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Comparative analysis of the innovation capacity in the WBC with particular focus on joint cooperation needs

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Executive Summary

This report presents an attempt to compare the innovation capacities of WBC based on multiple analytical approaches with a view to understand the possibility of closer regional innovation cooperation. The final aim is to carry out the background report for a common innovation strategy and initiatives for establishing the regional innovation system.

The analyses reveal that WBC differs significantly in overall development and related innovation capacities (e.g. there is almost a six-fold difference in per-capita income between the richest and poorest country in the region) as well as in performance of the national innovation systems (NIS) and governance abilities to advance innovation competences.

The comparative analysis of the main components of NIS (research sub-system, sub-system for research-driven and non-research driven innovation) distinguishes tentatively three groups of countries in terms of performance of innovation systems. Croatia and Serbia belong to first group which develops a 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 are lagging behind the leading countries. They are rather familiar with the development of some component of NIS (e.g. research 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 UN Res.1244) whose innovation systems are in the beginning phase (Albania) or infancy (Kosovo UN Res.1244).

Despite 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 technological sectors 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;
- improvement of expert assistance and cooperation with universities (enhancing the overall quality of science-industry cooperation in the region and strengthening the interest of both companies and universities for mutual cooperation).

The remaining most important factors are common measures against corruption and regional subsidies and programme for innovation cooperation.

Development of human resources and entrepreneurship infrastructure seems to be critical to enhance cooperation in the region in the future.

Fostering science-industry cooperation addresses two policy measures:

a) more funding for collaborative research between universities and businesses;
b) more funding for knowledge/technology transfer activities and expert consultations.

The concrete joint actions to be taken for better regional innovation cooperation perceived by entrepreneurs include:

- establishing of the regional venture capital fund;
- regional financing programme for innovation.

In contrast, researchers perceived the following joint action:

- mobility of personnel;
- legal framework for fostering direct foreign investments (FDI);
- opening and liberalisation of service market (probably for R&D services).

Despite the above differences, both parties recognised the lack of 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 if not all countries in the region like ICT, transportations, energy resources, clean technologies, etc.

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Foreword

This report presents the comparative analysis of the innovation systems and capacities of the Western Balkan Countries (WBC) in order to support the design of the innovation strategy of the region. The final aim is to encourage a new growth paradigm in WBC based on knowledge and innovation.

The innovation strategy and the regional innovation system are perceived as the public policy tools for accelerating knowledge based growth in WBC for economic recovery after the period of economic and social turmoil. The comparative analysis of the innovation systems and capacities is based on a multiple approach that includes desk research, survey of innovation needs based on two on-line and consecutive questionnaire targeted at two main innovation stakeholders - entrepreneurs and researchers and carried out by JRC-IPTS in cooperation with the Institute Ivo Pilar, Zagreb (Chapter 3.2.1 and 3.2.3.), mapping of the innovation systems carried out by the ZSI and national innovation experts (incorporated in the Chapter 2.2.2.3), analysis of the innovation infrastructure carried out upon national reports presented by innovation experts on the 1st innovation Dialog Forum held in Becici, Montenegro on November 8-9, 2010 (Chapter 2.2) and an open questionnaire targeted at selected innovation experts in WBC (Chapter 3.2.3).

The analysis is carried out within the WBC-INCO.NET-ENHANCED project (Work package 8, Task 8.1.Stocktaking), a consortium project financed by the European Commission within FP7 with the aim to support the cooperation between the EU member states (EU MS), countries associated to FP7 and the Western Balkan Countries and Turkey (WBC&T) in science and technology. The consortium includes 26 partners from 16 countries.

The task 8.1 Stocktaking includes the three sub-tasks:

a) updated mapping of the WBC innovation systems and stakeholders (government, programme owners, clusters, S&T parks, etc.) based on a comparative approach, including the identification of some show-cases for successful science-industry/SME cooperation and good practice – carried out by ZSI (with support of WBC partners, especially MPI and Ivo Pilar);
b) identification of future research and market needs (especially of SMEs) reflecting how research and innovation can be geared towards fulfilling these needs through collaboration in the region; the survey will also include questions about policy aspects which will help generate more innovation from research results (carried out by JRC-IPTS with support of Ivo Pilar);
1. comparative analysis of the innovation capacity in the WBC with particular focus on joint cooperation needs (carried out by Ivo Pilar)

The task leader of the 8.1. - *Stocktaking* is the Institute of Social Sciences IVO PILAR from Zagreb, Croatia having the main task to carry out a study on the comparative analysis of the innovation capacity in the WBC with particular focus on joint cooperation needs. To accomplish this task the Ivo Pilar research group has relied on analyses which were the responsibility of other two partners involved in WP 8.1: /1/ JRC-IPTS responsible for identification of future research and market needs and /2/ ZSI - in charge for updated mapping of the WBC innovation systems and stakeholders based on a comparative approach.

The results of the analysis especially the results of the double questioners aimed to identify research and innovation needs both of today and in the future is also aimed for further discussion and dedicated workshops with industry and research regional stakeholders and policy makers in order to be refined and complemented. The final aim is to make a theoretical background for the joint innovation strategy of WBC and paving the way for the regional innovation system.

1. PART ONE: SETTING THE ANALYSIS

1.1 Introduction

The Western Balkans Countries (WBC) includes Albania and successor countries of the former Yugoslavia (Croatia, Kosovo UN Res.1244, Serbia, FYR Macedonia, Bosnia and Herzegovina, and Montenegro) excluding Slovenia. They belong to the so-called transition economies which conventionally refer to countries which have moved or are moving from a primarily state-planned to a market-based economic system, with private ownership of assets and market-supporting institutions. The innovation, research and entrepreneurs systems of the Western Balkans Countries (WBC) have been subjected recently, since 2007, to many analysis with the aim to understand the overall economic situation and to identify the main obstacle that hinder faster economic growth and development of entrepreneurship as its basic requirements[1]. The main reason is the need of closer cooperation of WBC with the European Union (EU) as the EU neighbouring countries and perspectives of their possible integration. As perceived by some scholars (Skufic, 2010) the last enlargement of the EU by two new members Bulgaria and Romania, shifted the focus of the EU from Southeast Europe towards WBC as the area where future integration is expected. At the same time, the economic potential of these countries does not meet criteria for integration, thus, the additional efforts are needed to strength

[1] It should be stated that Europe also suffers from the sluggish growth, when compared to the US or Asian states like China and India which has led to debate over how best to stimulate European growth. Innovation is increasingly seen as the answer. At the moment, national governments spend about €65 billion per year on public research and the European Commission about €8 billion. The question is whether these sums are being correctly allocated between national and EU levels.

