple Helix II model (led by industry) is also a great challenge for all the WBCs, including the most developed – Croatia and Serbia. The main impediments come from the deficiencies of the production sector, which is mainly low-and medium-tech and rarely needs cooperation with the research sector. Economy in the WBCs is dominated by large and un-reformed state-owned companies that are not fully exposed to market competition which would urge them to innovate. A new layer of SMEs has been established in traditional sectors which are not based on R&D and innovation, and consists largely of micro companies with less than 10 employees having modest capacities to perform or absorb research. The analyses for Croatia indicate, for example, that, overall, SMEs invested less than 1% of total revenues in research and development, an amount of around €88 million in 2008 (MEC, 2012) .

The transition to a balanced model (Triple Helix III) which assumes co-evolution of helices and is characterised by interaction between knowledge-producing institutions, industry and government, may appear at first sight as an unrealistic task. However, a closer analysis for the majority of the WBCs, it could prove a feasible objective if envisioned as a process where universities could take an active, if not leading role, by strengthening government-university and uni-

versity-industry dyads. The fact that companies are not able to create advanced technology and apply competitive technologies makes room for universities to become more involved in the transfer of new knowledge and innovation for the needs of industry. Government support, or a stronger government-university dyad, is essential in achieving this objective, and could have an amplifier effect by further strengthening the university-industry dyad. Although such a model is still far from the balanced model of Triple Helix III, it could be seen as a precursor, giving universities a chance to fill the gap and overcome the weaknesses of a dormant and inefficient production sector and government sector. Global competitiveness depends nowadays on new, advanced and cutting-edge technologies which are technologically and economically disruptive and can be mediated by universities. Although universities could have a lead role in certain technological advanced sectors, the core of economic activities remains within business companies. Therefore, one of the most important steps towards implementation of the Triple Helix systems is to change the economic strategy to revitalize industry and improve technological competences of companies and allow universities to take a mediating position, if not a lead where possible.

3. Conclusions

The fact that a large part of the innovation process in the WBCs is not technology or R&D-driven reduces the relevance of the standard Triple Helix model, focused on the prominent role for the university, for studying innovation in the WBCs. However, the concept of the Triple Helix systems offers a new, down-to-earth analytical framework that takes into account that many countries are not able to generate appropriate structures for knowledge production, transfer and application built upon coordinated efforts of the Triple helix elements of university, industry and government.

From the perspective of Triple Helix models (TH I, II and III) that were extensively discussed during the last decade, the comparative analysis of innovation performance in the WBCs revealed that these countries mostly apply a statist Triple Helix model (TH I), driven by the government, which is however, not fully functional in any of the WBCs. There are also significant differences between the WBCs in their abilities to apply the Triple Helix model for strengthening the innovation capacities of national economies. The differences are due to disparities in the performance, maturity and efficiency of the main components of their innovation systems. How could these countries then move towards Triple Helix systems, considering that their innovation systems provide

the “inputs” for the Triple Helix Knowledge, Innovation and Consensus spaces, components and relationships?

The immaturity and dysfunctions of the spaces inhibit mutual co-evolution through interaction and cooperation that provide the essence of a Triple Helix system. This suggests that the main reason for weak Triple Helix functioning is not so much in the lack of interaction, but in weaknesses related to each of the individual TH components - innovation governance, scientific and higher education systems and innovation, and technological capacities of companies. Empowering each of these sectors through a stronger mediating, if not leading role of the university in university-government and university-industry dyads, appears, therefore, as a prerequisite for the co-evolution of helices and successful implementation of Triple Helix Systems.

One of the key messages coming from studying the possible implementation of Triple Helix systems in the WBCs is to strengthen industrial innovation and entrepreneurship. More precisely, the main challenge is to propel entrepreneurship spirit or capital (Audretsch, 2009) (and make innovation and research more attractive for business sectors and industry. These challenges are more related to the standard business development, managerial skills, technological accumulation and supportive business environment than to the exploitation and commercialisation of scientific research.

This is an unavoidable step towards achieving sufficiently mature helices which support each-other through a process of mutual co-evolution, feed-back loops and synergy. However, since the Triple Helix components across the WBCs are very unevenly developed, each country should apply own specific policy mix for upgrading the helices. For example, Kosovo and Albania should focus on establishing the research and higher education systems, as well as business supporting institutions, while Croatia should focus on the reforms of the same systems and institutions for their greater efficiency and self-sustainability. Less developed countries require further sophistication of entrepreneurship infrastructure like high-speed internet, while others are more challenged by production sophistication and entering global markets.

In addition to revitalisation of business competences, innovation policies in WBCs should also be more focused on instruments which accelerate innovation through more direct regional cooperation among companies to achieve goals like economies of scale, pooling resources, connection into the regional value chain, sharing common infrastructure and other resources. Regional cooperation in innovation, business and research could reinforce mutual learning and better use of resources. The primary aim is to improve business competitiveness

and relevance on international markets, which would have a positive feedback on both R&D and education. Future research should, therefore, pay more attention to business cooperation and identification of barriers that impede it. For example, the analysis performed within the WBC-INCO.NET project revealed that both entrepreneurs and researchers perceive the state and local administrative burdens and procedures as the greatest barriers to regional cooperation. While business people see it as an obstacle to access new markets, researchers are more concerned about barriers to mobility, which is for them an important component of quality research. Given that the knowledge about the nature and impact of administrative barriers is rather scarce, it could be worthwhile identifying in the future the red tape which impedes regional innovation cooperation.

The limited innovative capabilities, on the one hand, and the need for global competitiveness usually based on research and innovation, on the other hand, lead to the conclusion that WBCs have to act on two fronts simultaneously. The first front includes policy measures to improve the production capacities and to strengthen the entrepreneurial spirit in the region. This front is crucial for immediate or short-term recovery. The whole region could benefit from spatial proximity, a common market of more than 20 million persons, as well as from involving companies into the common innovation process on the regional level supported by the similar values and understanding of technological and commercial processes.

The second front refers to improving research and educational capacities to increase the economic impact of R&D, along the principles of smart specialisation. The World Bank's *Western Balkans Regional R&D Strategy for Innovation* (World Bank 2013) could provide an excellent starting point on this matter.

In short, the WBCs should play on both terrains - technological mastery in the industrial sector and frontier research in the universities. The implementation of these two tasks requires not only technological advancements and research capacities, but also more profound socio-cultural changes in order to bring back the trust in hard work, innovation and entrepreneurialism as drivers of progress and enrichment on both individual and broader socio-economic level. Since the development of non-research based innovation and traditional sectors are emerging as crucial for sustainable development in the WBCs, future research should be more concentrated on technological upgrading of these sectors.

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How to Implement Good Practice Examples in the Western Balkans – Four Pilot Projects

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Introduction

Based on the principle of the Open Method of Coordination, the European Commission and many Member States have promoted for many years the convergence and standardisation of innovation policies towards the ‘best-practice’ policy. However, over the last decade the insight has been widely acknowledged that what may work good in one region or country, may not be the best policy instrument for all other regions or countries¹. With new governance concepts, such as ‘Smart Specialisation’ the idea is rather a differentiation of policy that is promoted.

Still regions and countries can learn from policy instruments that have been developed elsewhere. The idea is not to copy-paste, or transfer the policy instruments, but to adopt some aspects, some design-features and adapt these useful elements to the situation in a different context of the concerning Western Balkan countries.

In this chapter we focus on learning, rather than on inventions. Learning by doing, learning by using and learning by interacting. Learning refers to policy-learning as well as to learning to innovate. Learning by policy makers from existing policy instruments invented elsewhere, and learning by SMEs from the experience that is provided by the concerning four support mechanisms.

Instead of offering a temporary incentive by reducing the cost of doing R&D to invent new products, these four schemes change the behaviour of the participating SME, and this change in behaviour often does not stop when the support stops, because they have learned lessons and gained experience in innovation

1

Nauwelaers, C. & R. Wintjes (2002), “Innovating SMEs and Regions: The Need for Policy Intelligence and Interactive Policies”. *Technology Analysis & Strategic Management*, vol. 14, 2, pp.201-215.

and have tasted the benefits of their new behaviour. The behaviour of the SMEs (their perceptions, their routines, their awareness) is changed: by addressing SME problems with external knowledge through vouchers, by the organised self-reflection of Strategic Innovation, by the lessons learned from an Innovation Officer, or from learning to go international from 'Soft landing'.

WBC-INCO.NET dedicated a special Work Package to the topic of innovation support. The objectives were to:

1. provide an overview on the innovation systems of the Western Balkan countries and the key RTDI stakeholders of the region,
2. identify future research / market needs and to analyse the needs in innovation policy and innovation support,
3. identify good practices of innovation activities, policies and instruments from EU Member States/Accession Countries as well as from Western Balkan countries (WBC) suitable to be adapted to the needs of the region and to develop adaptation schemes for selected ones,
4. identify policy measures to improve the framework conditions for innovation and then to define joint actions,
5. organise and promote a dialogue of the regional research and innovation stakeholders in South East Europe at political and analytical level (through Innovation Dialogue Fora, the establishment of a WBC Innovation Group of Experts and the support by a large networking conference),
6. organise trainings for innovation stakeholders and auditors, support agencies and researchers in the fields of technology transfer and market innovation needs with a view to bridging the gap between research and industry (with an emphasis on strengthening the market position of SMEs).

This chapter focuses on the third point: identification of good practice examples of innovation schemes and their adaptation schemes. In order to elaborate proposals for the implementation of good practice examples in the WBC, the project partners in charge of this activity carried out the following undertakings in order to enable the respective regional stakeholders to learn from the experiences of other regions:

- identification and comparison of good practice examples of innovation policy approaches and instruments of EU Member States and the Western Balkan countries suitable for the adaptation/transfer to the WBC, such as analysis of direct and indirect support measures for innovation activities (incl. tax measures);
- selection of some of these good practice examples of innovation policies, instruments and activities, especially suitable to be adapted to the needs of the region and their interest; then presentation to and discussion with WBC stakeholders;
- development of adaptation schemes for selected good practice examples taking into account the institutional and political environment in the WBC and their presentation to and discussion with WBC stakeholders.

A number of good practice examples of EU Member States and the Western Balkan countries were identified, listed and described in a project deliverable available at the project's website.² This includes innovation policies, instruments, infrastructure, measures, programmes and running activities. Liaison with the Regional Competitiveness Initiative (OECD) and the project on the WBC Regional R&D Strategy on Innovation (Worldbank and Regional Cooperation Council) were particularly sought also in relation to this task.

On the basis of the comparative analysis performed also in the Workpackage on Innovation Support, good practice examples suitable for the adaptation to the circumstances and needs of the region were selected. As part of WBC-INCO.NETs Work Package 8 on Innovation support, selected good practice examples of innovation measures adaptable to the region or to some individual countries of the Western Balkans were considered in view of their transfer and future implementation. This was performed in four steps:

1. The project team collected 45 good practice examples of innovation schemes (programmes, instruments and measures aiming at supporting innovation activities) from EU Member States and Western Balkan countries and presented the examples in a project deliverable³. Table x gives an overview over the innovation schemes. The schemes were chosen by matching them to the needs identified in another Task of WBC-INCO.NETs Work package 8 on Innovation Support.

2 D8.50

3 <http://wbc-inco.net/object/document/7884>; D8.50 "Good practice examples of innovation policy approaches and instruments in the EU Member States and the Western Balkans" submitted in November 2011

Table 1: Overview on the good practice examples matched to the needs identified

Market/Research need identified in the WBC	Number in text	Good practice example	Country
		From EU Member States	
Regional voucher scheme (companies to submit projects to universities)	3.1	Research Voucher Scheme	Netherlands
	3.21	Voucher scheme for science-business cooperation	Bulgaria
Network of regional innovation and technology auditors, carry out regional SME Innovation Audits	3.2	Strategic Innovation	Netherlands, Belgium, Germany
Develop the regional market for innovation and research	3.3	Integrated Destination Management System	Germany - Bulgaria
Regional venture capital fund & incubation services	3.4	Soft landing Platform Services	Germany - Croatia
	3.5	VenturelabTwente	Netherlands
Regional training programme for technical skills, entrepreneurship etc.	3.6	KOpEE	Germany
	3.15	Genomnanotech Regional Knowledge Center	Hungary
Large-scale technology programme which should involve all innovation stakeholders at the national level for modernisation (structure of the national economies is dominated by the low-tech sector)	3.7	Dutch Polymer Institute (and Polymer Innovation Programme)	Netherlands
Harmonise and open-up governments procurement markets	3.8	Small business Innovation Research (SBIR)	Netherlands
Regional financing programme for innovation activities in companies	3.9	Energy Subsidy Scheme	Netherlands
Programmes for science-industry cooperation should be adapted to the needs of the SMEs (vouchers, regional awards, regional training centres, various mobility programmes among countries and sectors, apprenticeship, etc.)	3.10	VINNVÅXT	Sweden

Foster wisely the programmes for research commercialisation and establishment of intermediaries (science parks or TTCs) so as not to create a false impression of progress and modernisation	3.11	Knowledge Management Centre (KMC)	Hungary
	3.12	Regional University Knowledge Centre for Vehicle Industry/Széchenyi István University, Győr	Hungary
Regional training programmes on innovation management	3.13	Semmelweis International Bio-Entrepreneurship Programme (SIBE)	Hungary
Strategic visions of development of NIS (analytical studies based on technology foresight exercise or assessments)	3.14	Future for Moldova	Germany / Moldova
Regional Innovation Coaching Scheme	3.16	Innovation Officer	Netherlands
Greater understanding by researchers of the needs of business companies and industry	3.17	Kplus/COMET	Austria
Network of clusters in selected sectors	3.18	Support to accredited innovation clusters	Hungary
Programmes for large regional infrastructure projects	3.19	Regional University Knowledge Center for Environmental - and Nanotechnology	Hungary
	3.20	Szeged Neurobiological Knowledge Centre (SNKC)	Hungary
		From WBC	
Programmes for large regional infrastructure projects	4.1	BIZ Incubator	Serbia
	4.8	Techno Park Zagreb	Croatia
	4.9	Techno Park Varaždin	Croatia
	4.10	BIOS Incubator Osijek	Croatia
	4.11	Innovation and Entrepreneurship Centre (IEC) Zenica	Bosnia and Herzegovina
	4.12	Innovation Centre Banja Luka (ICBL)	Bosnia and Herzegovina
	4.13	University Entrepreneurship Centre (UPC)	Bosnia and Herzegovina

	4.14	BIT Centre Tuzla	Bosnia and Herzegovina
	4.18	Incubator Inventivnost	Montenegro
	4.19	R&D Service Centre	Montenegro
	4.20	ICK	Kosovo under UNSCR 1244
	4.21	NCDIEL	FYR of Macedonia
	4.22	YES Foundation	FYR of Macedonia
	4.23	BSC Bitola	FYR of Macedonia
	4.24	MIR Skopje	FYR of Macedonia
Regional „Best technological innovation competition“	4.2	Competition for Best Technology Innovation	Serbia
Harmonise and open-up governments procurement markets	4.3	Grant Scheme Innovation Projects	Serbia
	4.5	RAZUM Programme	Croatia
	4.6	Proof of Concept Programme	Croatia
	4.7	TEHCRO Programme	Croatia
	4.16	Olive saplings production	Albania
	4.17	Support on Sustainable Agriculture in Albania (SASA Project)	Albania
Network of clusters in selected sectors	4.4	Vojvodina ICT Cluster	Serbia
Regional research infrastructure roadmap in collaboration with industry	4.15	Research laboratory for the production of Pleurotus mycelium	Albania

2. Eight of these examples were chosen as the most suitable and presented and discussed during a First Review Meeting on Innovation Good Practice Measures held in April 2012 in Tirana/Albania. At the end of the meeting, participants from the Western Balkans answered a questionnaire in order to identify the four schemes that seemed the most feasible and interesting for an implementation in their countries. The results and the most highly ranked schemes are given in table x2.

Table 2: Table presenting the results of the analysis of the evaluation forms

Nr. of example presented in meeting	Name of good practice example	Ranking of feasibility (1=high, 9=low)	Rank
1	Innovation Voucher	2,8	1
6	Soft landing platform services	3,9	2
3	Innovation Officer	4,3	3
2	Strategic Innovation	4,4	4
8	VINNVÄXT	4,6	5
7	Integrated destination management system	4,9	6
4	Knowledge Management Centre (KMC)	5,7	7
5	KOpEE	6,0	8

3. Out of these chosen eight measures, four selected good practice examples were looked at in more detail during a Second Review meeting in April 2013 in Skopje/FYR of Macedonia. During the meeting, possible adaptation schemes were developed for these four measures in view of an implementation in the Western Balkan region. These four schemes are: **Innovation Officer, Strategic Innovation, Innovation Voucher Scheme and Soft Landing Platforms**. WBC Participants again answered a questionnaire indicating which of the schemes would be the most feasible and interesting for implementation in their countries.
4. As a follow up, four Task Force Meetings were organised from November 2013 to February 2014 to draft for each of these four schemes a pilot project for its implementation in one of the Western Balkan countries or in the region. Representatives of one or two Western Balkan countries took part in the meetings, where the results – seven pilot projects - were presented also to high-level decision makers.

As guiding questions for the discussion during the Task Force Meetings, the following questions were used:

- Why is this measure interesting for country to be launched as pilot project addressed to support innovation activities in country?
- What are objectives?
- What is target group? If SMEs, what kind of SME's?

- Who could be possible knowledge providers?
- Who could be the agency that selects/contacts SMEs?
- Answers to point 3 of feasibility study (Setting-up of measure in WBC - proposed structures).

In order to give the project partners from all Western Balkan countries the opportunity to make use of these results, the pilot projects will be made available at an exchange platform under the wbc-inco.net website.