economically the Balkan region. Since the relationship between economic growth and innovation/technological development has been established, the determinants of innovation and entrepreneurship capacity of WBC have been investigated by increased number of scholars, especially by the umbrella institutions like the European Commission, World Bank, EBRD and OECD (OECD, 2008, OECD 2010, EC/OECD/EBRD, 2009). However, the data regarding SME sector, innovation capacities and research capacities for the majority of countries (except Croatia) cannot be found in international databases like EUROSTAT, OECD databases, European Innovation Scoreboard or other statistical databases. Some of them like Bosnia and Herzegovina and FYR Macedonia are included in the EU ERAWATCH project on monitoring research polices and systems

Much of the Balkans lags behind the rest of the EU in living standards, at least measured by the GDP per capita. Albania's GDP per capita is barely more than one-quarter the EU average while only Croatia has more than 50 per cent of the EU average[2] (Sanfey, 2011). WBC countries will need many decades to catch up with the EU average. By some estimations (Sanfey, 2011) Albania will need, for example, 65 years. **It certainly calls for application of the new growth models** after two decades of transition to market economy, establishing the appropriate macro-economic framework and other prerequisites for new growth paradigm such as the establishing of modern business infrastructure or developing the spirit of entrepreneurism and individualism. It is commonly perceived that the previous factors of growth like defensive inter-sectoral restructuring (dismiss of workers or early retirement), domestic market consumption and low-cost foreign direct investments (FDI) (Teodorovic and Lovrincevic, 1998) should be abandoned in favour of knowledge based factors of growth. Factors that typically shape the new techno-economic paradigm – knowledge economy – based on the appropriation of knowledge include innovation, research, education and information and communication technologies (ICT). Although it is well known that WBC are innovation laggards and hardly can compete in advanced technology sectors it should be taken into account that implementation of knowledge-economy should be locally specific and thus should differ by country specific technology competences, sectors, size, etc The knowledge economy in WBC as technology followers and less developed countries is not necessarily equalised with the cutting edge research and advanced "new to the world" innovation. Instead, the application of new technologies in the standard sectors of low and medium technology level, new management methods, long-term strategies, governance models, etc. could have much greater affect on their economy revalitalisation and could present a new growth model based on innovations. It implicates by all means that WBC are capable of producing advanced technologies and forefront research and be a member of world class networks of excellence and innovation drivers.

Generally speaking, the innovation capacities of WBC, despite great varieties among them, remain rather modest. There are many factors that have shaped innovation performance in the WB countries, and the five of them will be highlighted:

[2] that is more than EU MS Bulgaria with 44 and Romania with 46 per cent of the EU average

1. Transition process;
2. Wrong present economic model;
3. Lack of fundamentals;
4. Political situation;
5. Global financial crisis.

The transition process and slow restructuring of economies to the requirements of global markets and international competition is one of the major obstacles to the low innovation capacities of WBC. A deviant process of transition from planned to market economy related to the non-transparent privatization of previously state-owned companies partly caused also by the pressure of Copenhagen criteria is perceived as an important hindering factor. The model of privatisation according to the "empty shell" model meaning sucking out the substance of the companies (Zupanov, 2001) made business development and innovation marginal for economy The "empty shell" model in combination with the disaggregation of the large common market of WBC which led to the collapse of the former big corporations has caused also the breakdown of the in-house research institutes and centres of the industry. The collapse of research institutes by the model of shock therapy (Radošević, 1996) which used to be the centres of technological excellence and industrial competences marked a loss of 50-years of technological accumulation. They were also used to be the main driving forces of innovation and commercial application of scientific research in the past and are expected to be a natural partner for universities in developing new technologies and large-scale development programmes in the future. Unfortunately, the creation of new sectors of small businesses in the new socio-economic and political framework failed to compensate for lost competences.

The **present economic model** is outdated and wrong since it is based on:

1/ defensive inter-sectoral restructuring (dismiss of workers and early retirement as a tool for companies' restructuring),

2/domestic market consumption mainly by government which led to great public debts),

3/ low-tech/cost FDI,

4/long-term state borrowing which caused budgetary deficits (Radosevic, 2004; Teodorovic and Lovrincevic, 1998).

Existing economic models in WBC mainly rely on external financing i.e. capital inflows and external knowledge with implications on the science and research sector in these economies – namely low R&D demand, weak business R&D investments, low level of inventive activities, brain drain as well as limitation utilization of ICT. Therefore, the marginal role of science and research is a consequence of the economic models present in these countries, and unfortunately not a vital element of development.

The development of on **fundamental** economic and social stability, so-called fundamentals (OECD, 2001) have the critical role in building the environment in which innovation could flourish. They include factors such as functional market

economy, stable macroeconomic, fiscal discipline, low inflation rates, regular business to business payments to avoid insolvency of companies, VAT reimbursement on time, opening economies to international trade and capital flows, well-functioning financial and labour markets, etc. Besides, socio-cultural and political fundamentals are of critical importance. They include positive attitudes towards innovation, entrepreneurship, competition and individualism, prevention of corruption, vested interest, financial engineering and greed, political voluntarism, protectionism etc. that disable equal chances to all citizens based on their creativity, skills and efforts. However, these fundamental economic, socio-cultural and political fundamental prerequisites are often missing in WBC and make a huge obstacle to entrepreneurism and innovation development. The national development policies are still focused on establishing a fully functional market economy free from political voluntarism, corruption, administrative obstacles, excessive paperwork, insolvency, etc. They are followed by new problems in terms of ageing of population, scarcity of energy resources, global economic recession and financial crisis ("Grand challenges") that led to the collapse of pension funds, public debt, health care and a number of budget restrictions that guarantee existential security of citizens. As the fundamental economic framework have not yet been established, the bulk of development policy is oriented towards establishing the basic economic requirements for healthy market economy, then to overcoming the urgent economic difficulties[3] while innovation driven growth, innovation policy, knowledge-based economy and similar issues remain on the margins of strategic thinking.

The political situation has also great impact on the development of some WB countries. It should be taken in mind that the techno-economic backwardness of some countries is not only the result of historical development but also of the political situation. Some WBC have only recently won state independence and a chance to establish national governments dedicated to build the national economic progress and social welfare. For example, Montenegro, four years after gaining independence in May 2006, is in the process of establishing its own science system and science policy. Similarly, Kosovo UN Res.1244, has only recently won state independence in February 2008 and conquer a chance to establish national governments dedicated to build the national economic progress and social welfare.

Finally, the global financial crisis started in the year 2007 characterised by the strong deregulation of bank sector has a strong influence on the economies of WBC. Therefore it will be explained in more details in the next chapter.