Results

The results of the Task Force Meetings are documented as adaptation schemes (pilot projects for the schemes **Innovation Officer, Strategic Innovation, Innovation Voucher Scheme and Soft Landing Platforms.**) serving as supporting documents for the implementation of the measure for the WBC partner Ministries. They contain information on the implementing institution, budget, time frame, order of steps to be taken, capacity needed, accompanying measures etc. as guideline with the following content obligatory per measure:

1. Description of the measure
2. Development of the measure in country of origin
 - 2.1. Implementing agency
 - 2.2. Budget:
 - 2.2.1. Administration of the measure
 - 2.2.2. Financing the implementation of the measure
 - 2.3. Human resources:
 - 2.3.1. Management
 - 2.3.2. Operational staff
 - 2.4. Users (beneficiaries, clients) of the measure
 - 2.5. Procedure for implementation:
 - 2.5.1. Public calls, ToR (Term of Reference) for would-be applicants

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- 2.5.2. Criteria for selection
 - 2.5.3. Procedures for selection
 - 2.5.4. Awarding of applicants
 - 2.5.5. Procedure for complaints
 - 2.6. Monitoring of implementation of measure:
 - 2.6.1. Reporting
 - 2.6.2. Interim evaluation of the implementation of the measure
 - 2.7. Evaluation of the measure:
 - 2.7.1. Ex-post evaluation of the results
 - 2.7.2. Cost-benefit analysis
 - 2.7.3. Impact evaluation
 - 2.8. Publication and dissemination of the information about implementation, results and impacts of the measure
 - 3. Setting-up of measure in WBC - proposed structures:
 - 3.1. Organisational structure(s) of implementing agency
 - 3.2. Human resources:
 - 3.2.1. Management
 - 3.2.2. Operational staff
 - 3.3. Possible users of the measure
 - 3.4. Procedures for implementation of the measure:
 - 3.4.1. Public calls
 - 3.4.2. Selection and awarding of users
 - 3.4.3. Monitoring of the implementation of the measure
 - 3.4.4. Evaluation of the realisation of the measure
 - 3.4.5. Publicity of the implementation, results and impacts of the measure
 - 3.5. Budget:

3.5.1. Administration of the measure

3.5.2. Financing the implementation of the measure

4. Possible barriers and obstacles in implementation of the measure in WBC
5. Concluding remarks
6. (optional): Conditions for involvement of the authors of the measure in setting-up of measure in WBC

Finalising this procedure, four documents on pilot projects were created and compiled in a deliverable available at the project's website:

1. Pilot Project Strategic Innovation (Montenegro);
2. Pilot Project Innovation Officer (Serbia and Bosnia and Herzegovina);
3. Pilot Project Strategic Innovation Voucher Scheme (Croatia and Kosovo*);
4. Pilot Project Soft Landing Platforms (Albania and FYR of Macedonia).

Outlook

For many years R&D has been regarded as the single source for technological change and innovation and for many years the single message from EU innovation policy makers was to increase R&D expenditures.

However, increasing innovation in an economy can be supported in many ways, since the source for innovation can come from diverse knowledge and innovation activities. Basically we can distinguish support to exploration activities and support to exploitation activities. Besides economic benefits from the capacity to generate new technology, there are also economic benefits from absorbing and using technology developed elsewhere, and the capacity to diffuse technology and reach international markets.

For many years the focus has been on strengthening science and R&D and subsequently on the venturing and incubation of inventions into new high-tech products and industries which are characterised by high growth, productivity and competitiveness. This innovation policy model is relevant for R&D intensive firms and regions which are at the technological frontier. For firms, sectors, regions and countries who are positioned further from this top level frontier in terms of technology and competitiveness, this innovation policy model is less

relevant. Cooke (2013)⁴ and Asheim et al. (2013)⁵ point at the relevance of a contrasting model of innovation which is characterised by learning by ‘Doing, Using and Interacting’ (DUI) which seems especially relevant for promoting catching-up in innovation performance, and for designing regional innovation policy instruments for SME’s.

The four innovation policy schemes addressed in this chapter do not concern subsidies for R&D activities (exploration, inventions), but they are SME schemes that support the exploitation of knowledge and innovation for economic purposes.

Both the four schemes and the organised policy process we organised fit to the ‘doing-using-interacting’ kind of learning in innovation (policy) and catching-up. The tools are useful to increase the demand for and use of innovation rather than supply-side policies (R&D subsidies) that fit the Science-Technology-Innovation model. The schemes and the organised policy learning events are rather problem driven and benefit from applying existing solutions (and policy schemes), and learning from experience (behavioural additionality). Rather than mere subsidizing the invention of radical new technologies (or innovation policy instruments from scratch) the policy mix has been strengthened with pilot schemes in the Western Balkans which are based on learning by doing, using and interacting, which is a promising innovation model for catching-up.

4 Cooke (2013), ‘Towards DUI Regional Innovation Systems’. Utrecht University Papers in Evolutionary Economic Geography (PEEG), number 1321.

5 Asheim, B., M. Bugge, L. Coenen & S. Herstad (2013), What Does Evolutionary Economic Geography Bring To The Policy Table? Reconceptualising regional innovation systems. Working Paper 2013/05. CIRCLE, Lund University.

Smart Specialisation – an Overview

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Below, an overview on Smart Specialisation as a concept is provided, while the next article focuses the lessons learnt and recommendations for the Western Balkan region.

The concept of Smart Specialisation

Smart Specialisation is a concept that fits very well with the endeavours at the European level calling for more efficient and effective regional development and innovation policies, avoiding overlaps and imitation as well as for transparent priority setting processes involving a range of crucial actors, among them government, businesses and creative providers such as ICT, research, and educational providers. Research and innovation strategies for smart specialisation (RIS3) are extensively described in the RIS3 Guide published by JRC and available at <http://s3platform.jrc.ec.europa.eu>.

The concept of Smart Specialization is “one where each region builds on its own strengths, to guide priority-setting in national and regional innovation strategies”. (European Commission 2012) The objective of the Smart Specialization Strategy is to increase the impact and relevance of R&D through a fact-based consultative process that allows for “self-discovery” (David, Foray and Hall 2009). A smart specialization approach works with the industrial and economic grain of the country or region, using capabilities that have been developed over time to underpin its innovation potential.

Key steps for developing a RIS3 are:

1. Analysis of regional context/potential

Assessing existing regional assets, identifying regional competitive advantages and weaknesses, and analysing and assessing the potential for innovation-driven differentiation are crucial in order to detect emerging niches for smart specialization.

Identification of all relevant stakeholders: firms, universities, technology

centers, venture capitalists, innovation support agencies, and intermediaries. The final questions to be answered are: which areas have critical mass; which sectors have growing activity; which sectors contain new firms and faster-growing firms; which areas companies are investing in.

Several methods can be used to collect and treat information for such analyses. Some of the methods that should be implemented in this phase are: regional profiling, quantitative studies of STI potential, case studies, capabilities, SWOT approach, surveys, and foresight.

2. Governance

At the beginning of an RIS3 design process, it is necessary to define its scope and its expected goal, with a view to ensure participation of key actors and secure ownership of the orientations defined in the strategy. Defining the scope of the RIS3 is crucial, since different stakeholders will have different expectations and agendas with respect to the questions at stake, often restricted to their own areas of action (EU, 2012)

Regional policy makers should initiate an informal assessment process and invite representatives from selected leading enterprises and lead institutions to go through the questions and report their results. Their co-operation is essential to identifying a limited set of regional specialisations and develop a shared (and hence smart) vision and priorities. (Mahr A., Hartmann C., 2012). Key players are:

Regional leading enterprises and entrepreneurs: the leading industrial players, hidden champions, and key entrepreneurial innovators have the expertise on the market potential of new ideas, technology, and knowledge, as well as the economic base that already exists in a region.

Regional policy makers and implementers: Members of regional governments and intermediary institutions are invited to organise such initial self-assessments, to assess the governance sector of their region, to reconcile the expertise and interests of the two other groups and prepare a political RIS3 decision. This should cover all relevant government departments (enterprise, research, education, finance, etc.).

Regional lead institutions: Representatives of the regional science, knowledge, and creative sector, i.e. universities, research and technology organisations or innovation and design centres concentrate expertise on a region's specific knowledge profile.

3. Vision for the future

In order to establish a successful strategy, it is essential to create a shared vision of the region's potential and the main directions for its international positioning, to formulate different scenarios based on analyses and debate where the region wants to go, and produce a positive attitude towards the future. At this stage, the purpose is to create a willingness to act towards a region's transformation and to support the regional consensus necessary to run the other steps.

The vision should be defined to justify social and economic goals. It should guarantee a better life for citizens, reducing brain drain, and creating better living conditions.

4. Selection of priorities

The main feature of a smart specialization strategy is to make smart choices. That means to help the main actors choose national priorities and to direct resources to areas that have the greatest potential for development in the region. The selection process needs to be based on quantitative as well as qualitative information on the different possible domains for a national/regional smart specialization.

Prioritisation always entails risks for those who have to select those few domains that, as a result, will get privileged access to public funding. Common approaches followed in the past, which should not be repeated, were (EU, 2012):

- Spreading the money across the most powerful lobbies with the frequent outcome that there were too many priorities aiming at preserving the status quo rather than to look at future opportunities, or
- Imitating other regions. In that case, if the choice proved to be a mistake, at least this was a mistake others had made as well. At the end of the day, the regions contributed to produce a system with too many small sites doing the same things and where economies of scale were left unexplored.

In order to avoid common problems, it is necessary to involve all stakeholders in a process of entrepreneurial discovery. Such an open, participatory process is the best guarantee for avoiding both the risk of capture by interest groups and the risk of lock-in into traditional activities.

5. Policy mix, roadmaps, and action plans

Once the national priorities have been defined, the next step to be taken is to create an action plan elaborated by the RIS3 management bodies. This included the definition of challenges that prioritized areas are faced with, delivery mechanisms, a definition of actors involved, and responsibilities, measurable targets, timeframes, and the identification of funding sources.

Implementing a smart specialisation strategy contains a certain amount of risk, particularly when selecting priority areas. This selection can greatly change the direction of development of the region. In this regard, it is recommended to do experiments to collect enough information and reduce the uncertainty of the application of strategies. The best types of experiment are pilot projects launched during the design of a smart strategy. The purpose of the pilot projects is as follows (EU, 2012):

- Feeding the strategy with new information on regional innovation potential (they contribute to the ‘entrepreneurial discovery process’); Publicizing the fact that the strategy is going to be concretely implemented rather than remaining a concept; contributing to the communication of the RIS3 as a whole;
- Testing new or unconventional policy support approaches on a small scale before possible extension, thus limiting the accompanying risks.

If such learning mechanisms are properly introduced in pilot projects, they can provide a model for performance-based funding mechanisms, which are notoriously difficult to impose on existing programmes or actions maintained over time without such a provision.

6. Monitoring and Evaluation

A system of evaluation, although the last step, should be involved in the strategy from the beginning. In order to work properly, it is necessary to set clearly defined and measurable objectives. The strategy must be flexible to economic transformations and ready to coordinate the objectives in line with changes in economic conditions.

Establishing indicators for monitoring and evaluation plans should be defined at two levels: at the level of strategy and at the level of the action plan. The goal of monitoring is to determine whether the planned activities are carried out in the right direction and whether funds are used properly. Mon-

itoring is carried out by the main actors involved in the implementation of strategy.

The aim of the evaluation is to assess the effects of the strategy implementation. Evaluation should be carried out by independent experts.

Monitoring and evaluation should complement each other and to effectively contribute to solving problems in the implementation of a smart specialization strategy. The following questions cover the main features that these strategies should contain (EU, 2012):

- Is the strategy based on an appropriate stakeholder involvement? How does it support the entrepreneurial discovery process of testing possible new areas?
- Is the strategy evidence-based? How have areas of strength and future activity been identified?
- Does the strategy set innovation and knowledge-based development priorities? How have potential areas of future activity been identified? How does it support the upgrading of existing activities?
- Does the strategy identify appropriate actions? How good is the policy mix?
- Is the strategy outward looking and how does it promote critical mass/potential?
- Does the strategy produce synergies between different policies and funding sources? How does it align/leverage EU/national/regional policies to support upgrading in the identified areas of current and potential future strength?
- Does the strategy set achievable goals and measure progress? How does it support a process of policy learning and adaptation?

The RIS3 Self-Assessment. Key Motivation, Concept and Application

The RIS3 KEY is an output of the project of the OECD TIP working party on Smart Specialisation (2011-2012). It has been directly built upon the practical needs of regional policy makers. Its draft versions were tested and commented

on by stakeholders from several European regions and the experts from the European Commission DG REGIO in three iterative rounds. Its final version was presented at the OECD working group meeting in Paris in May 2012.

The RIS3 Self-Assessment Key is an easy-to-use tool to unlock the idea of Smart Specialisation for regions; a quick first assessment of their status and potential that is needed to prepare a SWOT analysis; a checklist of easily understandable questions for the assessment of the science / knowledge & creative sector, the enterprise sector, the government sector, and the regional innovation system as a whole; a complement to the first steps of the RIS3 Guide.

The RIS3 Self-Assessment Key helps to mobilise relevant stakeholders in all three triple helix spheres of the regional innovation system; to start communication between enterprises, the science sector and the regional government; to develop a shared language and understanding of the potentials and challenges for sustainable growth in your region; to make first steps towards a shared and mutually supported vision of the future in your region;

The RIS3 self-assessment key helps to start a dialogue within the regional triple helix.

The RIS3 Self-Assessment Key consists of four parts:

- Brief introduction
- Guiding questions for the self-assessment
 - Assessment of the status and potential of the Enterprise Sector
 - Assessment of the status and potential of the Science / Knowledge & Creative Sector
 - Assessment of the Government Sector
 - Assessment of the Innovation System as a whole
- Brief Guidance for the self-assessment process
- Glossary explaining technical terms

Five steps to make use of the S3 Self-Assessment key are:

- Initiate the self-assessment process and identify the relevant stakeholders in the enterprise and the science, knowledge & creative sector
- Prepare for the self-assessment: contact relevant stakeholders, distribute the guiding questions, and organise necessary milestones

- Perform the self-assessment for each sector by stakeholders stemming from the respective sector
- Perform an assessment of each sector with a mutual outside view (i.e. enterprises assess the science and the governance sector and vice versa)
- Prepare a first SWOT analysis as a starting point for the S3 process. Use identified strengths, weaknesses, opportunities, and threats for the development of a shared vision

Taking into account the diversity of regional development and institutional needs of the European Union, attitudes on the Smart Specialisation strategy significantly diverge. They range from very positive (in the regions where the current innovation policy is in line with the new concept) to scepticism in cases where Smart Specialisation brings anxiety and uncertainty. The general opinion is that it is very important to maintain flexibility in the implementation of the strategy, as well as exercise to strengthen the growth potential of various sectors and individual initiatives such as clusters. Implementation of the strategy of Smart Specialisation is not a guarantee of long-term regional economic success. The evaluation of the regional strategy is necessary in order to maintain regional innovation system on a successful level. The concept of Smart Specialisation should not be understood as a tool for changing the structure of innovation policy in the region but as a way to strengthen and support regional innovation policies based on existing innovation capacity.

The EC considers investing more in research, innovation, and entrepreneurship as a crucial component for the future success of Europe. As a result, the EC has decided that the submission of a Smart Specialization Strategy should be an ex ante conditionality for access to Structural Funds in the 2014-20 period.¹

Disseminating the concept through WBC-INCO.NET

Within the WBC-INCO.NET project two workshops were organised focusing the topic of the “Smart Specialisation”:

1. The first workshop – a two-day training event on Smart Specialisation, was organised by WBC-INCO.NET and co-financed by Central

European Initiative (CEI), which allowed participants from the Danube Region to participate at the event. It took place on 11-12 April, 2013 in Belgrade, Serbia. The training gathered participants from Serbia, Albania, Austria, Bosnia and Herzegovina, Croatia, Greece, Czech Republic, the FYR of Macedonia, Germany, Hungary, Italy, Romania, Slovenia, Montenegro, Spain, and Ukraine and was carried out by experienced trainers from five countries (Austria, Spain, Slovakia, Greece, and Germany). The training introduced the participants to the theory and practice of developing and implementing national/regional “Smart Specialisation Strategies” (RIS3). This in turn would help to maximise the use of EU regional funds for research and innovation activities to further economic and social objectives, and importantly, achieve greater synergy between EU structural and competitive funds (Horizon 2020). The training was rated very successful regarding the evaluation of the transferred knowledge and the organization following the feedback from the participants (e-mails and evaluation forms).

2. The second workshop was organised in Skopje, on November 20-21, 2013. This workshop was used e.g. to present and discuss results of the pilot self-assessment exercise for the research and innovation system of FYR of Macedonia as a pilot country which was also prepared within WBC-INCO.NET. Please refer to the article prepared by Zaharis et.al on the results of the pilot self-assessment exercise for the research and innovation system of FYR of Macedonia in this publication.

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<http://wbc-inco.net>

Innovation Strategies for Smart Specialisation (RIS3) – Lessons Learnt and Recommendations for the Western Balkans

Western Balkans

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Training workshop on smart specialisation for South East European countries in Belgrade: Lessons for the region

Smart specialisation has become one of the cornerstones of the EU's new Cohesion Policy. Policy-makers in EU regions and member states have to design and adopt innovation strategies for smart specialisation (RIS3) in order to spend European Regional Development Funds for research and innovation. This ex-ante conditionality is a novel element of the current and streamlined European Structural and Investment Funds (ESIF) for the period 2014-2020, which integrate all relevant funding instruments for regional and rural development, fisheries and social affairs.¹ For non-EU member states in the Western Balkan, this is not a legal requirement. Still, important lessons can be learnt from Central and Eastern Europe and the modernisation creation innovation eco-systems. This is why this workshop was organised as a first step of a learning journey that seeks to foster policy learning between EU and non-EU states and regions in the realm of place-based innovation. In this first workshop, presentations on the concept of RIS3, on-going activities in EU regions and the importance of synergies with Horizon 2020 were followed by case studies on Upper Austria, Bratislava and Crete. RIS3 is a dynamic and evolutionary process that is deeply grounded in a continuous entrepreneurial discovery process in which governments are rather facilitators than in a hierarchical position. The process stresses the need to concentrate resources by developing distinctive and original areas

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EU Regulation (1303/2013/EU). Regulation of 17 December 2013 laying down common provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund, the European Agricultural Fund for Rural Development and the European Maritime and Fisheries Fund and laying down general provisions on the European Regional Development Fund, the European Social Fund, the Cohesion Fund and the European Maritime and Fisheries Fund.

of specialisation based on existing strengths. In this understanding, RIS3 is a useful exercise for both innovation leaders and for less developed regional innovation systems. Horizon 2020, the successor to the 7th Framework Programme, offers valuable additional resources that will be distributed through competitive selection procedures. It shares similarities with Cohesion Policy funding but also differs in many respects. With a view to potential synergies between both funding streams, cohesion funding can be seen as useful to build necessary capacities and a basis for excellence-based projects in Horizon 2020. Based on Article 185 TFEU Initiatives, the EU Strategy for the Danube Region will also benefit from EU funding for the joint implementation of (parts of) national research and development programmes in similar ways that the Baltic region has been able to do. Another central question raised pertained to the RIS3 requirements for non-EU states. Despite the fact that smart specialisation is not a legal requirement for acquiring funds from the Instrument for Pre-accession, (potential) candidate countries should start the RIS3 process very early (OECD, 2013). Experience shows that an inclusive and truly bottom-up process generates better innovation results, but also takes very long to establish and implement. Other challenges voiced at the workshop related to the demographic problems of most Western Balkan states (ageing, brain drain) and the difficulties to counter these trends with higher productivity and valued added in economic activities in economically very demanding times that are marked, among others, by massive de-industrialisation and pre-dominance of low-tech sectors with limited value added.

In order to highlight some challenges in the design of RIS3, participants worked on case studies from their home countries (Albania, Slovenia, FYROM, Hungary and Croatia) based on short scoping documents that they had to prepare prior to the workshop. These documents described the current economic structure of their country or region and asked for information following a similar structure as the peer review templates used by the Smart Specialisation Platform that regularly conducts such policy learning exercises in the EU.² The main difference was that the participants were divided into 5 country groups (6-7 participants per group), with those coming from the discussed countries not being in their country's group. After the group discussions each group presented their findings based on the first five steps of the RIS3 Guide. These steps were: analyse existing strengths and potentials, include relevant stakeholders

through participatory governance mechanisms, preparing an innovation vision, prioritise strong and promising economic activities and design appropriate instruments and define financing to implement the strategy (European Commission, 2012). Feedback was given by the country representatives who had drafted the scoping documents. The main advantage of this approach was to allow participants to get an outside view on science and technology policy and the smart specialisation potential in their country. Most of the issues raised concerned governance questions and priority setting, something that is strikingly similar to the challenges identified by many regional policy makers in EU member states.

Fostering regional innovation through smart specialisation: FYROM as a pilot country

As a second step in this learning journey, WBC-INCO.NET organised a follow-up workshop for which a comprehensive analysis of FYROM's innovation system was conducted by looking at government, business and the knowledge sector. Before discussing this case study, the lessons learnt from the peer-review process in the EU were summarised to provide the background for discussions. Participants were particularly interested in the effectiveness of voluntary peer review and the current stage of developing RIS3 in EU member states and regions. This was followed by a presentation of the initial self-assessment for FYROM. Based on this, again a practical exercise followed in which participants identified and discussed innovation objectives, key priorities, and action points based on the self-assessment of FYROM.

After this exercise, the World Bank's Innovation Strategy for the Western Balkans was briefly discussed. There are still many uncertainties concerning the financing of the strategy's implementation. The strategy mainly refers to Chapter 25 (Science and research) of the *acquis communautaire*, which is surprising given the vast funding volume new EU member states can expect to receive from ESIF. Cohesion Policy is very likely to continue to be an important pillar of EU innovation support also after 2020. Moreover, the territorial dimension is largely missing in the strategy. Interesting case studies from still young EU member states provided useful insights for Balkan countries and concluded the workshop. In Slovenia, the RIS3 process has so far shown unsatisfactory progress due to continuous re-assignments of competencies between ministries and implementation problems with regard to legal provisions. In Estonia, the strategy process has already advanced substantially. Yet, there is a risk of implementation problems for the future, also because the regional and local level au-

thorities have not been fully involved in the process. The national development fund Arengufond has turned out to be a highly trusted intermediary that was able to gather all relevant stakeholders and especially businesses. In this sense, it provided an important value added. Finally, Croatia has had difficulties in streamlining various policy documents. It was not yet clear if up-coming choice of priorities will reduce the very large number of the 12 recently established clusters. Getting these strategic issues right will be crucial since Croatia will receive approximately 7.5bn EUR cohesion and regional funding in the current programming period.

In sum, the learning journey was an interesting manifestation of the very similar challenges both former and current transition states face when reforming or establishing more effective innovation systems. One recurrent challenge is particularly the lacking trust between public authorities and companies. Companies often distrust public institutions that they perceive as ineffective managers, corrupt or steered by informal elite relations (Hellman and Kaufmann, 2003). But how can policy-makers create trust as a basic pre-condition for participatory innovation strategies? Earlier pessimist views about the impossibility to create trust have been convincingly refuted by research on socio-economic relations (Sabel, 1993). State institutions can build trust by “operating through social networks and associations”, showing full commitment and giving them real ownership (Ansell, 2000: 310). This is how state-run development agencies like Arengufond can become central intermediaries whom companies and other stakeholders can trust and who can effectively moderate between different interests in the RIS3 process. Non-state stakeholders must be taken seriously, only then they can also take government initiatives in the realm of innovation policy seriously (Radosevic, 2011).

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The Results of the Pilot Self-Assessment Exercise for the Research and Innovation System of FYR of Macedonia

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Introduction

This article presents the results of the pilot self-assessment exercise for the research and innovation system of FYR of Macedonia with the aim to produce the baseline for developing a Regional Innovation Smart Specialization Strategy (RIS3) for the country. The analysis that follows is based on the guide titled “*Getting started with the RIS3 Key*” produced by Joanneum Research and the Austrian Federal Ministry of Science and Research. Based on a comprehensive analysis of each one of the 3 sectors (Enterprise sector; Science Knowledge and Creative Sector and Government Sector) an assessment of the smartness of the regional innovation ecosystem and the connections between the three sectors is being presented followed by an initial Strengths, Weaknesses, Opportunities and Threats (SWOT) analysis of the R&D and Innovation System of the country. Consequently an initial attempt to conclusions and recommendations based on this analysis is being presented followed by some lessons learned applicable to all WBC.

The pilot self-assessment exercise corresponds to the steps 1-3 and partially step 5 of the RIS3 Key as indicated in the following table (adapted from the “Getting started with the RIS3 Key” guide):

Step 1	Initiate the self assessment process and identify the relevant stakeholders for the in the enterprise and the science, knowledge & creative sector
Step 2	Prepare for the self assessment: contact relevant stakeholders, distribute the guiding questions and organise necessary milestones
Step 3	Perform the self assessment for each sector by stakeholders stemming from the respective sector

Step 4	Perform an assessment of each sector with a mutual outside view (i.e. enterprises' assessment of the science and the governance sector and vice versa).
Step 5	Prepare a first SWOT analysis as starting point for the S3 process. Use identified strenghts, weaknesses, opportunities and threats for the development of a shared vision

In order to follow up with steps 4-5 of the RIS3 Key the country should:

- Engage stakeholders in offering an “outsider’s” view of each sector (i.e. by organizing a workshop where government and academia stakeholders assess the enterprise sector and equivalent workshops for the other two sectors) and
- Finalize the SWOT presented in chapter 6, with insights of the “outside view” assessments and use it to develop a shared vision for the country

Assessment of the smartness of the regional innovation and growth policy framework

1. How well does the science / knowledge & creative sector interact with the regional economy (i.e. do you have industry-science co-operations in you region, privately endowed chairs at universities, joint research infrastructures, and/or pro-active technology transfers, contract research, living labs, student placement schemes, brokerage and technology demonstration events, share of regional business representatives in university management boards)? Which sectors are most active in this respect and where do you have potential for improvement?

Although some promising exceptions exist in the form of entrepreneur-savvy professors, the linkages between academia and industry by all attributes (joint publications, licensing, funded research, spin-off companies, etc) can be considered as very weak. To address the institutional barriers that inhibit knowledge transfer, the government has recently (June 2012) adopted legislation that creates a framework for the establishment of incubators, technology parks, centres for technology transfer (that is, TTOs) and university spin-off companies. According to the programme, among others, up to €20.000 in grants are envisioned for co-financing spin-off companies.

Many intermediary schemes for enhancing academia-industry linkages have been established with donor funding, but most of them proved unsustainable after funding stopped. The most successful initiatives from the academic sector

seem to stem from the departments of mechanical and electrical engineering and informatics at Ss Cyril and Methodius University in Skopje. A new generation of young citizens will benefit from the mandatory entrepreneurship classes in high schools which are followed-up by similar, more focused, elective courses at Universities (e.g., the Dept of Mechanical Engineering at Ss Cyril and Methodius University with the support of the Dept of Economics).

2. How do the government sector, the science / knowledge & creative sector, and the economic sector interact – i.e. are strategic RTDI policy priorities set jointly? Is there a shared development of regional innovation strategies? Is there a shared regional innovation system governance?

There is recent evidence of interaction between the “triple helix stakeholders” in the preparation of the Innovation Strategy of the Republic of Macedonia (ISRM 2012-2020) and the National Strategy for Scientific R&D Activities 2020 (NSSRA 2020) . According to ERAWatch Country Profile 2012:

“For the purpose of preparing the ISRM 2012-2020 and NSSRA 2020, in the period 2011-2012 broad consultations were undertaken with all important stakeholders. The consultation processes were coordinated by the responsible ministries, ME for the ISRM 2012-2020 and MES for NSSRA 2020. Each ministry first sent a draft version of the strategy to all university units, MASA and business associations such as chambers of commerce, and after the ministry collects comments and suggestions from these bodies. The ministry decided which suggestions will be adopted for the final version of the policy”.

However real buy-in of both Strategies from the science/knowledge sector and the economic sector remains a challenge and will primarily depend on the way these Strategies are going to be implemented in terms of efficient and transparent allocation of resources and distribution of responsibilities. The new Law on Innovation activity foresees an “*Entrepreneurship and Innovations Committee for Monitoring the Development and Commercial Exploitation of Innovations*” (article 6). The Committee will be chaired by the President of the Government and will comprise of 11 ministers and 5 “*innovation activity experts*” Although chairing by the Prime Minister and the participation of a large number of Ministers demonstrates a high level of commitment it should be pointed out that there is no guaranteed participation of the economic sector.

3. Is your existing regional innovation policy framework based on inter-departmental/inter-ministerial/inter-agency co-ordination and co-

operation covering relevant policies (in particular between research/science policies and, economic development policies, but also with regard to other relevant policies such as for instance education, employment and rural development policies)? Does it assess/take into account the existing level of policy co-ordination within the region?

The Innovation Framework currently consists of a series of newly adapted Strategies (i.e. ISRM, NSSRA, Industrial Policy, SME policy etc) that seek to complement each other and present an overall framework for competitiveness and development. However implementation seems to be allocated to a big number of committees and agencies that may have overlapping responsibilities, competing goals and most importantly need to take stock of a limited number of skilled personnel. The committees are:

- a. Committee for Education, Science and Sports
- b. Committee for Competitiveness
- c. Committee for Entrepreneurship and Innovation
- d. Committee for Technological Development
- e. National Committee for Development of Research and Technological Development
- f. National Entrepreneurship and Competitiveness Council
- g. Scientific council
- h. Entrepreneurship and Innovations Committee for Monitoring the Development and Commercial Exploitation of Innovations” (to be established under the new Law on Innovation Activity)

The agencies are:

- Agency for the promotion of entrepreneurship
- European Information and Innovation Centre
- A new “entity for encouraging innovative activities in priority areas of science and technology” which under the new Law on Innovation Activity will be “... *Established for the purpose of conducting activities for encouraging innovation activities in priority areas of science and technology, determined by the Innovation Strategy...*”

Lack of coordination of the policy-making is cited as one of the major challenges for the country's innovation system in the OECD 2011 review: *“Currently, the responsibility for innovation is split between several institutions, including in particular the Ministry of Education and Science and the Ministry of Economy, but there is a lack of policy co-ordination between the two ministries.”* (OECD 2011). It is hoped that better co-ordination can be established under the new Innovation Law which foresees: *“the Governmentshall adopt a Strategy for Innovation for a seven-year period, upon a proposal of the Ministry of Education and Science (...) in cooperation with the Ministry of Economy”*. MoES seems to gradually get a lead authority on innovation: article 8 of the new Law established its competences regarding innovation. It still remains to be seen if this can be feasible in terms of human resources and budget availability.

4. What are the main challenges your region will be facing in the next decade (economically, environmentally, socio-demographically etc.)? What are the main opportunities / emerging sectors? How can the regional enterprise sector and the science / knowledge & creative sector be mobilized to respond jointly to these challenges and opportunities?

Some of the main challenges foreseen in the next decade relate to the retention of human capital, the brain drain that has plagued the country, the infrastructural integration into trans-european networks (including but not limited to transport and research); and protection of the environment. With respect to the socio-demographic aspect, the country should benefit from adopting and implementing some aspect of social integration policy that should help foster the inter-ethnic dialogue and collaboration, and have a cohesive effect on the population.

5. What are the main challenges your region is facing with respect to RTDI performance (i.e. what are the major bottlenecks for a better overall innovation performance)? How can these bottlenecks be overcome by formulating and implementing jointly a RIS3 strategy?

The main challenges include the formation of RTDI niches, boosting the activities of the few relatively active research groups through international

collaborations, leveraging the diaspora potential, and taking advantage of the new large-scale research infrastructures in nearby countries. Hindrances to overcome include the lack of funding for startups, and the virtual absence of VC. Raising the entrepreneurial spirit among the academic researchers and cre-

ating enabling environment for the formation of university startups should help improve the overall innovation performance. Last but not least, the academic sector has a long-term record of nepotism, plagiarism, and corruption. These practices must be eradicated, and transparent and meritocratic evaluations by international standards must be implemented. That should help mitigate the RTDI isolationism.

6. Do scientific, technological, creative or skills strengths and specializations fit to your regional economic needs? Where is the best match – where do you see the strongest mismatch?

The ICT sector is probably the single case where adequate knowledge supply and business prospects (growth, employment and tradable services) converge. The two export-oriented sectors (automotive parts and pharmaceuticals) seem to cover their needs in-house. In Genetics and Seismic Engineering there seems to be a considerable supply of knowledge that has not been commercially exploited up to now, while in agricultural research and aquaculture the supply of knowledge that is relevant to the country's economic specialisation is rather minimal. The networks of excellence include agricultural research, renewable energy, nanotechnology for healthcare mentioned in WB report. The government has been supportive with respect to the establishment of new labs, but there appears to be a dearth of matching supplies / consumables.

7. Do perceptions of the enterprise sector and the science / knowledge & creative sector with regard to future promising technologies and products correspond?

Cooperation between the science and the enterprise sector is almost non-existent. According to a GfK survey on companies and various aspects of innovative capabilities, contacted in 2011 and cited in the OECD 2011 review: *“less than 9% of companies have some links with Universities and 5% with research centres”*. Further more according to the same study: *“... the aspirations of the companies show that, as far as cooperation with other stakeholders is concerned, limited number of changes are to be expected in the short term (...) The main evolution regards the increased willingness to cooperate with (...) foreign research institutions (11%)”* which indicates towards a lack of trust in the potential of the domestic R&D sector. *This lack of cooperation points toward a big gap between enterprise and science sector's perceptions, goals and expectations.*

8. How do your regional strengths and specialisations match, comple-

ment and build upon the profiles of your neighbouring and partner regions? In which fields could enhanced crosssectoral co-operation create competitive advantages for an even larger region?)

The large diversification of the limited and consistently underfunded research base at the national level results into fragmentation and further minimises the chances of specialisation. As discussed in point 5 above, one option is to focus research funding on very promising, following a scrutinised assessment by international standards, research groups; another option, proposed by World-Bank, is to aggregate similar research groups at the regional level and re-orientate them towards joint research endeavours that could impact the entire region. The WB's Regional R&D Strategy for the Western Balkan Countries suggests marine research, agricultural research, renewable energy and nanotechnology for healthcare as promising fields for co-operation. Both scenarios could benefit from access to ESFRI research infrastructures under planning in neighbouring EU member-states (Bulgaria, Croatia and Greece) and over-the-borders clustering activities funded by cross-border EU-funded projects.

SWOT analysis of the R&D and Innovation System of the country

1. Strengths

- S1: Commitment of the government at a high level to pursue innovation and adhere to the EUROPE 2020 goals, as demonstrated by a series of strategies adopted (i.e. Innovation Strategy, Industrial Policy, SME Policy) and the preparation of the Law on Innovation Activity.
- S2: Availability of data through the countries' statistical office.
- S3: Country with the most favorable business climate in the SEE region.
- S4: Relatively cheap, yet educated labor force (highly skilled human capital).
- S5: Strong concentration of researchers in and around the capital city of Skopje provides potential for interdisciplinary research.
- S6: Very positive trends in international co-authorships since 2000.
- S7: An established and outward looking research base in Medicine and Engineering; evidence of *regional (SEE)* excellence in Engineering, Agricultural and Biological Sciences, Materials and Environmental Sciences.

S8: Strong regional (SEE) linkages in terms of scientific publications and EU-funded research projects.

S9: Increasing participation (including SMEs) to FP7 programs

2. Weaknesses

W1: Lack of institutional dialogue tradition and arrangements.

W2: Lack of an evaluation and monitoring system that would estimate impact of interventions. Lack of evidence on the success of interventions and strategies implemented the previous years.

W3: Complexity of the institutional arrangements (i.e. overlapping of responsibilities, large number of committees and agencies)

W4: Lack of cooperation culture between high tech enterprises.

W5: Lack of public-private partnerships.

W6: Weak capacity for firm-level technology absorption.

W7: Poor work ethics.

W8: Very limited R&D investment from the business side (BERD).

W9: Weak performance in R&D spending (GERD); declining trends over time; underfunded research system, especially research in frastructure and equipment.

W10: The structure of the research system in terms of staffing and the actual funding are not in line with performance and outcomes.

W11: Research and higher education are not assessed according to international standards.

W12: Very limited linkages to high-ranking research universities.

W13: Very limited evidence of commercialization of research outcomes.

W14: Inability to sustain most of the donor-sponsored academia-industry linkage infrastructures.

W15: High unemployment, low productivity and high trade balance deficit

W16: Small number of researchers and inadequate distribution of them across sectors

W17: Very limited access to finance for SMEs and start-ups

3. Opportunities

O1: New Innovation Strategy (including the establishment of the Innovation Fund) and new Law on Innovation Activity providing the baseline for developing of innovation in the country, much-needed funds and potential for firm sophistication and improved competitiveness

O2: New Western Balkans Regional R&D Strategy for Innovation providing a platform for development of R&D and Innovation at a regional level by building on regional competencies and pockets of excellence.

O3: EUROPE 2020 targets and possibility of participation of the country to HORIZON 2020

O4: New programming period IPA funds (to be directed to education, research and innovation)

O5: Continuous support in terms of capacity building and analysis from international organizations such as the OECD, the EC and the WB

O6: Focus on export which becomes an issue of paramount importance for growth and development due to the limited size of the domestic market.

O7: Obtain access to ESFRI infrastructures in neighboring EU member states.

O8: Continuous donor-support in terms of infrastructure and capacity building.

O9: Leverage the Diaspora as an opportunity for knowledge transfer and research ecosystem development (though involvement in evaluation and assessment activities).

- O10: Introduction of new higher education evaluation systems that allow students to evaluate the work of professors
- O11: Allocation of funds to the creation of new laboratories

4. Threats

- T1: Continuation of the economic crisis at the EU and country level may endanger budgetary appropriations for innovation (as defined at the Innovation Strategy and associated Action Plan)
- T2: Unavailability of human resources to implement the Innovation Strategy
- T3: Committees and Agencies have overlapping mandates leading them to competition instead of cooperation.
- T4: Dichotomy of declarative support vs. actual performance in implementing interventions at the level of global best practices.
- T5: Brain drain rates have been relentlessly increasing, as the number of qualified researchers in the business sector has been steadily decreasing.
- T6: Growing gap in research capacity with respect to better funded regional research systems.