[3] In all countries of the Western Balkans, more than half of respondents reported difficulties in being able to manage on their households' income; this share ranged from 52% in Croatia to 78% in Serbia. Compared to 2009, in Serbia, Montenegro, Albania, Kosovo UN Res.1244 and Bosnia and Herzegovina, more people now reported difficulties in making ends meet. In Kosovo UN Res.1244 the proportion of respondents with financial difficulties has risen by 19 percentage points to 54%. (Gallup Balkan Monitor: Insights and perceptions: Voices of the Balkan, Summary of findings, 2010 (available at: http://www.balkan-monitor.eu/files/BalkanMonitor-2010_Summary_of_Findings.pdf. last access: 5.5. 2011)

The overall conclusion is that some common factors have shaped the current weak innovation performance in the WB countries. The following five are recognised: transition process; wrong present economic model; lack of fundamentals; political situation and global financial crisis. These factors made almost no need for companies' development and innovations, their low R&D demand, weak business R&D investments, low level of inventive activities, brain drain as well as limitation utilization of ICT.

1.2 The macroeconomic performance of WBC affected by the financial crisis

The existing economic models of the WBC which mainly rely on external financing have shaped innovation performance in the WB countries and deepen their economic difficulties during the financial crisis. The financial crisis exaggerated the global contraction (Reinhart, Rogof, 2009) and further contraction of economic activities is to be expected. In case of the Western Balkan countries the first financial crisis occurred during 2008-2009 whereas the consequent contraction has been evolving from 2010 until now. Unlike the first phase of the financial crisis where the emphasis was on financial losses and limitation of favourable financing, the second phase of the contraction is characterised by further weakening of institutions, reduction of socioeconomic activities with devastating implications on public services and investments in infrastructure result of public expenditure reductions within the national economies. Therefore, falling investments in the public sector, such as the energy sector, research and development and education sector, seem to be evidence of these new circumstances.

According to Bartlett and Monastiriotis (2010) the first financial crisis in the year 2007[4] was indirectly transmitted to the region through four visible channels: first, contraction of their foreign trade mainly with European countries. Second, decline of credit growth. Third, a rapid fall in inflow of FDI and fourth, decline in remittances from migrant workers for other WB countries except Croatia.

The first financial crisis is explained by two broad factors, namely global macro liquidity policies[5] and weak regulatory framework[6] (Blundell-Wignall, Atkinson, Hoon

4 Currently we are witnessing the second financial crisis which strongly affected European countries, where further borrowing in the national economies becomes questionable.
5 Macro liquidity policies need to be examined in the context of global imbalance where China, Japan and Germany run large surplus whereas United States and Great Britain run deficits. According to Jickling (2010: 4), U.S. borrowing cannot continue indefinitely; the resulting stress underlies current financial disruptions
6 Jickling (2010:7) explained phenomena shadow banking system where financial institutions create new financial instruments. Mortgage lending, in particular, moved out of banks into unregulated institutions without any safety instruments such as deposits.

Lee, 2010). The causes of the financial crisis are tightly connected with the deregulation of capital, goods and services markets in the EU countries, all key processes that have strongly shaped the socio economic performance in the EU over the past thirty years. Jean-Pierre Chevènement[7], recited in Le Monde Diplomatique (2011, 1106: 10-11) stated 'the real turning point was 1983, when we rallied to the idea of the European monetary system and, in fact, neoliberalism. Then in 1986 we had the Single European Act, which amounted to implementing deregulation at continental level'. However, other important mechanisms that provide convergence among the countries such as labor mobility, wage flexibility and central government support have not developed at the same pace. Therefore, the introduction of a single currency for the EU countries meant the acceptance of obligation to defend the Euro in case of the financial crisis. This is currently happening, where capacities are different among member states and depend on the competitiveness of their national economies.

In the last thirty years strong deregulation can be explained by the motivation to maintain profit rates for multinational firms and international banks in comparison to their main global rivals, occurring primarily in USA and Japan, as well as China and India over the past twenty years. The deregulation as a policy approach deteriorated labour share in gross value added and in the national economy at the same time, and caused negative effects of purchasing power of labour on consumption[8]. Since profit could not exist without demand for goods and services, debt-led consumption growth model presents a counterpart mechanism where financial institutions need to secure sufficient amount of financial capital aimed at stimulating consumption. Therefore to a large extent macroeconomic policy makers have been going to policies to retain the confidence of volatile financial markets (Onaran, 2011: 2). Deregulation of the market caused the redistribution of income on the global level where differences between 20% the wealthiest and 20% the poorest had been growing in the period 1960-1997. In 1960, the ratio was 30:1, whereas in 1997 the proportion was 74:1 (UNDP 1999: 3). Great income change had been occurring in the USA over the last half century, for example Piketty and Saez (2003) argued that top income and wages shares display a U-shaped pattern over the century, where increasing inequality between various income classes has been growing in the last fifty years. On the firm level, deregulation caused a shift in management behaviour, the 'retain and reinvest' logic had been changed to 'downsize and distribute' (cf. Lazonick and Sullivan, 2000). As a result, shareholder interests became crucial, verifying corporate governance. Therefore, the benefits of GDP growth go mainly to capitalists causing job losses (cf. Gordon, 2011). Within the business sector corporate governance appears to be a crucial systematic variable that influences innovation activities (c.f. Casper, Matraves, 2003), even in developing countries such as Croatia (cf. Račić, Cvijanović, Aralica, 2008).

7 Honorary president of the Mouvement Républicain et Citoyen,
8 Given that the marginal propensity to consume out of profits is lower than out of wages

At the same time strong deregulation of bank sector activities allows for profit seeking orientation of the banks where economic activities with larger number of realization phases (technology intensive production) with higher level of perceived risk are not priority for them, i.e. results of perceived uncertain future earnings (Aralica, 2010: 336). As a consequence the importance of innovation activities as a part of investments had been falling, regardless of the level of the analysis i.e macro level and/or firm level. On the other hand innovation activities became stronger oriented towards consumption and services and these activities become new sources of innovation.

On the global level, especially within the developed countries innovation activities within service sector especially ICT and financial sector have become crucial. The dematerialization of innovation activities with strong emphasis on individuals through their consumption has evolved into a crucial trend in the USA and throughout Europe. In the era of economic activity contraction (Reinhart, Rogof, 2009) i.e. the second financial crisis, the emphasis will be on the efficient use of materials, energy as well as financial resources. Arguably therefore there were multiple financial crises.