Conclusions and recommendations

1. Enterprise Sector

The enterprise sector in the former Yugoslav Republic of Macedonia is comprised of four key national industries: (i) ICT, (ii) agribusiness & food processing, (iii) apparel, and (iv) automotive components. Relative to the rest of the European rivals, relative competitive advantages are displayed by these four sectors, as well as the production of generic pharmaceuticals.

Clustering and collaboration between firms is limited; so are the public-private partnerships, which in the high tech sector are virtually non-existent. Even though there is a handful of highly innovative companies, these operate in a technological discontinuum with the rest of the country's economy: they are

independent and have limited interactions with other national countries and/or universities. This should be improved if the country intends to help its economy transition into some form of triple-helix innovation.

The FDI numbers of the country present a major problem for future sustainable growth. The manufacturing sector is the leading exporter and strengthening this sector could substantially reduce the notoriously high trade deficits. Yet the current manufacturing facilities are technologically obsolete due to low levels of investment in fixed assets. This is an impediment to the sector's competitiveness.

Entrepreneurship and entrepreneurial spirit cannot thrive in an environment that is not supportive of innovation, creation, flow and absorption and adequate diffusion of technologies. This type of environment is dependent on the existence of certain framework conditions, such as business-friendly climate, unimpeded access to finance, coherent set of rules pertaining to intellectual property rights and sound competition law.

Foreseen economic (and social) challenges include the reversal of the country's extraordinary high rate of brain drain; the need for markedly increased investment in R&D in the enterprise sector; and internationalization of the economy so that it can increase its high tech export capacity.

2. Academic & Research Sector

The key issues that were identified with respect to the status of the academic/research sector in the former Yugoslav Republic of Macedonia's innovation system include:

- a small and fragmented research base, coupled with an unbalanced distribution of researchers by sector, age and ethnic origin;
- continuously underfunded research infrastructures;
- low investments in applied research and innovation and a low level of private investment in R&D that seem to follow decreasing trends;
- very weak linkages between academia/research and enterprises;
- a very opaque STI & HEI governance system that does not reward scientific merit, excellence and achievement and lacks a feedback loop for assessment and self-improvement;
- brain-drain;

Some very recent initiatives such as the National Innovation Strategy 2012-20 and the new law on Innovation Activity indicate that the Government is aware of the key challenges; however, proper and timely execution in a country with a history of unfinished reforms remains to be seen.

We strongly recommend that a quality assurance system for higher education, based on international standards and methods, is urgently needed to support the quality and the relevance of the skills of university graduates and orientate the universities' policies towards excellence in education *and* research *and, if applicable*, technology transfer. The scientific Diaspora could play a critical role here, as unbiased and critical assessors with a good level of contextual awareness.

We welcome the provisions of the new law on Innovation Activity that are related to technology transfer by the universities but we believe that a country-wide legal and policy framework that would clarify the relationship of HEIs and enterprises is still missing. The transposition of the recent (2009) EU guidelines or other international best practices is highly recommended as a very needed next step.

The country's small and fragmented research base is in need of a mid-term adjustment in terms of staffing and funding that would probably follow the introduction of a quality assurance system for higher education and research mentioned above; there are two options available: supporting, in terms of funding and staffing, of a cohort of promising research groups to become excellent at the European or international level, and integrating others within wider regional research groups so that critical mass is created and common research problems are addressed.

Although the need for enhanced industry-science collaboration is evident, we note that so far, the most successful mode of commercialising university research is the establishment of spin-off companies by entrepreneurial-savvy academics; we strongly suggest that stimulating, by means of financial support and policy, this trend might be a promising mid-term measure that would create new, knowledge-intensive, jobs and new entrepreneurial ecosystems around the country's universities.

Given the low effectiveness of measures to repatriate the scientific Diaspora, we suggest that in the following years the government's policies should put emphasis on exploiting the Diaspora as an opportunity of expanding the country's knowledge base, diffuse existing knowledge created outside of the country and enhance the receptivity of existing innovation. We suggest inbound mobility

programmes, joint doctorates and research fellowships as the most promising alternatives.

3. Government / Policy

The adoption of the Innovation Strategy and the establishment of an Innovation Fund together with some institutional initiatives provide an initially positive environment for the promotion of development through research and innovation. However there exist several weaknesses that need to be addressed in the near future:

- The government should emphasise coordination of initiatives and programs and clearly define responsibilities among ministries, committees and agencies in order to maximize benefits and avoid duplication of efforts.
- Establishment of a dialogue on an institutional level, including open public consultation on future programs and initiatives is necessary for stakeholder engagement.
- A monitoring and evaluation system for current and future programs and initiatives should be put in place. This will help define expected impact from each intervention and measure its success based on pre-defined measured outcomes.
- A more rigorous and effective procedure for the evaluation of proposals submitted for funding to national funding programs is needed. The extensive experience of the operation of the EU's FP programs and other relevant initiatives could be utilized towards this end.

It is further suggested that public procurement is used as an instrument to support innovation in the country. This will require a major shift in the programming and implementation processes of public procurement programs in all major public sector organisations.

Finally, the government should encourage cross-border cooperation with neighbouring countries and especially the WBC including academia – enterprise cooperation across borders and the establishment of WBC-wide centres of excellence. This will help overcoming the small size of the local ecosystem and allow for networking and synergies of a wider range for both academics and industry. The “Western Balkans Regional R&D Strategy for Innovation” that was adopted on October 2013, provides a framework for this cooperation, but it

needs commitment, political support and resources from all the WBC in order to succeed.

A major task of the government, in the current timeframe, is the negotiation of the IPA funds with the European Commission. It is important that R&D and Innovation are a major priority for the IPA funds of the 2014-2020 programming period.

Lessons for the Western Balkan Countries

Smart Specialization Strategy for Research and Innovation has, in the recent years developed into a major strategic design tool for EU countries and their regions. The EU has created a support platform within the framework of IPTS (<http://s3platform.jrc.ec.europa.eu/home>) where experience is being accumulated and exchanged and has made the development of RIS3 strategy a major ex-ante conditionality for accessing structural funds. Currently all EU regions and countries are preparing their RIS3 plans to be submitted and incorporated in their programming documents for the structural funds of the 2014 – 2020 period.

It should be emphasized that RIS3 is not a conditionality for the WBC countries and thus adopting this methodology is not mandatory. However, taking into account that all the WBC have signed or are in the process of signing Stabilization and Assessment Agreements with the EU and are indeed characterized as either candidate or potentially candidate countries, adopting an S3 approach on their planning for Research and Innovation can have a major impact in their path to EU integration. Moreover RIS3 adoption will allow WBC to take better advantage of their participation to HORIZON 2020, remain in the same pace with their neighbouring EU Member States and align their research and innovation priorities across borders. Taking RIS3 into account into their IPA funding design can have long term impact in building up a robust innovation ecosystem. Since a RIS3 strategy is designed to be a continuously monitored and updated process that allows regions/nations to adopt, learn, design and redesign, going through the exercise is an excellent preparation for a country in its way to become an EU member state.

Upon reflection, there are several lessons to be learned for the WBC through the pilot activity of FYR Macedonia described in the current report:

On selection of the application space:

RIS3 methodology has been designed to be implemented at the regional (NUTS 2) level of the EU countries. However, even within the EU member states, there are some countries that, based on their size or their uniformity of their situation, have chosen to implement it at a national level. Size is a decisive factor of course, but other factors like regional disparities/ similarities, history of industrial and technological development etc could play a role when deciding if a country will develop RIS3 at a national or a regional level. For WBC that are rather small compared to the average EU MS and have not yet adopted a regional approach to economic development, the option of developing a RIS3 at a national level is a sensible one, although there might be cases where a more regional approach might be adopted. In the case of selecting the whole country as the “domain” for RIS3 development, what needs to be avoided is the concentration of the analysis and the resulting priorities on the capital and the research/ industrial capacities around it. A specific effort should be made to include the capacities, capabilities and priorities of the whole country.

On methodology and procedure:

The main methodological tool used was the *“Getting started with the RIS3 Key” guide*. This is a tool that is simple enough to be used by countries that do not have a long tradition in designing and implementing Innovation policies. It allows for clear definition of the role, capacities and priorities of the different stakeholders and provides a “roadmap” for building consensus through a process of mutual assessment between the stakeholders. The strong part of the guide is the provision of a series of guiding questions for the self-assessment of each one of the three sectors: Enterprise sector; Science, knowledge and Creative sector and Government sector and also for the assessment of the smartness of the regional innovation and growth policy framework. Using the guide allows countries (or regions) to build the base for developing a vision and priorities for their RIS3 strategy.

On ownership of the procedure and engagement of the stakeholders:

Ownership of the RIS3 procedure by the competent science, technology and innovation authorities and support at the highest level is of outmost importance for the success of the exercise. Clearly linking the results of the exercise with the allocation of funds (national or IPA funds) is an implicit prerequisite for the successful engagement of the stakeholders who need to be convinced that this is not going to be just another “academic” exercise of little “real life” consequences.

RIS3 methodology is a bottom-up approach based on entrepreneurial discovery. In order to succeed in it the creative and innovative parts of all the levels of stakeholders need to be engaged. Some tips:

- At the level of government: Engage all governmental organisations and agencies that have some role to play on supporting research and innovation, ensuring competitiveness, support extroversion and attract FDI. These may be very different agencies but they all have to play a role in Smart Specialization and can provide valuable insights from different perspectives.
- At the level of academia/ research: Engage researchers that have achieved high level of internationalization (though publications but also though participation to collaborative research) but also researchers who have gone into the opposite world have, have tried to create a company or have cooperated with industry and have valuable insight to offer. Try to identify pockets of excellence by studying journal publications and FP participation records.
- At the level of enterprise: Do not restrain participation to the level of industry representing organisation. Try to engage innovative and extrovert companies who have experience that can be shared and multiplied. Engage the young entrepreneurs and the community of start-ups if available. Learn from the experience (both positive and negative) of intermediary and business support organisations (especially new economy support organisations like incubators and accelerators).

On sources to be used for the initial assessment:

Based on the experience of FYR Macedonia the following (usually) available sources could be used in the process of developing the country's current situation:

- **For the Enterprise sector:** Statistical data and sectoral distribution from the statistics office; data on FDI (either from the statistics office or the body designated by the government to facilitate FDI); Business Climate Surveys; deliverables of WBC-INCO.NET project such as the "D8.48: Report on the mapping of the WBC Innovation infrastructures"; reports on research, innovation and competitiveness of the country published by OECD, World Bank, ERAWATCH, INNOTREND, UNESCO and many other EU organisations, international organisations and private companies; report from Cluster Observatory.
- **For the Science/ knowledge and creative sector:** Publication data from the Web of Science; data on FP7 participation (successful participation as well as FP7 proposal participation); statistics on researchers per discipline and sector and statistics on research expenditures (from the statistics office); data on brain drain and on scientists of the Diaspora; national funding programs for R&D participation over the past 3-5 years).
- **For the Government sector:** National Strategies on Research, Innovation, Competitiveness, Industrial policy, Education policy, Vocational education etc; relevant legislation (i.e. on IPR, innovation funding, technology transfer etc); expenditure for innovation, research and education the past 3-5 years; impact assessment reports for past national and EU (IPA) funding programs; future IPA funding preparation documents.

On the value of the exercise:

WBC face similar problems in their efforts to create an innovation and competitiveness environment. What comes as a surprise is that a lot of EU MS face similar problems (as demonstrated when the November 20-21, 2013 workshop at Skopje discussed the cases of Slovenia, Estonia and Croatia). Difficulties such as lack of cooperation between industry and the research sector, brain-drain, poor policy coordination, lack of will for cross-border cooperation, are

common also in these countries. A systematic approach towards building consensus on research and innovation policies, such as the one suggested by the RIS3 methodology, can go a long way into addressing these problems. RIS3 is a new concept not only for the WBC but also for the EU member states that are going through similar difficulties both at a procedural and at a content level. WBC can learn from the different approaches that are being used and take advantage of the fact that RIS3 is not yet mandatory for them, in order to build a more relaxed and robust strategy that will address both their developmental needs and priorities and the ambitious targets set by EUROPE 2020. RIS3 preparation will help WBC to overcome isolation by linking their developmental paths to those of their neighbours (both EU member states and other candidate and potentially candidate countries). It will also ensure that future funding from the IPA instrument will be used in a structured way in order to achieve maximum results in terms of long term competitiveness and development. Finally a well designed RIS3 strategy will help WBC and their researchers and industry enhance participation in the HORIZON 2020 and prepare for eventual EU accession.

How to effectively engage stakeholders in Research and Innovation Strategies for Smart Specialisation (RIS3)

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1. Introduction

In the wake of Europe's tense economic situation, public austerity is limiting the scale and scope of public intervention, which has reinforced the impetus for policy-making efforts that are more effective (in achieving goals) and efficient (in terms of investing resources). In response to this challenge, the RIS3 concept had hence been adopted as a leading mechanism for the new EU programming period 2014-2020 to incentivising effective priority-setting amongst governments and public administration, thus making the resources allocated more productive. The RIS3 concept includes proposals as to how to make the processes of priority-setting and implementation of the strategies more effective, considering that strategic objectives can only be effectively achieved when the conditions for their implementation are effective, such that the "right" entities are involved and at the "right" time; that their roles, rights and responsibilities are clearly defined and communicated; that the modes of interaction and their management are appropriate; that proper means for assessing progress are in place, and; that the mechanisms for reviewing and adjusting the strategy are suitable.

Along these lines of argument, this chapter raises a number of key questions concerning the engagement of stakeholders in RIS3 processes:

- What is meant by engagement? Information, participation, collaboration?
- Who would desire a participatory approach and why?
- Who are the relevant stakeholders?
- What are their interests?
- How can they effectively be involved (and when)?

In so doing, rather than analysing which priorities are set in different socio-economic, spatial-structural or geo-political contexts, it looks at how the right stakeholders can be engaged appropriately so as to identifying meaningful and relevant (ambitious, though achievable) priorities and successfully governing their implementation.

To this end, this chapter briefly recalls the basic meaning of strategic planning and analyses the scope of “governance” as it is postulated by the concept of smart specialisation; it reflects on the prevalent different modes of governance identifiable in different political and social-local contexts (“politics of place”) in order to inspire their adaptation to the new challenges for R&I policy-making in the context of smart specialisation; it proposes methods and practices of organising stakeholder engagement for implementing “collaborative” policy processes and concludes with identifiable success factors for stakeholder engagement in light of the requirements of smart specialisation.

2. Smart specialisation strategies – postulating a new paradigm for governing complex policy processes?

Before attending to the specific requirements for governing smart specialization processes, let us recall the basic meaning and purposes of strategic planning and stakeholder engagement as they can be found in the pertinent literature of planning theory.¹

Strategic planning can be described as a method to exercising power, to creating benefit towards shared and public interests, to making efficient and effective use of public resources, and to providing security for implementing activities, e.g. investments. Strategic planning is, therefore, a policy-driven (not interest-driven), coordinative, knowledge-rich and future-oriented approach, which is only likely to flourish in particular modes of governance (these will be discussed in section 3.). Stakeholder engagement is an indispensable element of such an understanding and is a way to identifying the development forces at work in a region, to aligning varying interests (towards a shared policy-vision), to bringing together different levels of knowledge, to building relations (between relevant actors), to creating consensus (on objectives, priorities, activities), and to making strategies more likely to be implemented, reviewed, redesigned and their objectives to be achieved.

An important consideration when engaging stakeholders or employing participatory approaches, respectively, is that these processes do not stop with the agreement or endorsement of a strategy but spans all stages of policy-making. This includes the planning stages as well as the implementation and review/evaluation stages as a basis for the adjustment and redesign of a strategy. (Figure 1)

Figure 1: Participative Policy Process

Source: King Baudouin Foundation and the Flemish Institute for Science and Technology Assessment (viWTA) (2005), p. 9



Based on these basic considerations, let us recall what are the requirements for “good governance” when engaging in an RIS3 process, as they are stipulated by the RIS3 Guide².

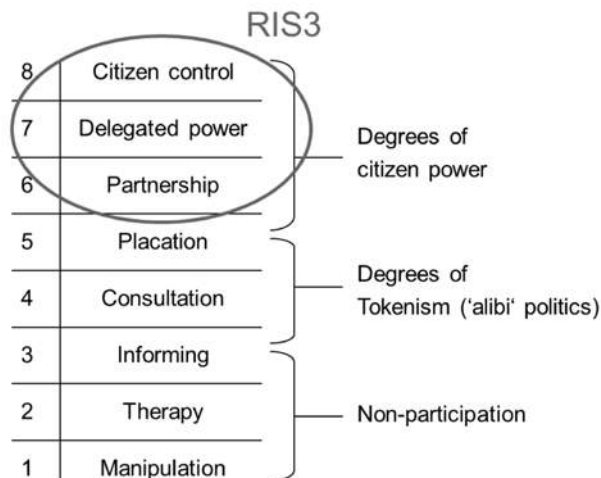
RIS 3 is based on a wide view of innovation including, for example non-technological, social, public sector and service innovation. The well-known ‘Triple Helix’ model of governance, promoting the involvement of three major spheres of actors – government, industry and education and research institutions, seems no longer sufficient in the context of smart specialisation, since its scope extends beyond the supply-side (legislators, regulators, knowledge-providers, product developers etc.) and includes the demand-side, that is, the users of innovation and those affected by innovative products, processes and service (consumers, civic society). Therefore, more traditional practices of engaging ‘elites’ in a strategy process should be rethought by adopting a ‘quadruple helix’ model, incorporating stakeholders of different types of actors and levels of decision-making, including e.g. non-profit organisations representing citizens, that should participate actively in the design and implementation of RIS3. Such a more complex and inclusive governance structure should also be able to prevent strategies be ‘hi-jacked’ by particular interest groups and lob-

bies. In order for all stakeholders to own and share the strategy, the RIS3 concept requires that responsibility is spread more widely across actors involved through 'collaborative leadership', ensuring that all actors have a role and can take the lead in specific phases or on certain activities of RIS3, according to their specific capabilities and capacities. Due to this complexity and flexibility, RIS3 demands that effective mechanisms are in place allowing the strategy processes to be moderated and potential conflicts to be managed. To this end, 'boundary spanners' are proposed; certain individuals or organisations that could facilitate the RIS3 process based on interdisciplinary knowledge or proven experience in interaction with different actors.

With these aspects of RIS3 governance in mind, it becomes clear that engaging stakeholders in a RIS3 process is highly demanding as it extends far beyond a mere information of actors or the formal involvement of stakeholders through, e.g. public consultation. On Arnstein's 'Ladder of citizen participation' (Figure 2), this mode of participation would be found on the very highest steps of the ladder, while other forms – unidirectional, top-down and less interactive ones, i.e. steps 1-5 on the ladder – are highly unsuitable for designing and implementing RIS3.

Figure 2: Arnstein's Ladder of citizen participation (1969)

Source: Healey (1997), p. 26 (modified)



3. Modes of governance and implications for smart specialisation processes

Given the demanding conditions required by RIS3, it seems beneficial to look at current practices of governing complex processes, and at the way decisions are taken, choices are made, relations are built, and consensus is achieved in a given geo-socio-political context. Such specific circumstances could be termed “politics of place”, as they describe the region- or country-specific relations between institutions and individuals and the distribution of competences and interests and hence define a place-specific culture of political negotiations and decision-making. They also determine the answers to the questions raised at the beginning of this chapter regarding ‘*what is meant by engagement?*’, ‘*who would want a participatory approach?*’ and ‘*who are relevant stakeholders?*’.

In order to identify such specificities for a given region or country, it is worthwhile to consider different governance traditions that are typically prevalent in western democracies, and which could serve as benchmarks of governance systems against the RIS3 requirements, by acknowledging their differences in the way actors are involved, negotiations are conducted and decisions are reached. In particular, identifying what is a “good” decision in the specific context may help understanding the circumstances specific to a given region or country, which should be incorporated in the design of the governance structure for smart specialisation.

Four modes of governance are particularly widely employed in (predominantly western) democracies:

1. Representative democracy
2. Pluralist democracy
3. Corporatism
4. Clientelism

These four modes are looked at below by specifically addressing two underlying questions: Who represents a political community? To whom must their actions be legitimated?

Representative democracy

A main characteristic of a representative democracy is the prominent role of institutions of formal government. Government officials and experts are the key actors in articulating 'public interest'. It is hence marked by steep hierarchical bureaucracies ('apex' structure) where actions are justified to seniors and politicians rather than to people. The focus of reasoning would typically be on technical and legal aspects of the policy objectives. This governance mode may work well in homogeneous societies where the representation of opinions is supposedly less complex, but not in culturally diverse ones.

The 'good decision' would be one where public interest is articulated by government. This model is widely challenged today because politicians and officials are subject to all kinds of influences, which are hidden from the public and therefore unaccountable. Moreover, it is virtually impossible to aggregate the high diversity of interests and accumulate the vast knowledge about issues and concerns of businesses and citizens in a society and an economy that is more and more dependent on international – particularly European – interaction. Finally, the model is unsuitable to promote growing public participation, since this would challenge the role of representatives itself. Therefore, in a representative democracy there is a tendency to limit public engagement to formal procedures of consultation.

Pluralist democracy

In a pluralist democracy, the diversity of interests is recognised, ensuing that different interest groups compete in the definition of the agenda of governmental actions. The role of politicians is typically to arbitrate between the individual interests, claims and preferences.

A 'good decision' in such a system is one which everyone can agree upon, however requiring that all issues on which participants cannot agree are eliminated.

This model is challenged as it favours minimalist solutions to ones where the common benefit would be greatest. Strategy development degenerates into a practice of mediating between competing interests and of bargaining with

stakeholders. It entails a risk of NIMBY-style politics³, minimising the willingness of government to involve the public.

Corporatism

Corporatism is characterised by a routinised practice of collaboration between government, major business organisations and trade unions determining economic and social policy. It assumes a ‚shared-power‘ world, but – unlike in a pluralist system – only among a few. Although not hierarchical, corporatism exhibits an ‚apex‘ structure with a dominant role assigned to major organisations. In such a system, stable consensus can be achieved, capable of coordinating various policies across long-term time horizons and even overriding changing political majorities. Due to its capacity for flexibility it allows mutual learning between organisations involved and thus avoids competitive politics (as is the case in pluralist systems). The ‚good decision‘ is the one which best achieves the public interest defined by corporate alliances, where reasoning is conducted in terms of ‚instrumental rationalism‘, that is, with a focus on scientific knowledge interpreted with regard to certain interests.

Corporatism is challenged for a variety of reasons: small or disparate entities are often ignored (e.g. SMEs, citizens); social change is barely considered, but undermines the corporatist model, since the consensus achieved is regarded as unrepresentative, unable to learn, innovate, and adapt to new conditions; strategy process flourishes at the expense of a narrow agenda with the risk of not considering important and potentially productive niches of development.

Clientelism

A key feature of clientelism is the existence of interactive relationships of politicians and government officials with their social networks. It arises where the role of governance is to distribute and allocate resources, such as taxes, programme funds, or building permits. Clientelism is more likely in systems with less developed administrative procedures or a policy-driven governance culture. Politicians and officials become ‚gatekeepers‘ in managing flows of resources;

3 NIMBY stands for ‚not in my backyard‘. It symbolizes an attitude where the common benefit is acknowledged but at the same time controverted by individual interests. A good example in Germany would be acknowledging the need to enlarge the energy grid for realizing the ‚energy turn‘ while opposing the idea due to the risk that the electrical lines could – quite literally – cross one’s own backyard.

they act as patrons with bands of clients who benefit from decisions, e.g. in exchange for a vote.

Correspondingly, the ‘good decision’ is the one which best sustains such ‘patronage’ relations. The risks of clientelism are obvious, with decision-making processes being hidden from public or democratic scrutiny, and priorities meeting particular rather than public interests or policy objectives.

Newer forms of governance

The models discussed above are to some extent simple generalisations, however attempting to capture the commonalities of systems of current practice. They show that for a governance effort to be legitimate, the challenge is to find more inclusionary ways of collaboration and consensus-building. The same is required by the RIS3 concept, which demands nothing less than a paradigm shift in the way strategies are developed, implemented, evaluated and redesigned. The magic to work would be to combine the strengths of the governance models practiced while eliminating their weaknesses and avoiding that new weaknesses arise with the recombination of certain features.

Trends in the evolution of governance systems, on which the RIS3 concept builds, range from criteria-driven approaches (focusing on „hard infrastructure“ in the form of regulatory criteria and performance targets), to entrepreneurial consensus-building (emphasising „soft infrastructure“ in terms of institutional capacity and consensus-building mechanisms) to inclusionary argumentation (aiming to combine both ‘hard’ and ‘soft’ infrastructure). This latter approach represents a model of participatory discursive democracy. It is based on collaborative argumentation about key questions, such as

- What are the issues?
- How are these understood by different groups of society?
- What constitute problems?
- What are the options for acting on them?
- How may these affect the various members of a community?
- How may choices impact on different members?

A fundamental feature in such a system is a structure through which *giving rights to be heard* goes with *responsibility to listen*. The ‘good decision’ here would be one for which decision-makers are accountable and which is legiti-

mate, as it is based on collaborative discussion, thus good reasons can be given for it if challenged.

Healey (1997 and 2005) suggests that in a functioning governance system of inclusionary argumentation, challenges to decisions made would be the exception rather than the norm, since in such a system, the rights to challenge would be clearly described and trust toward such a governance system would consequently develop among participants.

Based on these modes of governance discussed and the impetus to find more sophisticated forms of managing strategy-development processes, what could be appropriate ways to engage relevant stakeholders in a RIS3 process that comes close to meeting the aims desired by the concept?

4. Organising stakeholder engagement

There is not one definition of a stakeholder⁴. However, in general terms, a stakeholder can be any individual or organisation that

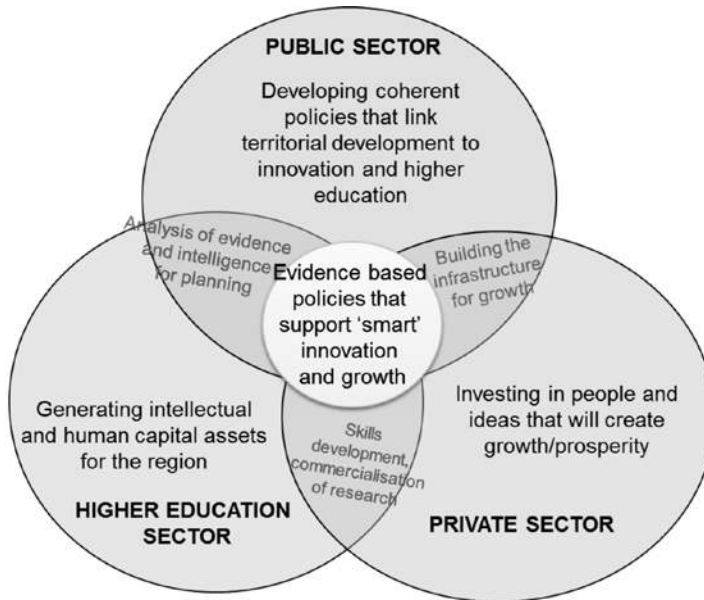
- takes – or is involved in taking – a decision,
- influences a decision by setting particular framework conditions,
- is affected by a decision,
- is meant to implement a decision or an action foreseen in a strategy,
- contributes intelligence (knowledge, know-how, expertise) to the strategy process.

Identifying the relevant stakeholders is determined by the specific strategy process. Considering that RIS3 is related to research and innovation, and that it can have a regional and/or a national dimension, stakeholders can come from a vast variety of different sectors (across the economy, research fields, and technology areas, but also across society) and be equipped with very different levels of formal or informal power, influence and interest. Goddard's (2011) '*connected region*' exemplifies the roles of different spheres of actors in a research and innovation-focused regional setting, with the institutions not being just in the region but of the region, incorporating a regional identity and a strong sense of ownership, which is based in strong partnerships and on a shared understanding of the challenges

and on how to overcome them (Figure 3). The oppositional situation would be a 'disconnected region' where spatially-blind policies are implemented back-to-back but not integrated.

Figure 3: The connected region

Source: Goddard (2011) (modified)



The design of strategy-making processes as well as the implementation and review of the strategy itself take place in different 'participatory scenes' where power is dispersed and power relations are unequal. According to scholars of governance theory, the settings in which different stakeholders can be engaged are

- **Forums**, which encompass a wide range of stakeholders, emphasising on the creation and communication of 'meaning', that is, values, preferences, perspectives, and fears.
- **Arenas**, in which key groups are involved (sponsors and champions, coordinating groups, planning teams, and various advisory or support groups), with a key role in policy-making and implementation, agenda-setting, planning, and budgeting of policy action.

- **Courts**, which includes ‘boundary spanners’ and formal institutions, tasked with the management of conflict and the enforcement of underlying norms and rules.⁵

Engaging stakeholders in practice is not ‘rocket science’. However, in order to best utilise the potential of each stakeholder and to curtail possible risks of involvement, it is critical to employ suitable methods to organize the engagement of a variety of stakeholders. It requires the choice of techniques according to the specific local conditions and purpose of stakeholder engagement. A number of handbooks and guides can be found in literature presenting many such techniques for practical use⁶.

Let us now see what could be suitable steps to arrive at an inclusionary and integrated while effective strategic approach to stakeholder engagement as they are postulated by the RIS3 concept. The following process could be suitable:

Step 1: getting started by choosing participants for a stakeholder analysis

A strategy process is typically initiated by an actor formally in charge of – or playing an indispensable role in the implementation of – a policy (often called ‘champions’), or a ‘sponsor’ involved in the financing of possible actions. A brainstorming within a small group of such stakeholders or their representatives, could help starting the stakeholder analysis by exploring who else has a ‘stake’ in an issue and subsequently identifying additional suitable participants of the process (snow-balling technique). A suitable tool could be the *Basic Stakeholder Analysis Technique*⁷, which offers a way of identifying stakeholders and their interests, clarifying stakeholders’ views of a focal issue (e.g. a policy goal), identifying some key strategic issues, and beginning the process of identifying coalitions of support and opposition.

Step 2: performing a stakeholder analysis

The stakeholder analysis should take place by involving a larger group of par-

5 See, for example, Healey (1997), p. 259-260

6 See, for example, King Baudouin Foundation and the Flemish Institute for Science and Technology Assessment (viWTA) (2005) or Bryson (2003)

7 cf. Bryson (2003), p. 13

ticipants to consider the actual or potential power of each identified potential stakeholder, its legitimacy, its capacity to mobilise resources and to get attention among groups of actors not directly involved. A key task is to identify possible positive and negative consequences of involving – or not – other stakeholders or their representatives in the strategy-making exercise. A possible technique to use could be a *Stakeholder Influence Diagramme* (Figure 4). It indicates how the stakeholders could exert influence on the strategy-making process (Importance) and in which fields (Interest), and how they are likely to influence one another (Relations with other actors). Informational inputs can be obtained through, e.g. the use of interviews, questionnaires, the setting up of focus groups, or other targeted information gathering techniques.

Figure 4: Stakeholder Influence Diagramme

Source: author's representation based on Bryson (2003)

Stakeholder	Importance (influence on decision-making / implementation, mandate, knowledge, network / contacts, financial capacity etc.) High / low	Interest (demand, claims, preferences) High / low	Relations with other actors strong / weak
Actor 1			
Actor 2			
Actor 3			

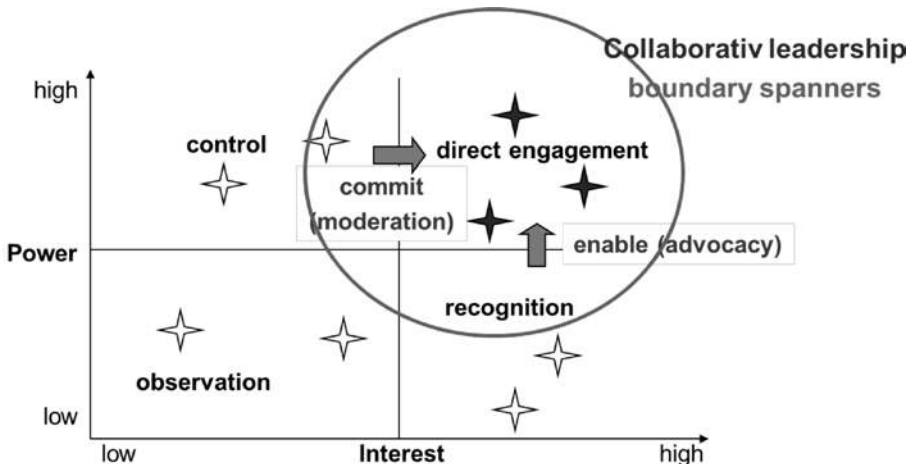
Step 3: identifying the roles of stakeholders

For a strategy-making process to be effective, it is pivotal to identify various groups who will have some role to play in the strategy-making effort: sponsors and champions, coordinating groups, planning teams, and various advisory or support groups. A suitable technique could be the Power versus Interest Grid (Figure 5), which array the stakeholder's interest (in a political sense) in the issue at hand, and the stakeholder's power to affect the issue's future. Four categories of stakeholders emerge from such an analysis: Players who have both an interest and significant power; subjects who have an interest but little power; context setters who have power but little direct interest; and the crowd which

consists of stakeholders with little interest or power.⁸ Power versus interest grids typically help determine which players' interests and power bases must be taken into account in order to address the issue at hand. They may also help highlight coalitions to be encouraged or discouraged, what behavior should be fostered, and whose support should be sought or who should or could be encouraged to opt-in. The result of this is that each stakeholder will be subject of different forms of consideration and treatment: players need to be directly engaged with an active role to ensure that the strategy-making process is being effectively conducted (such as leading on specific tasks or themes, or managing conflict as boundary spanners); the subjects' (users or those affected by the policy) interests need to be considered to ensure that the policy is relevant. The context setters will need to be controlled and committed to the strategy's goals in order to contain the risk that power is exercised in opposition to the strategy; and the crowd needs to be observed to avoid unintended adverse effects of the strategy-making process. Finally, the use of such a grid could provide information on how to convince stakeholders to change their views. It can even be used to help advance the interests of the relatively powerless, allowing for enabling and advocacy measures.⁹

Figure 5: Power vs. Interest Grid

Source: author's representation



8 cf. Bryson (2003), p. 14-15

9 ibid.

Step 4: planning for stakeholder participation

With the knowledge gathered until now about the various possible stakeholders, the subsequent task is to respond to or engage different stakeholders in different ways over the course of a policy or strategy change effort. A possible technique, which is specifically designed for the purpose of planning for stakeholder participation is the Participation Planning Matrix (Figure 6). The matrix identifies the role of each stakeholder in various strategic management functions including, for example; organising participation; creating ideas for strategic interventions; building a winning coalition around proposal development, review, and adoption; and Implementing, Monitoring and Evaluating Strategic Interventions. The levels of participation range from a minimum of simply informing stakeholders through to empowerment in which the stakeholders or some subset of them are given final decision making authority. Each level has a different goal and makes a different kind of promise, implicitly or explicitly. The matrix enables planners to consider appropriate responses to the demands of different stakeholders and, as a result, reaping the benefits of taking stakeholders seriously while avoiding entailing risks of inappropriately responding to or engaging stakeholders.

Figure 6: Participation Planning Matrix

Source: Bryson (2003), p. 39 (modified)

Stakeholders to Approach by Which Means:				
Inform	Consult	Involve	Collaborate	Empower
Promise: We will keep you informed	Promise: We will keep you informed, listen to you, and provide feedback on how your input influenced the decision.	Promise: We will work with you to ensure your concerns are considered and reflected in the alternatives considered, and provide feedback on your input influenced the decision.	Promise: We will incorporate your advice and recommendation to the maximum extent possible.	Promise: We will implement what you decide.

5. Conclusions: engaging stakeholders through good governance in light of smart specialisation

The review of prevalent governance systems has shown that there can be no 'one-size-fits-all'-method of managing strategic policy-making processes. What works for one region may not work as well for another. Therefore, every regional or national constituency needs to derive and adapt the model most suited for its individual purposes. Thus, being able to read the 'politics of place' becomes a critical skill.

In this sense, also the way collaborative leadership is construed, structured and executed needs to be adapted to the local culture of governance, in order to secure ownership of the strategy, which in turn means to commit powerful actors (the players but also the context setters) to the commonly agreed policy goals. It also means to minimise the purchase of external expertise and services (e.g. experts, analyses), making it possible to identify all relevant – and also new – stakeholders such as social entrepreneurs while keeping control over the process through 'boundary spanners'. This will increase the likelihood that the full research and innovation potential can be exploited.

Recalling the demands of the RIS3 concept in terms of governance clarified the sophisticated nature of the partnership approach required. However, considering that RIS3 is about making the best educated bet on the future of a region or country, exercising partnership and shared leadership are also the most promising strategies to minimising risks ('all stakeholders collectively are less likely to make the wrong bet') and share these among the stakeholders.