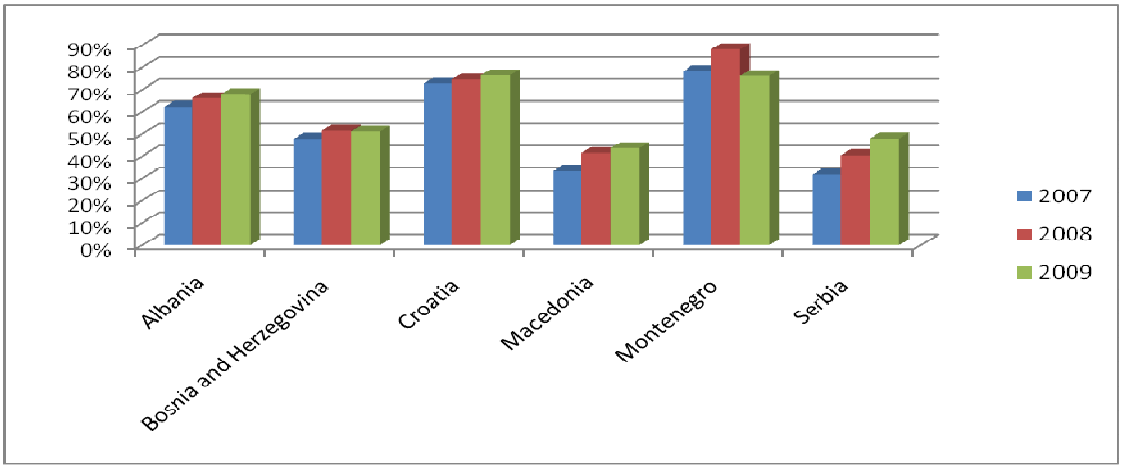
Therefore dominant technologies, such as ICT and biotechnology will be in the near future accompanied with nanotechnology[9], and the convergence of these technologies will be a result of improving human capacities, social effects, national economy productivity and quality of life (see Roco, Bainbridge, 2003).

The aforementioned strengthening of neoliberal policy has shaped the WB region over the past twenty years. During the nineties and at the beginning of the new century it had slowed due to armed conflict in the region and capital flow restrictions, e.g. Croatia began to liberalize capital flows in 1995, by signing agreements with the Paris and the London club. In terms of the financial system agenda in the region, the majority of policy actions aimed to clean up and stabilise the banking industry. Over the past ten years, the banking sector in the Western Balkans has recently attracted considerable attention from foreign investors through the removal of national restrictions, the liberalization of market access, and the sale of state owned banks, according to Berthomieu, et al (2008:12). In the period 2000-2008, Economic growth had been strongly facilitated by banks and other financial institution instruments in the WB region. Great influence of financial institutions on economic growth in the national economies within the WB region could be explained by the facts that banking and non-banking financial sectors were restructured and largely placed in

[9] Technology based on miniaturization of product i.e. efficient use of resources.

the ownership of reputable foreign financial institutions during privatisations. Moreover, until 2008, the access to international capital markets improved significantly, partly as a result of the global monetary easing leading to ample liquidity and partly due to the increased creditworthiness of the reformed financial institutions. Thus, the ratio of domestic credit as % of GDP (Figure 1) has steadily increased during the period 2007-2009 in all countries of the WB region (Montenegro is only exception with decreases in 2009 compared to 2008). Moreover, the ratio of domestic credit to GDP reached relatively high levels in Montenegro, Croatia and Albania in particular (more than sixty percent).

Figure 1: Domestic credit as % of Gross Domestic Product in WB Countries



Source: *IMF Statistics, WIIW (value for Montenegro's GDP in 2009)*

Despite trends in the Western Balkan financial markets, according to Golubović (2005) these markets remain small, fragmented, and at an early stage of their development. [10]. Therefore, they are more vulnerable in cases of the financial crises where financial resources are limited.

The negative implications for the region will be persistently high unemployment levels and weak growth rates in the next ten years where consumption over saving will be constrained even further in comparison to the current situation[11]. The current crisis in the Western Europe is about functionalizing

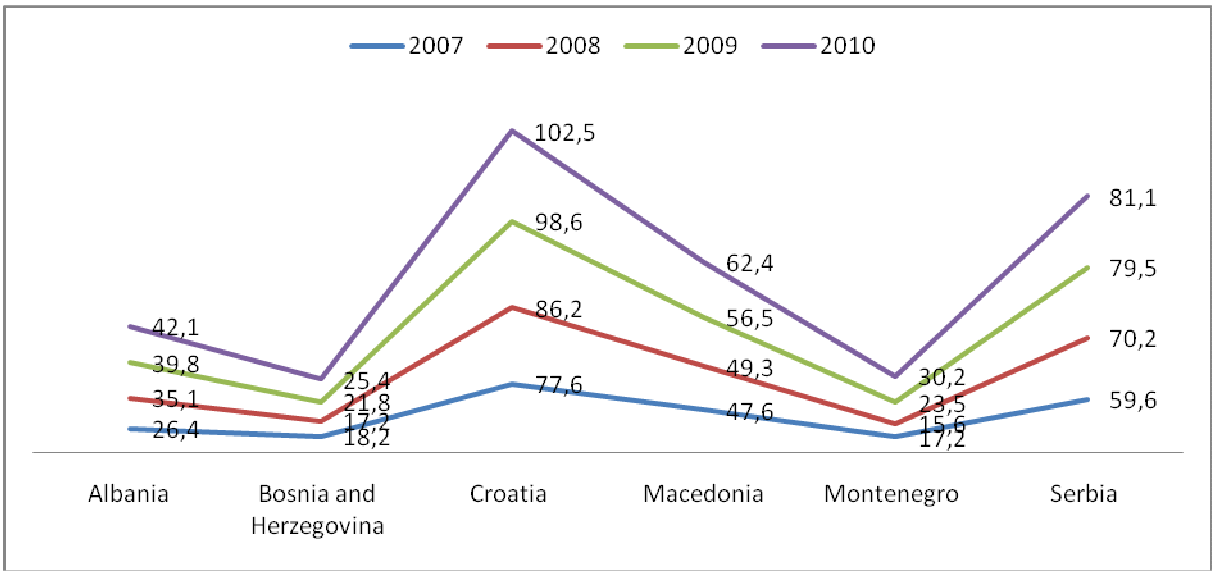
[10] The general characteristics of this market are: activity on the equity market is considerably lower than activity of the banking sector; majority of the countries are characterized by low liquidity on the capital market, with exchange concentrated on small number of shares of listed companies; and, an increased sensitivity of the financial markets to the movements of speculative capital

[11] Moreover, the problem of the bank sector in Italy could complicate further situation in the Western Balkan countries especially in countries where foreign owned banks with Italian investors dominate e.g. Croatia.

institutions, where finance - led economy[12] requires additional financial resources for its activities. As Boone and Simone (2011:1) state, Europe's financial system relies on moral hazard, i.e., a no defaults' policy, to attract the funding needed to roll over large amounts of short–term bank and sovereign debt'. So, bankruptcy of banks and nations may appear, as a consequence of the scenario where politicians in these countries call for further investments from the private sector in their highly risky debts.

Weak recovery of some WBC like Croatia could be partly ascribed to a problem of exchange rate regime. Comparing the exchange rate policy in Croatia and Serbia adopted floating exchange rate. However there are distinctions among them, as Serbia is closer to the flexible exchange rate whereas Croatia is closer to a fixed exchange rate. Therefore in scenario of a sudden stop of capital inflows, which occurred in 2009, the outcomes are different. Petrovic (2010) says Serbia depreciated its currency 23% which mitigated a decline in output to a certain extent. On the other hand Croatia defended a fixed exchange rate and experienced a severe decline in output. During the period 2007-2010, Croatian external debt rose by 32% and amounts to 102.5 percent of GDP at the end of 2010, which is four percent less than external debt rise in Serbia (36.1) over the same period (Figure 2).