Considering the dynamics created by RIS3 as a complex strategy, maintaining it as a 'living' entity is a pre-requisite to catalyse progress towards the common goals. This entails securing iterative processes in which communication channels between stakeholder are kept open in a well-managed dialogue and collaboration is ensured throughout the whole process of strategy design, implementation, monitoring, review and evaluation, so that re-adjustments can be made based on changing conditions.

In conclusion, the RIS3 concept offers a paradigm that is not really new. Rather new, however, would be its proper implementation.

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Innovation and Brain Drain in the Western Balkans

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Introduction

Human capital formation and accumulation have created challenges to most of the developing countries in terms of striving to achieve economic growth. Human capital is inevitably linked to issues of innovation, successful technology transfer, and economic growth. The most persistent challenge in this respect has been the phenomenon of high rates of brain drain, i.e. droves of highly educated labor force (scientists/researchers) leaving their native countries in search for better life. In the WB countries this problem has been pervasive and ubiquitous for years. The reasons behind brain drain are twofold: on one hand, globalization generates agglomeration of human capital in places where it is already in abundance; on the other hand, host countries gradually impose conditions to filter highly educated immigrants through selection policies (World Bank, 2008). Two concepts prevail in the discussion about the impact of highly educated migration on the economic development. One refers to brain drain as a phenomenon that negatively impacts the sending country's human capital accumulation and fiscal revenue (Bhagwati and Hamada, 1974). Proponents of this view accentuate the need for implementation of restrictive public policies targeted at restricting highly educated labor mobility. The other concept focuses on the nature of highly educated Diaspora acting as a powerful force in promoting economic development through a variety of instruments, such as remittances, trade, foreign direct investment (FDI), and knowledge transfer. Globalization has drastically improved access of technological latecomers to advanced technologies, helping low-income countries to raise per capita income (Mayer, 2000), exemplified in the rapid development of high-tech companies in India and China as a result of their Silicon Valley Diaspora (Saxenian, 2002a).

Migration, if certain conditions are met, can lead to human capital accumulation and influence the net increase of the educational level of the sending country (Beine *et al.*, 2001, 2008). Yet only a handful of studies examines the

impact of highly educated migration on the economic development, or engages in the analysis of empirical data pertaining to high human capital emigration rates in small developing countries (reviewed in Stankovic *et al.*, 2013). These few studies provide no empirical data about the brain drain effect on the fiscal system, nor do they measure the size of the benefits for the migrants themselves in the process of emigration (Gibson and McKenzie, 2010).

Docquier and Marfouk's (2006) definition of immigrants as foreign-born workers does not consider the fact whether the education was gained in the home or in the host country. This can lead to overestimation of brain drain and construct a false picture of the variations of this phenomenon across the analyzed countries (Rosenzweig, 2005). To rectify this, Beine *et al.* (2007) use the age at which immigrants enter the host country as an indicator of where the education was acquired. Their results indicate that the size of the country and the emigration rate are inversely correlated, i.e., the average highly educated emigration rates are seven times higher in small countries in comparison to those in large countries (Docquier and Marfouk, 2006). Highest emigration rates have been observed in middle-income countries, where people have both the motive and the financial means to emigrate.

Benefits of Agglomeration of Knowledge

Knowledge is unevenly distributed; it is typically located in clusters. This results in stratification and differentiation of centre and periphery, where underdeveloped peripheral countries (i.e., WB countries from the point of view of this article) and regions become impoverished in terms of human capital. The peripheral countries do not achieve high incomes at the expense of developed central regions, which in turn benefit from disproportionately increased revenues. As a consequence, the North-South development gap constantly increases. Less developed regions have a shortage of highly educated staff that would otherwise enable higher capital profitability. Capital circumvents these regions, and thus the average productivity remains low. This in turn encourages more talented people to leave, perpetuating the brain drain phenomenon in a vicious circle, in a phenomenon known as the "Mezzogiorno effect" – named by the region of Southern Italy where it is ubiquitous.

In the context of WB countries' relatively high rates of highly educated emigration and also in the context of formulating sound brain gain or brain circulation public policies, several questions resonate: What is the starting point of the "Mezzogiorno effect", and whether WB countries, through implementation of

targeted public policies, can affect their qualification as a periphery or centre? Should WB countries undertake public policies aimed at generating indigenous human capital by subsidizing education and scientific research? Should they undertake public policies aimed at attracting and importing of human capital that has already been created abroad, and funded by another country (Lucas, 1990)?

Brain drain for one country equals brain gain for another. High brain drain rate negatively impacts the sending (i.e., home) country in several aspects. First, it might lead to increased global level inequality (Bhagwati and Hamada, 1974), creating substantial losses in the economy of the home country. It might also generate deficit in certain professions, making distinct professional profiles emigrate in disproportionately large numbers. This might be exacerbated by different types of governmental public policy measures aimed at prevention of brain drain, such as discouraging professional programs for acquisition of easily mobile skills, e.g., nurses (Poutvaara, 2004). These public policy measures are presumably focused on creating professionals who will be unable to leave the country easily (e.g., lawyers). However, in the long run this might lead to hyperinflation of those professions, leaving the problem with the deficit professions unsolved.

The relative degree of possibility to emigrate affects the decision as to whether people will invest in acquiring tertiary education diploma. If a certain type of education is an immigration card, this will act as an additional stimulus for investment in human capital. Uncertain emigration prospects when deciding about entering tertiary studies may influence the decision to (not) invest in acquiring new skills and competences. In the short term, this is beneficial for the sending country in terms of not losing additional human resources (Beine et al., 2001). In this respect, countries combining relatively low levels of human capital and low rates of highly educated emigration evidence net profit. However, most developing countries record huge losses in human capital in the form of brain drain. Only a handful of large developing countries net insignificant benefits by balancing low human capital levels with low highly educated emigration rates (Beine et al., 2008).

Benefits of Brain Drain

Potential benefits from brain drain include: remittances, return migration/brain circulation, and various diaspora externalities. There are two motives behind remittances: altruism and exchange (Beine *et al.*, 2006). Altruism is usu-

ally directed at immediate family members, whereas remittances, most often motivated by exchange, represent compensation for services done on behalf of immigrants by someone in their native country. Such transfers are intrinsic to temporary migration, signaling the willingness of immigrants to return home. It is unclear whether highly educated migrants transfer more funds than less educated ones. The highly educated often emigrate with their family, severing their ties with the native country. In this respect – at aggregate level – brain drain migration generates less income from remittances (Faini, 2006).

Return migration is rare among highly educated persons who left their country, unless the return is not preceded by considerable growth of the national economy (Milio et al., 2012). For instance, less than one-fifth of Taiwanese and South Koreans with doctorates in engineering who completed their studies at US universities in the 1970s chose to return to their home countries. However, after two decades of rapid economic growth in Taiwan and South Korea, the share of students returning upon graduation increased to two-thirds. The same trend has been observed with Chinese and Indian students who graduate in the USA and return home, suggesting that the return of highly qualified persons is a consequence rather than the cause of economic growth (Commander et al., 2003).

A number of social studies stress the potential of Diaspora externalities. Mobility of highly educated migrants might contribute towards reducing transaction and other types of information costs, facilitating trade, FDI, and technology transfer between the host and the home country (Kugler and Rapoport, 2006).

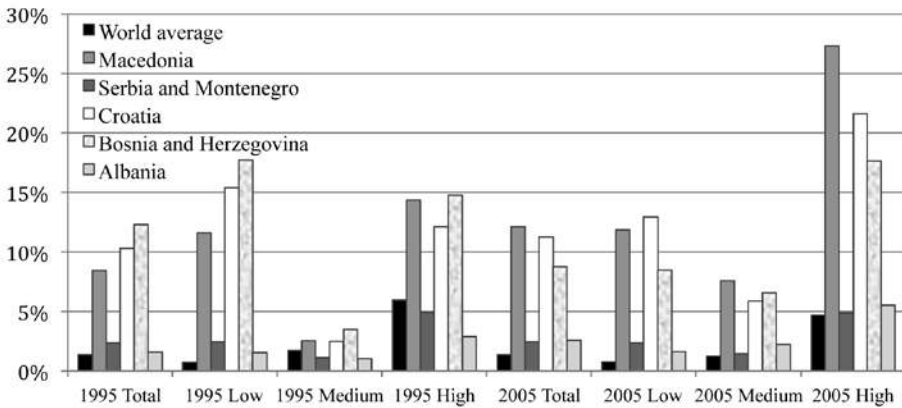
Brain drain trends in WB countries

The dissolution of the past regimes, weak economic structure, low level of industrial production, low performance results of the educational system, high level of public debt, high unemployment level, low contribution of SMEs to innovation, and the lack of motivation, commitment and trust, had enormous negative impact on human capital development in the WB countries. Two contemporaneous processes have been taking place, one associated with “external” brain drain, i.e. experts leaving the country for better professional fulfillment abroad, and the other associated with “internal” brain drain, i.e. specialists leaving their professions for better paid jobs in the private and/or informal sector of the economy (UNESCO, 2004). The educational and scientific systems of the WB countries share low level of investments (less than 1% of GDP) in research

and development (Stankovic et al., 2013). This is a result of several intertwined structural problems, including budgetary constraints imposed by restrictive monetary and fiscal policies, de-industrialization, high transaction costs of societal transition, external accounts imbalances, low national investment and savings rates, and limited FDI inflows (UNESCO, 2004). EU enlargement is particularly problematic for new member countries from the WB region. It is likely that the skilled and innovative individuals will leave WB to look for their luck in other EU countries as the freedom of movement becomes facilitated by membership (Fischer et al., 1997).

Figure 1. Emigration rate by educational level 1995–2005, selected WB countries.

Source: Docquier et al. (2011)



Even though most WB countries have undertaken education strategies and action plans geared towards increasing the tertiary enrolment rates, this has not resulted in substantial decrease in brain drain. On the contrary, brain drain rates have been relentlessly increasing, with FYR of Macedonia leading the WB pack (Figure 1, Table 1); Croatia and Bosnia & Herzegovina (BiH) follow suit. In fact, in 2010 FYR of Macedonia had a stock of emigrants of approximately 447.100, which is almost 22% of the country's population (World Bank, 2011). Albania and Serbia have much lower brain drain rates, which have remained relatively stable over time and are slightly higher than the world average. The largest relative increase in emigration is found in the group of highly educated individuals (Figure 1).

Table 1. International skilled migration, estimates controlling for age of entry, percentages.

Source: Beine et al. (2007).

Country	Brain drain 0+ years age		Brain drain 12+ years age		Brain drain 18+ years age		Brain drain 22+ years age	
	1990	2000	1990	2000	1990	2000	1990	2000
Albania	17,4	14,3	17,3	14,1	17,1	13,9	16,1	13,2
Bosnia & Herzegovina		23,9		23,2		22,9		21,9
FYR of Macedonia		29,1		26,9		25,9		24,1
Croatia		24,1		22,1		20,7		18,9
Serbia & Montenegro		13,7		13,3		12,9		12,3

Intellectual Mobilization of the WB Highly Educated Diaspora: Brain Circulation

The so-called brain circulation paradigm goes beyond the classic brain drain-brain gain dichotomy, and relies on notions such as globalization and transnationalism (Gaillard and Gaillard, 1997). The brain circulation paradigm is based upon several preconditions, the most important being the possibility for brain exchange between countries, increase in temporary migration flows, and increase in return migration flows (Milio *et al.*, 2012).

A number of KAM (Knowledge Assessment) variables are of particularly high significance for brain circulation (Stankovic *et al.*, 2013).¹ These are shown in Table 2 across several WB countries. While the list of variables is not inclusive, it points toward the major issues that influence brain drain/brain gain. KAM variables are normalized on a scale of 0 to 10 relative to other countries in the comparison group:

1 See Knowledge Assessment Methodology 2012. KAM is an interactive benchmarking tool created by the World Bank's Knowledge for Development Program, available at www.worldbank.org/kam (accessed on March 10, 2014).

Table 2. Values for selected KAM variables in WB countries.

Source: World Bank (2013).

	FYR of Macedonia	Croatia	Serbia	Albania	BiH
Human development index, 2010	7.71	9.86	3.68	4.38	3.61
Control of corruption, 2009	5.62	5.82	5.21	4.18	4.52
University-company research collaboration (1-7), 2010	5.27	4.66	5.27	0.15	1.98
Availability of venture capital (1-7)	5.42	2.44	3.21	2.44	1.37
Patents granted by the USPTO, avg. 2005-2009	3.36	6.71	5.07	2.4	3.63
High-tech exports as % of manuf. exports, 2009	3.59	7.18	n/a	2.44	3.59
Firm-level technology absorption (1-7), 2010	1.91	3.44	0.53	3.44	1.53
Public spending on education as % of GDP, 2009	n/a	7.43	7.43	n/a	n/a
Brain drain (1-7), 2010	1.07	1.22	0.46	2.98	0.46
Difficulty of hiring index, 2010	7.87	1.77	0.92	3.4	2.13

The return migration flows are primarily influenced by public policy measures undertaken by governments in order to influence the mobility of highly educated migrants (Johnson and Regets, 1998; Saxenian 2002b). Government programs targeting brain circulation influence the nature and intensity of exchange relationships between highly educated migrants, sending countries and destination countries (Saxenian, 2002c). Due to the mostly transient and “fluid” character of the Diaspora networks, it is extremely difficult to measure and assess the impact of these networks on the economic growth of the sending country (Meyer, 2001). For Diaspora networks to serve as hubs for knowledge and expertise transfer and dissemination, certain preconditions in the sending country should be met, such as adequate legal, economic and political infrastructure and human capital, and most important of all, supportive governmental public policies. These policies can aim towards establishment of industrial clusters linked to science and university parks, establishment of innovative start-ups by entrepreneurial returnees, and promotion of activities undertaken by expatriates acting as “transnational professional communities” between the sending and the destination country (Saxenian, 2002b). Many authors find positive

correlation between the incoming FDI from the USA and number of tertiary graduates residing in the USA (Javorcik *et al.*, 2006; Kugler and Rapoport, 2007; Docquier *et al.*, 2011). However, these effects cannot be extrapolated to all developing countries, since, as already pointed out, certain preconditions should be met (Skeldon, 2009).

Several public policy mechanisms can be deployed by the WB countries in order to discourage high brain drain rates. These involve policies aimed towards: (i) return of migrants into their home country; (ii) restriction of international mobility of own and foreign highly educated citizens; (iii) recruitment of highly educated international migrants; (iv) reparation of the human capital loss; (v) Diaspora options, or resourcing of expatriates; and (vi) retention via development of adequate educational sector policies aimed towards economic growth. Out of all of these public policy measures, only public policies aimed at attracting migrants to return to their home country, public policies influencing formation of Diaspora networks, and retention public policies are viable options in terms of brain circulation. Most often, governments undertake a *mélange* of these public policies, linking the technological growth with retention policies, e.g. Asian countries, and/or Diaspora networks, e.g. South American countries (Lowell and Findlay, 2002).

In recent years, the WB countries have achieved certain progress in the area of human capital development by enacting and implementing national strategies and actions plans pertaining to innovation, science, and higher education (OECD, 2010). Despite encouraging reforms in this field, the WB countries' governments face number of challenges. The brain drain generates a gap between the supply and the demand of certain skills, leading to distortions in the highly educated population labor market. This is one of the main reasons why the private sector encounters difficulties with recruitment of highly skilled personnel in certain professions. The lack of coherent, holistic and strategic public policy approach sustains the vicious brain drain cycle in these countries. This is a consequence of the fragmented, *ad hoc* cooperation between governmental institutions responsible for creation of public policies on human capital development. One possible public policy instrument would be the implementation of a holistic, inclusive approach to education, science, technological development and innovation. Creating and sustaining substantial - and not only formalistic - institutional ties is essential in this regard.

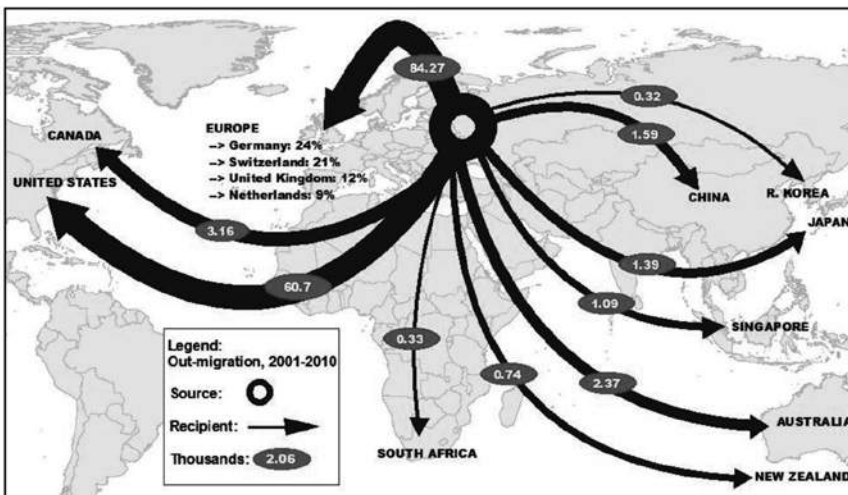
The highly educated and skilful workforce contributes to the development of innovative capacities of the private sector, of the academia, and of the society as a whole. The number of highly skilled migrants – innovators – can be used as

an indicator of the human development potential of one country. The number of innovators and inventor migration can be captured from census data. To supplement the census data, patent data have the potential to cast light on the migration trends of inventors. For example, the number of patent filings tends to correlate with the degree of innovation, and with the relative investments in R&D, thus indicating the efficiency of one country's policies in generating human capital. Patent Cooperation Treaty (PCT) patent applications provide useful information. They have the unique characteristic that they record both the residence and the nationality of the applicants. This has to do with the requirement under the PCT that only nationals or residents of a PCT contracting state can file PCT applications. As a result, nationality and residence information are available for 80.6% of the inventors. PCT records offer good coverage of inventor nationality and residence information for all countries between 2004 and 2011. Taking advantage of this fact, and focusing on inventor migration as captured in patent applications, a recent study attempted to globally map inventor migration (WIPO, 2013).

Figure 2 illustrates the migration of inventors from Europe. Different from the other regions analyzed, the majority of migrant inventors from Europe do not move to the US, but stay in Europe and Central Asia – with most of them moving specifically within and to Western Europe. The high income status of Western Europe, language ties, and the opening of European labor markets may explain the large intra-regional inventor flows (WIPO, 2013).

Figure 2. Where do inventors from Europe go?

Source: WIPO (2013).