Figure 2: Western Balkan Countries and Gross External Debt in % of GDP in the period 2007-2010



12 According to Fumagalli and Vercellone (2010:22) the financialized economy is based on shareholder theory of sovereignty, which legitimizes control of the company by shareholder. Interpreting (Aglietta, Reberioux, 2005) they stated that the doctrine of shareholder do not have the real means to exercise their sovereign control, but external and internal control compensate, externally auditors, financial analysts and rating agencies are responsible for accounting information whereas the board of directors assumes the task of re-establishing shareholders' real rights.

Sources: Hunya (2010), https/www.wiiw.at

Regardless of exchange rate regime the financial crisis, in both countries increase of external debt are tightly connected with increase of the market risks which imply increase propensity of further capital outflow decreasing capacity of debt payment in the WB region with negative consequence on weakening the competitive capacity of the national economies.

Therefore, during a financial crisis, an increase of efficiency of use of available resources through various mechanisms, such as the inventive and innovation cooperation within the region seems to be a useful mechanism for developing national economies where the innovation infrastructure (where capital intensive investments are required on the national level) presents a critical element of the national innovation system.

1.3 SME development in the financial crisis

Throughout the region, the common challenge is to strengthen business investments in R&D activities, innovation capacities of companies and industry structure in the overall economy. This finding can be confirmed in each Western Balkan country regardless of the development level. This is due to the fact that knowledge-related activities rarely lead to competitive advantage in the short term. SMEs tend to operate in non-knowledge intensive sectors (e.g. tourism, real estate sector and/or retail) where enterprises are primarily oriented towards the local or regional (domestic) market. Moreover, they are likely to see their fellow SMEs in the same industry or region as a competitor, rather than as a potential partner.

The crisis has affected small business owners in Western Balkan countries through a triple reduction of economic activity, liquidity and access to finance (credit). Smaller enterprises are disproportionately affected by variations in business cycles, which makes them riskier from the point of view of financial institutions. The effects of weak competitiveness and slow restructuring, coupled with low levels of export-oriented FDI have been exacerbated by the effects of the global economic and financial crisis. The current trends have had negative effects on innovation activities in the short term, as companies struggled with decreasing demand and liquidity problems and were forced to cut costs and lay some workers off. The projects with a longer payback period (including innovation-related projects) are likely to have been postponed or cancelled.

However, in the longer run, the current conditions may occasionally improve efficiency, stimulate entrepreneurs to undertake restructuring and/or seek R&D, strategic (or financial) partners – all of which may actually be beneficial to those who are able to survive and develop new products, processes and business models. However, more policy efforts are likely to be needed to overcome current problems and facilitate positive developments. This includes more emphasis on improving business and investment climate, expanding the scope and efficiency of national

(and regional) innovation policies, as well as on developing instruments that may facilitate innovation-related collaboration in the region.

The policy responses to crisis have focused on the financial aspects – e.g. by extension of favourable loan and guarantee programmes which enable enterprises to improve their liquidity and maintain competitiveness; some governments also offer tax or social security contribution deferrals (OECD, 2009). In a limited number of cases (e.g. in Croatia) the government has performed debt-to-equity swaps and effectively took over companies in financial difficulties which had considerable financial obligations towards public authorities. Furthermore, another policy response includes public-private investment funds (e.g. Funds for Economic Co-operation in Croatia) for taking over and restructuring / growing companies with a significant market potential. However, such funds have performed few investments and there are no indications that they had any impact on innovative enterprises. Their focus seems to be on companies with assets that can be used as a collateral or divested in order to improve liquidity. Innovative enterprises with a high growth potential are usually tackled solely by innovation policy measures, which are often inadequate or underfunded.

This deficit creates opportunities for international actors to step in facilitate regional innovation-related cooperation which may both increase the potential markets for innovative start-upa and facilitate synergies related to innovation cooperation. However, this is likely to require a comprehensive approach (strategies, financial instruments and implementation mechanisms) which will link knowledge transfer and regional cooperation with the provision of financial assistance.

1.4 Why is a regional innovation system important?

Almost no concept in science and technology policy has achieved such a sudden rise and global spreading, both in practical/political, as well as theoretical and scientific terms, as the concept of the national innovation system (NIS) (Albert and Laberge, 2007).

The concept of NIS first appeared in the 1980s in the framework of institutional and evolutionary economists (Lundvall, 1992; Nelson and Winter, 1982; Freeman, 1988) with the main aim to understand and put into action the processes through which scientific research and knowledge is produced and transferred into businesses and innovation. The two essential features of NIS make ground for its huge influence on government practices for improving national competitiveness and economic growth. First of all, contrary to the precedent neoclassical economic approaches, NIS provides certain ‘recipe’ to national governments on how to cope with globalised innovation-based competition. The recipe consists basically of recommendation to governments to establish an institutional set up of private and public institutions that

would, by mutual interaction foster and accelerate creation, storage and transfer the knowledge and skills which produces new technologies and innovation (Freeman, 1988; Sharif, 2006). It calls for public policy induced interaction among sectors and intersectoral knowledge flow (OECD, 1997).

The second appealing feature of NIS comes from its underlying message that economic growth is not an economic spontaneous process simply driven by the 'hidden hand' of market which is beyond the reach of socio-economic agents, such as influence of strategic policy visions, management skills and governance competences. Besides, competitiveness of a nation does not depend on the scale of R&D but rather "(…) upon the way in which the available resources are managed and organized, both at the enterprise and at the national level" (OECD, 1992:80). Therefore, efficient NIS is a result of governance of innovation process and management of knowledge resources through appropriate institutional set-up. The ability of society for social and related institutional change towards such an institutional set up which would facilitate productive use of knowledge points out the utmost importance of socio-cultural factors of economic growth.

NIS as an institutional structure shaped by the deliberate policy action and political wisdom of national political elites is the hidden driver of NIS' widespread impact and its power over the public administration.

The underlying idea of NIS is that innovation is an interactive learning process that brought a concept of a learning economy[13] which implies knowledge flow and cooperation among different stakeholders of the innovation system. The most important stakeholders are entrepreneurs (knowledge users), researchers (knowledge producers) and government which provides the institutional and regulatory framework for their cooperation

The supremacy of the concept of NIS has been both endangered and reinforced by the recent financial crisis. On the one hand finical crisis illustrates that the free market itself does not promote the long-term benefit of society, and that certain fundamental government investments and regulations are necessary to promote the social good and economic prosperity. This is particularly true in the case of investments for research and development, where knowledge spillovers and other externalities ensure that the private sector will not under-invest in research and innovation. This view calls for sustained government involvement in strategic development by provision of massive institutional and financial support for both public and private development.