High brain drain rates represent net transfer of human capital, in the form of educational costs, from low-income to high-income countries. Emigration of the highly educated workforce strata which directly contribute to production, e.g. engineers and scientists, might result in reduced innovation and technology transfer rates in the domestic economy (Kapur and McHale, 2005). The emigration rates of scientists, engineers and doctors are, in general, higher than the emigration rates of the labor force that has non-technical university education (e.g. lawyers). When local conditions and opportunities are limited, certain levels of emigration rate can be positive for the sending country, due to the possible positive effect of technology transfer from the Diaspora. However, certain pre-conditions need to be fulfilled in order for positive externalities of brain drain to occur. If the sending country represents relatively small economic market (as in the case of all WB countries), it is very likely that the brain drain will cause significantly adverse labor market changes that will affect all sectors of the local economy. The likelihood that a young man who earned his doctorate in the USA will remain there after completing doctoral studies decreases with the increase in the average per capita income in the home country. However, this is not the sole factor affecting the decision to return. This decision is influenced by other factors such as quality of living conditions, density of research networks, and size of the host country Diaspora. Factors that could positively affect the decision to return to the home country are family proximity, cultural familiarity, and the desire to participate in the technological progress of the home country.

Due to the alarmingly high rates of brain drain, the WB governments should formulate public policies aimed towards encouraging brain circulation. The brain drain is a complex issue that occurs as a result of a variety of mutually overlapping factors, out of which the most important is the level of economic development of the home country. For instance, the economic development of the country is the main reason for the return of South Korean highly educated immigrants to their home country. However, the lack of opportunities for economic development is not the only obstacle to the return migration. The 2005 study of the Albanian Institute for International Studies pointed out the fact that the young educated Albanians do not return to their home country due to the inappropriate business practices of the employers in terms of recruitment and selection, nepotism and lack of transparency in the public administration and in the academia (OECD, 2010).

“Piloting Solutions for Alleviating Brain Drain in South East Europe” financed by UNESCO and Hewlett-Packard is one of the pioneering brain circulation projects in WB (Gabaldón *et al.*, 2005). This project was designed to

support research and reduce brain drain by creating opportunities for advancement of young WB scientists in their home countries. Universities from the WB countries received assistance in the form of grid technologies and start-up capital for financing scientific cooperation and exchange with their counterparts in the Diaspora. Since all WB countries share similar socio-economic conditions, the regional approach to brain circulation will be an effective public policy instrument. Therefore, it would have been beneficial if the activities of the above mentioned project became sustainable in the long run. Another effective public policy in this regard would be the creation of Diaspora knowledge networks (e.g., similar to the Colombian Red Caldas).

The highly educated Diaspora creates an opportunity for a potential gain to the home country. The educated WB expatriates create a pool of potentially useful human capital for the countries of origin. The challenge lies in mobilizing these brains in order to involve them in promoting the economic growth of the region, building a sustainable brain circulation network. WB countries can benefit from other countries' successful experiences, e.g. India, where the partnerships between the private sector and the academia, twinning project with technology institutes from the USA and the technology transfer led by the Silicon Valley Diaspora have greatly influenced the rise of Bangalore as one of the world's IT centers. Institutional factors play a major role in brain circulation. Looking at the examples of India, China, and other countries, returning migrant communities are not replicating Silicon Valley around the world. It is more appropriate to see the emerging regions as hybrids, combining elements of the Silicon Valley industrial system with inherited local institutions and resources (Saxenian, 2005). Universities should motivate talented lecturers and students to spend short periods of research and study abroad. Also, the institution of exchange programs is an excellent means of encouragement of highly educated Diaspora scientists to return to their home country and provide lectures or engage in collaborative projects with their counterparts. All these endeavors need to rely on stable long-term strategies to promote economic growth and democracy in the WB countries, leaving no way to nepotism and corruption, two of the main culprits for the long socio-economic status quo of the WB countries (Quaked, 2002). The main preconditions for brain circulation can be found in the "well developed scientific infrastructure, higher investments in the science sector, and the stability of a consolidated democratic government that assures human rights and academic freedoms" (Horvat, 2004).

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RTDI Evaluation in South East Europe – Reflections based on the experiences of EVAL-INNO¹

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1. Introduction

The complexity and heterogeneity of innovation systems requires from ERDF² and IPA countries³ strategic intelligence to design, implement, and follow up research, technological development, and innovation (RTDI) measures at different spatial levels (local, national, regional, and European) by addressing issues of relevance, efficiency, efficacy, impact, and sustainability. For this purpose, evaluations are one of the most essential tools for evidence-based decision-making. This is especially true in the South-East Europe⁴ region which is characterised by an adoption and adaptation of new⁵ RTDI policies, programmes, and (support) institutions and a transformation of funding towards competitive schemes. At the same time, however, a lack of methodological and procedural know-how on the part of both evaluators and awarding authorities concerning purpose, design, and use of evaluations has become obvious.

In the face of the dynamic developments in terms of designing, establishing, and implementing new RTDI instruments in the South-East Europe region, helped especially by the availability to the “new” EU Member States of structural funds, providing significantly higher amounts of fresh money compared with the accession phase and accession funds, the “Steering Platform for Research for

1 The authors would like to thank all EVAL-INNO partners for their contributions, which have been integrated in this summative article. We acknowledge especially the reports prepared by Lena Tsiouri and Nikos Sidiropoulos from the University of Athens, Centre for Financial Studies, which form a substantial input to this article.

2 ERDF = European Regional Development Fund; applicable to EU Member States only

3 IPA = Instrument for Pre-Accession Assistance; provided on the basis of the European Partnerships of the potential candidates and the Accession Partnerships of the candidate countries, which means the Western Balkan countries, Turkey, and Iceland. In our regional context, we mean the Western Balkan countries.

4 The “South-East Europe region” is here defined administratively by the geographical borders stipulated by the South East Europe Transnational Cooperation Programme.

5 “new” is meant here as new in the regional context.

Western Balkan Countries” as soon as 2010 identified the need for better and more pro-active use of evaluations to avoid an instrumental arbitrariness and called for regional solutions. Also the EU INNO-Appraisal project (Edler et al. 2010), which took stock of and assessed appraisal exercises, such as evaluations in the area of innovation policy across Europe, identified a significant difference of the application and use of evaluations between more advanced RTDI countries and especially the new EU Member States, not to mention non-EU member states in the so-called Western Balkan region.

The EVAL-INNO project was designed in 2010 with the key development objective of strengthening regional as well as national evaluation capacities in order to improve the framework conditions for innovation policies, programmes, institutions, and projects. The operational project goals were

- to promote the role of RTDI evaluation as a crucial condition for a reflexive learning innovation system;
- to develop the needed capacities and competencies for comprehensive RTDI evaluations; and
- to provide procedural and methodological know-how and tool-kits on the part of both evaluators and awarding authorities.

In early 2014, after a positive funding decision for the project granted by the South East Europe Transnational Cooperation Programme and after almost three years of implementation, it is time for a review of the situation.

The underlying broad structural starting point for the project was that innovation capacities and results in the South East Europe region are too limited and that, therefore, public interventions are necessary and consequently increasingly implemented to stimulate meaningful innovation activities. However, under tight financial regimes, public spending for innovation has to identify the right rationales and mechanisms for performance-based innovation funding from the start. To secure an optimum use of taxpayer money, principles of good governance have to be respected. Evaluations are considered to be a proper tool for ensuring transparency and accountability. They contribute to an efficient new public management. Also, the right application of evaluations has to be learned in policy systems with continuously increasing complexity (e.g. caused by vertical, and intrinsically sometimes quite different spatial intervention levels [local, national, regional, European, global], as well as caused by an increasing complexity of rules and regulations [national/European/global] and by the emergence of horizontal multi-level policy systems cutting across previously more

separated policy fields and stakeholder arenas [see for instance the Triple Helix Concept or the “knowledge triangle” approach, to name just two prominent paradigmatic cross-policy field examples]). Ex-ante, interim, terminal, and ex-post evaluations have to be properly and meaningfully tendered, and they have to be implemented so as to secure strategic intelligence building and evidence-based decision making.

The reasons for commissioning evaluations can be manifold. They can serve the need for legitimisation of public interventions and, thus, justify the use of public funds. Similarly, evaluations can satisfy information needs to show the public how funds are being used and to what effect. In general, however, evaluations often fulfil a learning function, which basically means to do things better in the future based on analytical evidence and judgement provided by the evaluation and to allow a better steering of planned or implemented interventions (e.g. for establishing more relevant policy objectives or to improve the design and implementation of certain interventions). Sometimes evaluations also support the mediation function if they are – intentionally or not – balancing interests (e.g. of programme owners and of target groups) and help to improve the understanding and dialogue about diverging, or sometimes even conflicting, interests.

2. Isolation and Compartmentalisation in the Field of STI Evaluation

When EVAL-INNO was conceived, an obvious finding was that evaluation experts in the South-East Europe region are rarely institutionalised in professional evaluation associations or other relevant networking bodies. Those regional capacities with RTDI evaluation experience are usually individual experts conducting evaluations pre-dominantly on their own. Moreover, the core group of beneficiaries of RTDI-related evaluations, which are usually considered to be those public authorities who are in charge of planning evaluations and commissioning them internally or externally, are a few in number, rarely have a formal evaluation education or job description, and are only loosely connected to peers in other units, policy fields, and countries. Thus, the following two key challenges were identified:

Key challenge “one”:

- Beneficiaries of evaluations at policy-level are dispersed across sectors and governance levels, but exchange among them is limited

Key challenge “two”:

- Lack of systematic exchange with evaluators in EU and globally

The relative isolation of beneficiaries of evaluations from each other, as postulated in key challenge “one” above, remains a fact. EVAL-INNO did not target this “compartmentalisation” at national level. As a trans-national activity, it “logically” supported the development of a regional zone for encounter and interaction across the existing “compartments” in the field of STI, which seem to exist in any administrative entity. A rare example at the national level to combat administrative “compartmentalisation” of programme owners and programme managers from the field of Science, Technology, and Innovation (STI) is the Austrian Platform for Research and Technology Policy Evaluation (FTEVAL), which was also featured during the training sessions organised by EVAL-INNO as a good practice example in establishing a conscious evaluation culture in a rather short period of time in an agglomerated policy field (science policy, technology, and innovation policy).

FTEVAL was also considered as a model for a regional platform, which could contribute at this level as an alternative to a stepwise breakup of the existing compartments at the local and national levels without, however, replacing necessary national efforts. In this sense, the regional platform kicked off by EVAL-INNO did indeed provide a zone for encountering and interaction at the regional level by bringing experts from different national and regional administrations into contact with each other. Although this was only made possible thanks to the South East Europe Transnational Cooperation Programme, the programme itself was at the same time obstructing an even better exchange due to its blatant rigidity in terms of limiting the reimbursement of travel expenses of officials from public authorities to attend the final project conference in Vienna (to give just one example). Besides such operational difficulties, the South East Europe Transnational Cooperation Programme was perceived by many of its beneficiaries as a mixture of a highly relevant programmatic intervention in terms of its contents and intervention logic, but at the same time as administratively extremely heavy and unnecessarily rigid in a way that the administrative overhead caused by the programme cannibalised its eminent thematic and

content-related virtues. But this might be a finding (or not) of a programme evaluation of the South East Europe Transnational Cooperation Programme and not an issue to be further extended in this article.

A problem faced by almost any regional initiative is its institutionalisation and sustainability. Whereas champions, owners, and, thus, ownership can more easily be identified at the national level, it is difficult to identify regional “owners” and to create regional “ownership” when no regional champion exists or is mandated through a diplomatic inter-governmental process. Such a political process could hardly be implemented by EVAL-INNO itself. Nevertheless, a business model for a sustainable institutionalisation of the regional platform was developed, which is based on a membership model under which the presumptive members, i.e. ministries and agencies in charge for STI policies, would have to pay a yearly membership fee of a few thousand Euros to access and use the services provided by the platform.

EVAL-INNO successfully contributed to tackling the second key challenge by providing a systematic exchange with evaluators in the EU, especially through trainings organised by the project. It became evident, however, that without (co-)funding of travel costs, participation of evaluators from economically less developed South East European countries in pertinent European or international STI evaluation conferences or workshops would remain very limited. An indication of this was the low participation rate of these countries in the largest STI evaluation conference organised in 2013, the FTEVAL conference “Evaluation of STI policies, instruments and organisations: new horizons and new challenges” which took place in Vienna in November 2013, although FTEVAL was intensively collaborating with EVAL-INNO and even provided a dedicated after-conference session on the issue of “Supporting RTDI evaluation culture: The way forward in Southeast Europe and Central Europe – Lessons learnt from the Conference”.

3. Human Capital Shortcomings in the field of STI Evaluation

Based on its pre-project analysis, the developers of EVAL-INNO identified a lack of STI evaluation capacities in the South-East Europe region, which is another key challenge for developing sound STI evaluations:

Key challenge “three”:

- Lack of certified evaluators for programme, institutional, and policy

evaluations in the field of innovation as well as methodological deficits and weaknesses

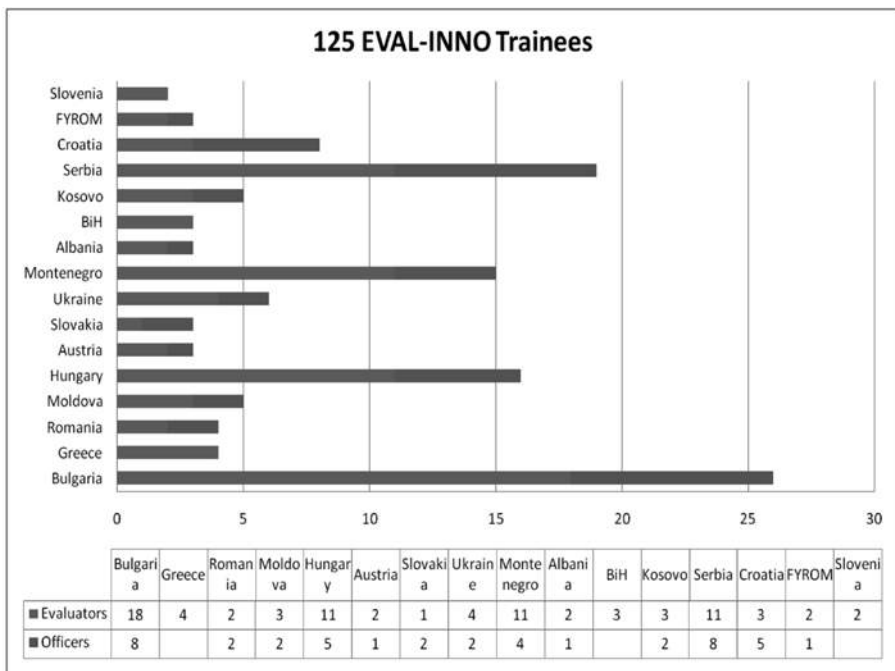
To mitigate key challenge “three” was a central goal of EVAL-INNO. The project organised four training weeks in Sofia, Budapest, Podgorica, and Belgrade. The two target groups of these trainings were evaluators on the one hand and programme owners and programme managers on the other. In other words, the target groups were those who conduct external evaluations and those who commission external evaluations. During these four training weeks, 125 trainees, consisting of 82 evaluators and 43 programme officers, were trained. These trainees came from 16 countries from all over the South East-Europe region. The mobilisation of EVAL-INNO in this regard was very high and was definitely also facilitated by an earnest need and factual demand. In this regard, EVAL-INNO amply demonstrated its relevance and effectiveness. Also, the mobilisation of trainers was highly effective and the offered diversity was appreciated by the trainees: For the four five day’s long trainings provided for the evaluators, 24 lectures and 9 group exercises were implemented. For the training of the programme managers, which each lasted in total four days, 20 lectures and one group exercise was executed. 12 lecturers with different national background taught and produced educational material for lectures and group exercises.

Fig. 1⁶ shows the origin of the trainees: 15 or even more trainees each came from Bulgaria, Serbia, Hungary, and Montenegro. This huge participation from these countries is not surprising given the fact that these were the host countries for the four training weeks. The local hosts for the trainings succeeded in mobilising national communities interested in STI evaluation. Also the numbers of trainees from Croatia, Ukraine, Moldova, and Kosovo was high, which is an indication for the regional outreach of EVAL-INNO because no institution from any of these countries was a member of the EVAL-INNO consortium.

In the two training weeks provided to the evaluators, which were organised in non-EU Member Countries (i.e. in Belgrade and especially in Podgorica) the number of participants who had never participated in similar events before was higher than the number of participants who had. As regards the two training weeks organised in EU Member States, one can conclude that in Sofia the participation of these two groups was balanced and in Budapest the number of newcomers was lower than the number of participants who had already partici-

pated in similar events before. As regards the participation of programme owners and programme managers, newcomers by far outnumbered those who had already participated in a similar event before, which is evidence that EVAL-INNO really could contribute to mitigating key challenge “one” mentioned above at the regional level.

Fig. 1: Origin of Trainees Participating in the STI Evaluation Training Weeks organised by EVAL-INNO

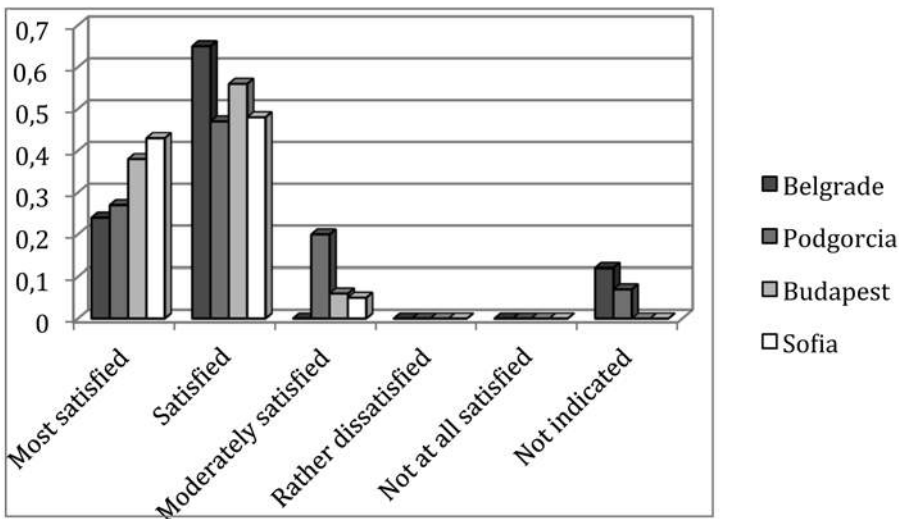


As shown in Fig. 2, almost 90% of the participating trainees from the target group “evaluators” were “most satisfied” or at least “satisfied” with the content of the trainings offered by EVAL-INNO. Only the training week in Podgorica received a lower appreciation rate, with 74% approval (“most satisfied” and “satisfied”) in this regard. No single participant from this group was “rather dissatisfied” nor “not at all satisfied”.