On the other hand, some claims that the recent crisis was the result of too much rather than too little government support. This view calls for cutting government regulation and gutting public programs, hoping the market will take care of the rest.

Anyway, the appropriate framework for government involvement is still debated.

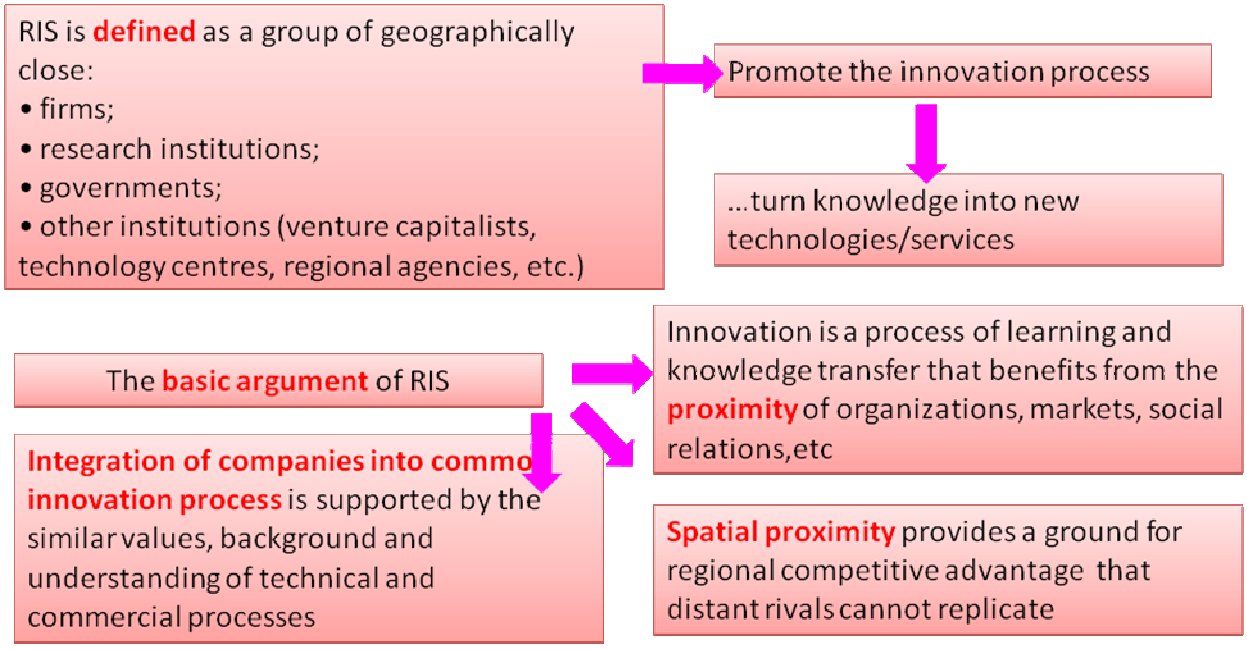
[13] See Lundvall and Johnson (1994)

A concept which in a certain way, combines government intervention in the national innovation system (often blamed for abstraction, pure conceptualization with no reference to reality) and the spontaneous development of local companies based on exiting capabilities is the concept of the regional innovation systems (RIS). The concept of RIS occurs in the early 1990s (Cooke, 1992., 1998., Lundvall and Borras, 1997:39), only a few years after C. Freeman has firstly used the concept of NIS to explain a sudden rise of Japan (Freeman, 1988). Today, the concept is globally spread and forms an important part of national development strategies from Africa to Asia.

Unlike NIS, RIS is, for many, a more natural environment for economic development because
it is strongly focused on the development of specific companies according to their specific production capacities and management skills in local communities. Many RIS based on the clusters were formed spontaneously and thus provided a powerful impetus to other similar initiatives.

A regional innovation system refers to how firms, institutions and government can, jointly and individually, promote the innovation process within a regional context. By definition, the RIS is a group of geographically close firms, research institutions, governments and other institutions (venture capitalists, technology centres, regional agencies, etc.) with the common interest to turn knowledge into innovation and competitiveness (Figure 3) Cooke (2001, 2006).

Figure 3: Why the regional innovation system is needed?



Since innovation is a learning process, companies involved in the RIS benefits from the proximity of other companies, organizations, markets, social relations, etc. that can trigger innovation process. The essence of RIS is spatial proximity which provides a ground for regional competitive advantages that distant rivals cannot replicate. Geographic, market, cultural and institutional proximity provides companies with special access, closer relationships, better information, powerful incentives, and other advantages that are difficult to tap from a distance. Competitive advantage lies increasingly in local things - knowledge, relationships, and motivation - that distant rivals cannot replicate.

Integration of companies into common innovation process is supported by the similar values, background and understanding of technical and commercial processes since geographically close companies usually share many historical, cultural and socio-political similarities.

One of the assumptions of the regional innovation systems approach is that many innovative firms operate within regional networks, cooperating and interacting not only with other firms such as suppliers, clients and competitors, but also with research and technology resource organizations, innovation support agencies, venture capital funds, and local and regional government bodies. However, the main advantage of RIS compared to NIS is that RIS does not necessarily involve R&D and therefore it is more convenient for less developed regions with scarce research resources. RIS can combine “research-based “ and “non-research based” innovation, i.e "science push" paradigm that is characteristic for knowledge intensive industries and "technology push" and market needs ("demand pull") approach that is more appropriate for technologically less developed regions (Almeida et al, 2008).

Technologically less developed RIS are usually based on clusters but these concepts should not be identified or mixed. Clusters and RIS may co-exist in the same territory while RIS may in fact contain several clusters. By contrast, cluster is not by necessity an integral part of a regional innovation system (Andersson and Karlsson, 2004). Clusters do not necessarily involve research institutes or universities but they are gathered around the same working sector, common market, common problems to face, etc. Unlike RIS, clusters can be developed only bottom-up since they consist of dense network of firms connected in value-chain and government can provide only horizontal measures. Since they are usually supported by the regional or local government and financial are not very demanding their number can be significant.

SMEs, both in traditional a s well in advanced technology or knowledge intensive business sectors, as noted by the European Commission (European Commission, 2010), are heavily dependent on their regional environment where proximity plays a key role, in particular regarding tacit knowledge for innovation.

Having in mind that RIS is based on spatial proximity and similar socio-cultural and business environment and do not necessarily involve high technologies and sophisticated research, it seems reasonable to argue that companies in the Western Balkan region can be involved in such a regional innovation system. Regional cooperation of companies at the level of the Western Balkan might strengthen the innovation capacity of companies by offering the diversity of people, new markets, specialized infrastructure, educational institutions, workforce and other assets that supports innovation capacities and economic development. The smart connection into the value chain can contribute to their completive advantage in global markets.

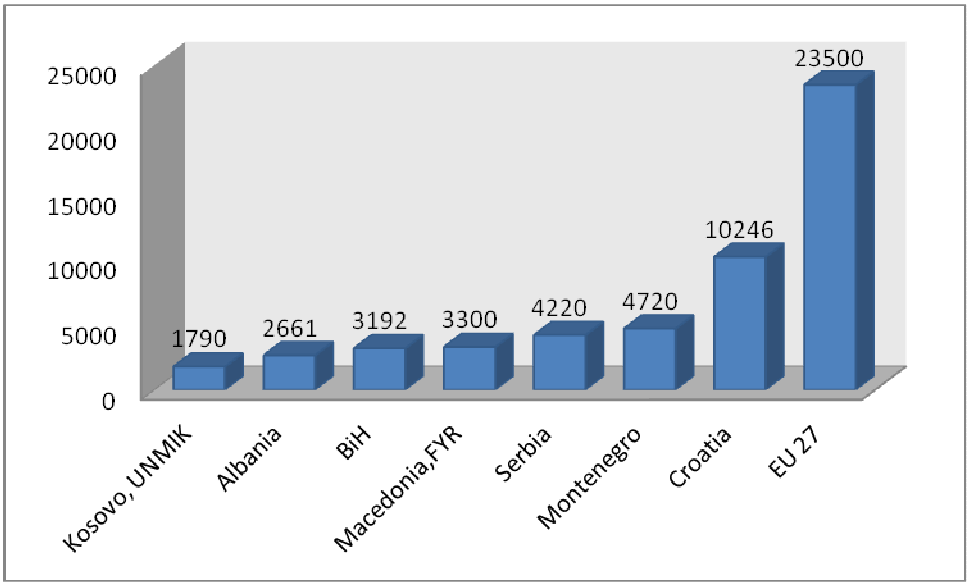
2 PART TWO: COMPARATIVE ANALYSIS OF THE INNOVATION CAPACITIES OF WBC

2.1 Introduction: some differences some similarities

The differences among WBC are significant regarding overall economic development as well as the development of specific sectors such as research and education system, technological development, ICT and similar factors that are critical for global competition based on innovation.

There is almost a six-fold difference among WBC in per-capita income between the richest (Croatia) and poorest (Kosovo UN Res.1244 UN) countries in this region. Croatia is a leading country in terms of GDP per capita (10246 EUR) followed by Montenegro (4720 EUR) and Serbia (4220 EUR) in 2009. Bosnia and Herzegovina (3192), FYR Macedonia (3300), Albania (2661) and Kosovo UN Res.1244 (1790) are lagging behind the leading Western Balkan countries in GDP per capita (Figure 4).

Figure 4: GDP p/c, 2009



Source: EUROSTAT

In 2009, GDP decreased in all countries apart from Albania. Croatia (-1.2%) was the only country that suffered a drop of GDP in the following 2010. Interestingly, Albania maintained positive growth rates in the period 2008-2010 (Table 1). This could be

explained by low levels of FDI, low level of GDP, weak financial sector as well as its geographical isolation.

Table 1: GDP, real change in %

	2007	2008	2009	2010	2011	2012
Albania	5.9	7.5	3.3	3	4.1	3.9
Bosnia and Herzegovina	6.2	5.7	-3	0.8	2.2	3
Croatia	5.1	2.2	-6	-1.2	1	2
Macedonia; FYR	6.1	5	-0.9	0.8	2	3
Montenegro [14]	10.7	6.9	-5.7	1.1	2	3
Serbia	6,9	5.5	-3.1	1.8	2.5	3

Sources: Hunya (2010), https/www.wiiw.at, http://data.worldbank.org/indicator/ NY.GDP.MKTP.KD.ZG

According to the Lisbon Review (WEF, 2010) which measures eight distinct dimensions that capture areas highlighted by Europe's leaders as critical for becoming competitive economy in a globalised world, all WBC perform lower than the various EU groupings, including the average of the 12 more recent members. Montenegro is top-ranked country which outperforms the five lowest-ranked EU members of Greece, Poland, Italy, Romania and Bulgaria. Croatia is on a par with Greece and ahead of the four countries ranked below it. In other words, the top-performing non-members receive better assessments overall than a number of present members (Figure 5).

[14] Three different sources (EBRD, WB and the Montenegrin Bureau of the Statistics) showed different values for Montenegro real growth in 2010. So we accepted medium value provided by the World Bank.

Figure 5: Rankings and Scores of Non-EU Eastern European Countries

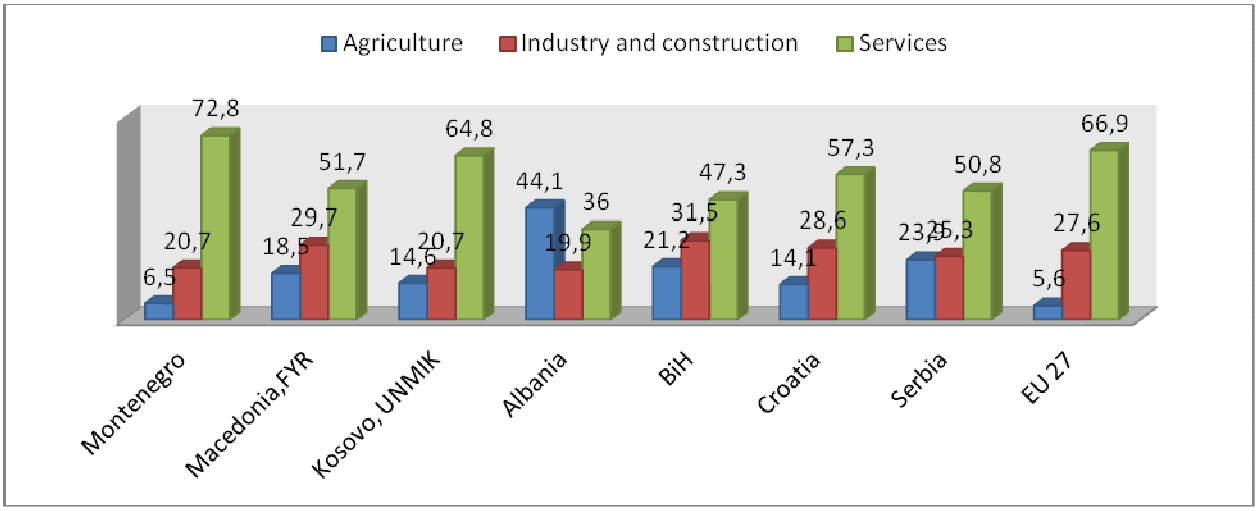
	Final Index		Subindexes															
			Information Society		Innovation and R&D		Liberalization		Network Industries		Financial Services		Enterprise Environment		Social Inclusion		Sustainable Development	
Economy	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score	Rank	Score
Montenegro	1	4.19	2	3.95	3	3.32	2	4.34	2	4.60	1	4.74	6	4.32	2	4.28	2	3.94
Croatia	2	4.18	1	4.04	2	3.36	5	3.85	1	5.23	3	4.34	7	4.16	7	3.72	1	4.70
Azerbaijan	3	4.02	4	3.67	4	3.26	3	4.15	6	4.16	4	4.13	2	4.68	1	4.50	4	3.57
Turkey	4	3.85	5	3.61	5	3.24	1	4.39	3	4.38	2	4.39	5	4.46	10	3.19	9	3.12
Macedonia, FYR	5	3.79	3	3.86	7	2.93	4	3.95	5	4.16	5	4.08	3	4.58	9	3.39	6	3.33
Georgia	6	3.78	6	3.35	9	2.79	6	3.82	8	3.93	7	3.69	1	5.01	6	3.77	3	3.89
Ukraine	7	3.62	9	3.04	1	3.59	10	3.48	4	4.32	11	3.22	9	4.08	4	3.89	5	3.33
Serbia	8	3.51	7	3.29	6	2.95	8	3.66	9	3.83	8	3.68	10	4.01	8	3.45	7	3.19
Armenia	9	3.50	11	2.70	8	2.82	7	3.74	7	3.94	6	3.88	8	4.15	5	3.79	10	2.98
Albania	10	3.47	8	3.13	11	2.52	9	3.65	11	3.46	9	3.41	4	4.48	3	3.94	8	3.13
Bosnia and Herzegovina	11	3.07	10	2.86	10	2.54	11	3.43	10	3.73	10	3.32	11	3.28	11	2.69	11	2.73
EU 27	-	4.81	-	4.73	-	4.23	-	4.80	-	5.39	-	5.05	-	4.60	-	4.51	-	5.16
EU 15	-	5.12	-	5.06	-	4.66	-	5.06	-	5.80	-	5.33	-	4.69	-	4.78	-	5.61
Accession 12	-	4.42	-	4.32	-	3.68	-	4.47	-	4.88	-	4.70	-	4.49	-	4.19	-	4.61