As regards the target group of programme owners and programme managers, the appreciation was high as well (80 % approval for “most satisfied” and “satisfied”), but slightly less than compared with the target group of “evaluators”, with some dissatisfaction expressed during the trainings in Budapest (17%

“rather dissatisfied”) and Sofia (9% “rather dissatisfied”). This relative dissatisfaction may have been caused by the heavy methodological orientation of the trainings during the first two days. 33% of this target group who participated in the training week in Budapest stated that the training was too advanced (22% in Belgrade, 9% in Sofia and 0% in Podgorica). On the other hand, the training was perceived as too basic by 36% of the programme managers participating in the training week in Sofia and by 11% of the participants from this target group in Belgrade (0% in Podgorica and Budapest). A second reason for the expressed level of dissatisfaction of a few participants from the target group of programme owners and programme managers could be the sub-optimal response of the training curriculum to the needs of the target group. During the trainings, it became obvious that programme managers from the “new” EU Member States were deeply concerned by the evaluation requirements stipulated by the structural funds, which was an issue not sufficiently anticipated by EVAL-INNO. This also constitutes an area for a possible future support intervention for which a high demand is very likely.

Fig. 2: Satisfaction of the Trainees from the Target Group “Evaluators” Participating in the STI Evaluation Training Weeks organised by EVAL-INNO



As regards the overall quality of the trainings provided by EVAL-INNO, around 95% of the participating target group of evaluators would recommend the training to their colleagues, and almost 100% of the target group of programme owners and programme managers indicated that they would recommend the EVAL-

INNO training to their colleagues. Based on the feedback of the trainees, the coordinators of the training work package, Ms. Lena Tsipouri and Mr. Nikos Sidiropoulos, suggested for the future a better selection of the trainees based on CV evaluation instead of the first come first served principle, a better selection of trainers through a central selection process based on international quality standards, and the provision of more practical case studies and more time for discussion.

4. Varying Degree of Maturity of public procurement of RTDI evaluations

During inception of EVAL-INNO the low number of published STI-related evaluation studies and reports by most of the countries located in the South-East Europe region (with the exception of Austria) became obvious. This was also confirmed by the findings of the INNO-Appraisal project published in 2010. The main assumptions for this low use of STI evaluations are that, although there is a need for RTDI evaluations for effective, evidence-based policies, most SEE countries lack an evaluation culture and skills that can play a crucial role in reversing the situation and help these countries adopt models that will allow them to rapidly improve their policy performance.

Argumentum e contrario, another assumption was that there might be a lack of sufficient knowledge of professional tendering procedures to obtain the best evaluation results and that there might be shortcomings to make the best use of the obtained evaluation results in the relevant STI policy cycles.

Key challenge “four”:

- Lack of knowledge of professional tendering procedures (incl. public procurement laws) to obtain the best evaluation results

In order to respond to this key challenge, the participating EVAL-INNO countries were benchmarked towards each other based on the formal institutional rules for RTDI evaluation procurement, informal behaviours and precautions, implementation processes and last but not least the maturity and skills of the actors in the field of RTDI policy and on the RTDI evaluation market. For this comparative study, the following methods were used: literature and document research, database inquiries (search on using the CPV Code “Research and Development” and keyword “evaluation” for all participating EVAL INNO countries), and interviews. The benchmarking exercise aimed to quantify and

compare topics and parameters that were difficult to measure. A methodology was developed that reflects both the status quo and the willingness to change. Objective indicators and subjective judgements were combined to arrive at partial indicators and a synthetic one. While recognising the limitations of this methodology, it can be considered as a first attempt, which, if further refined and systematically reported, may evolve into a useful input for monitoring and benchmarking of RTDI evaluation systems (Tsipouri, L. and Sidiropoulos, N., 2013).

- The conceptual framework (Tsipouri, L. and Sidiropoulos, N., 2013) used to compare and benchmark the performance of the countries is based on the decomposition of the policy cycle and the procurement process into the following stages:
 - Identifying the requirements and user readiness
 - Market intelligence
 - Tendering process (Terms of reference: background, data availability, questions, and methods)
 - Assessing tenders and awarding contracts
 - Managing contract delivery

As the different stages were too detailed to study, in particular in countries where only few RTDI evaluations were tendered until recently, it was decided to transform them into related categories (e.g. institutional set up, implementation processes etc.). The institutional setup for tendering RTDI evaluations was decomposed into a formal part (rules when and how to tender) and an informal part (behavioural routines). Further categories taken into account for the benchmarking exercise were the implementation processes referring to assessment and management of RTDI evaluations (see Tsipouri and Sidiropoulos 2013 for a detailed methodological description). In this way, the conceptual framework resulted in a few interconnected categories, against which all countries were benchmarked: the institutional setup (formal and informal), the implementation process, and market agents consisting of awarding authorities on the one hand and professional evaluators on the other.

Table 1: Aggregated results of the benchmarking

	Formal Set-Up	Informal Set-Up	Implementation	Awarding Authorities	Evaluators
Austria	5	4	4	3	4
Bulgaria	1	2	2	2	3
Greece	1	2	2	2	3
Hungary	2	2	2	2	3
Montenegro	1	1	2	1	2
Serbia	1	1	2	1	1

The aggregated results of the benchmarking exercise are shown in Table 1, which clearly demonstrates that Austria can be used as a benchmark for the EVAL INNO countries in all chosen categories. Austria seems to be well ahead of the other countries and close to an excellent performance.

Formal rules for public procurement should, in theory, be the same for all Member States, whereas the potential future member states are expected to gradually transpose the pertinent EU directives into their national legislation. However, Member States are allowed to impose stricter rules than those foreseen by the directives. In addition, one should keep in mind that the informal rules, namely the choice of awarding authorities to go for lower budgets and less strict procedures is also a fact. In order to benchmark the formal rules in the scrutinised countries (Austria, Bulgaria, Greece, Hungary, Montenegro, and Serbia), the following parameters were used:

1. The budget thresholds for general provisions for public tendering
2. The existence (or not) of special provisions for RTDI evaluations (e.g. specific thresholds; individual selection procedures etc.)
3. Explicit legislation (or not) regarding the legal obligation of awarding authorities to evaluate their programmes or organisations.
4. The existence (or not) of evaluation standards.

As regards the assessment of the formal institutional set up for tendering RTDI evaluations, the distances in-between the analysed countries are large. Austria is highest rated with 5 points (out of 5); Hungary is in the middle with a score of 3 and the rest only scored 1 point.

Given the homogenous and unified formal rules on thresholds, what is maybe even more important for the institutional set up comes from nationally

embedded routines, namely the informal rules that influence the behaviour of awarding authorities. The following parameters were used for comparison:

1. The frequency of evaluations
2. The type of evaluations
3. The willingness to improve
4. The existence of champions

As a result, Austria, with limitations in international tendering and a willingness to experiment, was rated 4 points (out of 5); Hungary, Bulgaria, and Greece were in the middle with 3 points each, for different reasons, and the two IPA countries again scored 1 point only.

In order to assess the implementation of procuring and using RTDI evaluations, the following parameters were used for the benchmarking exercise:

1. *Smooth process*, meaning that once RTDI evaluations are tendered, there are usually no complaints, at least not formally.
2. *Time to contract*: This is a particularly relevant variable: if the time to contract is long, the whole process is delayed and it is unlikely that the evaluation will feed into the next policy cycle on time.
3. *Use of Monitoring* and its quality, which is assumed to depend on the qualification of individual officers and the culture of the awarding authorities.
4. *Content* of the terms of reference for tendering external evaluations, which is crucial for procuring and obtaining good evaluations. More often than not, awarding authorities refrain from ambitious ToR with regard to the content to avoid being exposed and instead formulate standardised requests, rarely requiring innovative approaches or methodologies.
5. *Adoption of recommendations*, which is a subjective indicator based on the perception of both awarding authorities and evaluators, as they were expressed during the study visits.

As a result of this investigation, Austria scores highest again, with room for improvement, while all other countries are in serious need of improving the more difficult parts of the implementation process (see Table 2).

Table 2: The implementation process of RTDI evaluations: assessing country performance

	Smooth process	Time to contract	Monitoring	Content	Adoption of recommendations	Comments per country
Austria	Yes	***	Good/variable	Variable	60%	Implementation is smooth but can be further improved
Bulgaria	Yes	***	Limited/variable	Standard	40%	Need to improve monitoring, content of the ToR and relevance of recommendations
Greece	Yes	*	Limited	Standard	20%	“
Hungary	Yes	**	Limited/variable	Standard	40%	“
Montenegro	Yes	**	Limited	Standard	30%	“
Serbia	Yes	**	Limited	Standard	30%	“
Comments per parameter	In all countries visited the process was smooth and no particular training needs are identified	Ways to minimise time to contract are important and need to be stressed during the training	In three countries the monitoring varies; in the rest it is in general limited. Good monitoring should be included in the training modules.	The balance between standardised content in the ToR, request for more ambitious exercises and avoidance of over-specification is an important element for the training	Improving the need to discuss/adopt recommendations and the way how to embed them into the policy cycle is another important element for the training modules	

A good RTDI market is composed of demand (awarding authorities), supply (evaluators), and intermediaries (other stakeholders). They all play a role in organising and executing good tenders. Awarding authorities are the crucial element on the demand side. It is for them to decide when to launch evaluations,

what budget to dedicate, to monitor implementation, and choose whether and which recommendations to implement (or not). The following parameters were used to assess the awarding authorities:

1. Number of awarding authorities
2. Experience in evaluation market/needs
3. Experience in drafting Terms of Reference (ToR)
4. Willingness to experiment
5. Willingness to participate in EVAL-INNO trainings

While Austrian authorities exist in high numbers and are experienced, they expressed limited interest in the EVAL INNO activities and trainings, which, however, might be caused by the existence of FTEVAL, i.e. their own national RTDI evaluation platform, which also provides similar activities and trainings. Conversely, the less experienced Bulgarian authorities proved more eager to experiment and learn. In Greece (more skills than willingness) and Hungary (more willingness than skills), skills and willingness are mixed and led to average scores, whereas for the IPA countries Montenegro and Serbia, the scores were low and the usefulness of EVAL INNO trainings was assessed highest.

The following parameters were used to assess the supply side:

1. Number of evaluators
2. Experience of evaluators
3. Willingness to participate in EVAL-INNO trainings

Not surprisingly, the benchmarking result showed that Austrian and Greek evaluators are more experienced and less interested in training. There is an emerging market for evaluators in all countries and in addition a demand for evaluations from international organisations.

5. Improving access to information, standards and good practices

Another concern of EVAL-INNO was to improve the access of stakeholders in the South East Europe Region to relevant RTDI evaluation information, standards and good practices. Moreover, the project aimed at contributing a few inspiring RTDI evaluations in the region by conducting two RTI programme evaluations and one benchmarking exercise evaluating the performance and

practices of R&D institutions from the region vis-à-vis societal needs and societal impact.

Key challenge “five”:

- Difficulties to access RTDI evaluation information and good practices and general lack of completed good-practice evaluations in the region under scrutiny

In order to tackle key challenge “five”, EVAL-INNO implemented different activities:

- a. Publication of RTDI Evaluation Standards
- b. Publicly accessible web-based databases (to search for evaluators etc.)
- c. Implementation of pilot evaluation exercises, which can be considered to be inspiring practices for the region

The publishing of RTDI evaluation standards by EVAL-INNO in 2012 in Bulgarian, English, Greek, Hungarian, Montenegrin, and Serbian was motivated to provide support to conduct proper and meaningful tenders to procure RTDI evaluations as well as to implement them in such way as to secure strategic intelligence building and evidence-based decision-making. Especially in countries with an emerging evaluation culture and a yet underdeveloped evaluation market, RTDI evaluation standards can help stakeholders to agree on priorities and to establish a road map leading to a high quality national RTDI evaluation policy. The EVAL-INNO standards offer a guideline for programme owners on how to plan, tender, and conduct evaluations. As the market for RTDI evaluations develops, it is important to adopt clear rules and ethics for commissioning institutions and evaluators to ensure responsible behaviour, credibility of results and cost-effectiveness. The standards also include recommendations on how to design an evaluation framework before launching a tender and describe the basic elements of Terms of Reference.

The standards have been drawn up in an interactive process involving experts from six countries through discussion of and reflection on existing RTDI experiences and framework conditions in the South-East Europe region. It is the first attempt of this kind at the regional level. The authors have not been working from scratch ‘re-inventing the wheel’, but rather were using the existing practice of evaluation standards from EU countries (especially the Austrian

Evaluation Standards in Research and Technology Policy⁷⁾ and the USA⁸⁾ as successful examples of good practice and trying to adapt them as comprehensibly, concisely, and usefully as possible to the particular situation and needs of the region.

The standards are published on the EVAL-INNO website (<http://www.eval-inno.eu>), which also makes accessible several databases, which were stocked with

- 180 profiles of evaluators (cut-off date of this article was 12 March 2014), including demographic data and information about previous evaluation experience of the evaluators;
- 159 profiles of other relevant stakeholders (e.g. ministries, agencies, funds, intermediaries) from the region;
- 291 templates informing about RTDI strategies at different level and scope relevant for the region under scrutiny;
- 229 templates summarising RTDI programmes from several countries including information about the design of the programme and its evaluation;
- information about 271 RTDI infrastructures to enable identification of potential service providers or project partners.

Finally, methodological guidelines for programme evaluation and a benchmarking manual have been developed and used for three evaluation exercises conducted by EVAL-INNO, namely

- evaluation of innovation projects funded by the Ministry of Education, Science and Technological Development of the Republic of Serbia in 2011;
- a strategic benchmarking of the research response (“practices”) of R&D organisations from Austria, Bulgaria, Greece, Hungary, Montenegro, and Serbia on societal needs to generate societal impact (“performance”), and

7 Evaluation Standards in Research and Technology Policy (full-length version), Platform – Fteval, Vienna

8 Further reading can be found in the literature list at the end of this article.

- a pilot evaluation of the voucher scheme for innovative SMEs, a programme managed by the Directorate of Development of SMEs in Montenegro.

Document analysis of the legal and the economic context, reviews of good practices/ examples of similar schemes in other countries, case studies, face-to-face interviews, focus groups, surveys, and analysis of secondary statistics were employed for these pilot evaluation exercises, which all produced eminent results and recommendations which were fed back to the programme owners for consideration. Unfortunately, there is not enough room to go into the details of the findings due to the complex contextual peculiarities of these evaluations, which each would require a separate article.

6. Conclusion and Outlook

Since May 2011 EVAL-INNO, a project funded by the South East Europe Transnational Cooperation Programme has addressed and supported the qualitatively hardly standardised and organisationally fragmented endogenous RTDI evaluation potential in the South-East Europe region. Through a structured approach, the project has contributed to an improvement of the cognitive foundations and instrumental application of evaluations as a policy intelligence tool to achieve a traceable impact on a reflective innovation policy and to prepare the region for an informed implementation of and contribution to the “Europe 2020” strategy.

EVAL-INNO has focused on capacity building and institutional support. Its main target groups were policy-makers and policy-delivery systems, innovation infrastructures, and (potential) RTDI evaluators. An easily accessible and systematically structured web-based Regional RTDI Evaluation Platform was programmed, subdivided into four distinct databases which were continuously updated to meet the information needs of both evaluators and awarding authorities (agencies, ministries). Specific training modules were prepared for them and implemented with an emphasis on methodological and procedural issues. Moreover, regional RTDI evaluation standards were published in six languages and programme evaluations as well as a comparative benchmarking of R&D organisations was carried out based on sound methodological designs.

Despite several improvements stimulated by EVAL-INNO and also influenced through external developments, a still unsatisfactory level of deployment

of evaluation in RTDI policy-making has to be ascertained. Most structural key challenges which we still face today were also relevant three years ago when the project started.

Based on the input and tools provided by EVAL-INNO, we suggest the following steps be realised by the authorities responsible for research, technology, and innovation policy in the economically less developed countries of the South-East Europe region:

1. Adopt RTDI evaluation standards (those suggested verbatim or an adapted variation) agreed upon by all relevant national stakeholders.
2. Start with a commitment to regularly evaluate larger RTDI programmes and public R&D organisations (incl. universities) by external evaluators. Three to four years might be needed for this first stage, in which programmes will set out clear objectives and a budget earmarked for evaluation ranging from 1–2% of their total funds (depending on the size of the programme) is secured.
3. During this process, commissioning organisations will gain experience, evaluators will be trained on the job (learning by doing), and a market for RTDI evaluations will be created, which will constantly improve its services.
4. Make the regional RTDI evaluation platform sustainable based on small yearly membership fees, which enables encountering and interaction at the regional level by bringing experts from different national and regional administrations into contact with each other and which centrally provides high-quality trainings on evaluation methods and evaluation processes.
5. Programme owners will, based on training, learning on the job, and their own experience, increase their ambitions for RTDI policies by tendering more complex evaluations (portfolio and system evaluations), whereas national public, private non-profit, and profit-oriented evaluators (institutions who perform evaluations) will emerge to respond to the increasing market demand for sound RTDI evaluations in South East Europe.

Further Reading

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Tsipouri, L. and Sidiropoulos, N. (2013): *Public procurement in SEE innovation evaluations: A comparative and needs assessment study*. EVAL-INNO Report.

UNICEF (1991): *A UNICEF Guide for Monitoring and Evaluation: Making a difference?* Evaluation Office, New York.

US Government Accountability Office (GAO) (2012): *Designing evaluations’: Applied research and methods*, Washington, D.C.

This book outlines results from the past and discusses options for the future while it also tackles the issue of regional cooperation in research and innovation from different standpoints and in different styles. Researchers as well as policy makers and administrators inform on the broader picture but also on their particular perspectives. The publication at hand is not only prepared as a report on the WBC-INCO.NET project that has ended in 2014, but it is intended to promote regional cooperation also in the future and is aimed at everyone interested in research and innovation in Western Balkan region.

The publication consists of three parts: the first part is discussing the development of RTDI policies and initiatives in Western Balkan region towards 2020 while it focuses on current strategic approaches in/for the region. Some of the articles included in this part have been presented and discussed during the WBC-INCO.NET final conference in Vienna, on March 27/28 entitled: "Towards 2020: New Horizons for RTD and Innovation in the Western Balkan Region". The readers are also invited to visit the conference website <http://towards2020.wbc-inco.net/> and download the presentations and audio files of their interest which are publicly available. The second part includes several reports compiled by the project WBC-INCO.NET on the situation of Science and Research in the Western Balkans and the coordination of relevant policies and initiatives in: Albania, Bosnia and Herzegovina, Croatia, FYR of Macedonia, Montenegro, Serbia, and Kosovo*. The third part puts the focus on innovation and discusses the WBC innovation systems while at the same time the results of some of the WBC-INCO.NET activities such as workshops on Smart Specialisation are presented.

We hope that readers interested in research- and innovation-related topics as well as in the progress of the integration process of the Western Balkan countries into the European Research Area will gain some fruitful insights from this book.

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