Source: WEF, 2010

Montenegro and Croatia are ranked 1st and 2nd of the group. Montenegro's greatest strengths are in the dimensions of financial services and social inclusion while Croatia's main strengths are its network industries and efforts toward sustainable development. Serbia's and Macedonia's greatest strength is the quality of the enterprise environment. At the bottom of the table are Albania (10th) and Bosnia and Herzegovina (11th) which receive very poor assessments across most other areas. However, Albania's comparative strength is in the enterprise environment, where it is just barely behind the Accession 12 average and not far behind the EU27 score.

Similarities do, however exists. For example, all the countries, except Albania and B&H can be considered as **service economy** since more than a half of employed are in services, although in traditional sectors (Figure 6). The share of employment in services in BiH counts for 47.3% while in Albania it counts for 36%

Figure 6: Employment by economic activity (%), 2009



Source: Eurostat, 2011

Unfortunately, in the area of innovation the similarities are mainly related to **unfavorable position** of the WBC within the knowledge related sectors in comparison to the EU average. It could be described using indicators such as low R&D demand, weak business R&D investments, low level of inventive activities, low share of R&D employees in the business sector, and brain drain (cf. UNESCO, 2010:183-188). Similarly, OECD (2008: 152-153) stated that countries experiencing problems with education and training, and skill development as well as ICT infrastructure development were recognized as important avenues.

The region suffers from **high unemployment rates** - Croatia has the lowest unemployment rate (9.1%) followed by Albania (13.1%) and Serbia (16.1%) in 2009. In terms of unemployment, Montenegro (19.3%), Bosnia and Herzegovina (24.0%), FYR Macedonia (32.2%) and Kosovo UN Res.1244 (42.2% in 2008) have unfavourable position in comparison to other countries in the WB region. The high unemployment rates can be linked to the **large size of informal economies**. That implies low levels of **export competitiveness** and **low values of different technological indicators** e.g. inventive activities and business expenditure on research and development (Aralica, 2010). Unfortunately the data about technological capacity of economy and innovation absorption of companies are not readily available to make comparisons.

The **WB economies are greatly dependent on the EU economy**. According to Koyama (2011: 3) between 60 and 80 percent of their exports are directed towards the EU markets, with a similar percentage of imports from the EU.

Besides, the noted economic developments in the WB countries **have relied heavily on capital inflows through FDI**. In comparison to other countries, Croatia is a leading country in terms of FDI per capita stock (4930 million EUR). Montenegro's

value (4846 million EUR) is slightly lower than Croatia (Hunya, 2010). Since 2009, FDI inflow has dramatically declined in the region (for example in Croatia FDI fell to 439.9 million EUR in 2010)[15], with a worsening economic perspective in terms of potential for overcoming future financial crises[16]. A strong reliance on capital inflows and external knowledge presents crucial elements of the economic model in the region with implications on the science and research sector in these economies – namely low R&D demand, weak business R&D investments, low level of inventive activities, brain drain as well as limited utilization of ICT. Therefore, **science and research is a residual of the economic models** present in these countries, and unfortunately **not a vital element of development.** The result is that WBC are not active in world frontier technologies**.** Instead, a majority of their **technology efforts include absorption of foreign technologies and mastery of production capability**

The analysis of the main export sector and products within the main WB countries show that these countries dominantly achieve their **competitive advantages in non technological sectors and products** (Table 2). Apparel industry and their products show competitive advantage in all countries, with oil and petroleum products dominating in Croatia and Serbia. Moreover, food industry appears as competitive sector and/or products in all countries except from Croatia. Regarding the technology intensive sector of non – electronic machinery, it frequently appears as competitive in the analyzed countries, with FYR Macedonia as the only exception. Croatia is the only country where industry of electronic machinery appears as a competitive advantage so we may assume that Croatia achieves competitive advantage in technology intensive sectors in comparison to other countries in the WB region.

Table 2: Sectors and products dominating the export of observed national economies

Economy	SECTOR (TPI)		PRODUCTS (NEP)	
	Current Index (static)	Change index dynamic	Stars (static)	Champions (dynamic)
Serbia	Non electronic machinery, transportation equipment, leather products and electronics	Minerals, fresh food and transportation equipment	Panty hose and tights, frozen fruits and walnuts, and pneumatic tires	Petroleum oil, flat rolled products of iron seats

[15] This is dramatic decline 79% in comparison to previous year, when FDI amounted to 2095, 6 mil. EUR (CNB).

[16] In terms of innovation performance measured by European Innovation Scoreboard data exists for Croatia and Serbia. Croatia belongs to group of moderate innovators whereas Serbia belongs to innovative countries with value far below the EU average i.e. modest innovators. For more detail please see EIS (2009). Unfortunately for other WB countries the values are still missing so for these countries data should be retrieved.

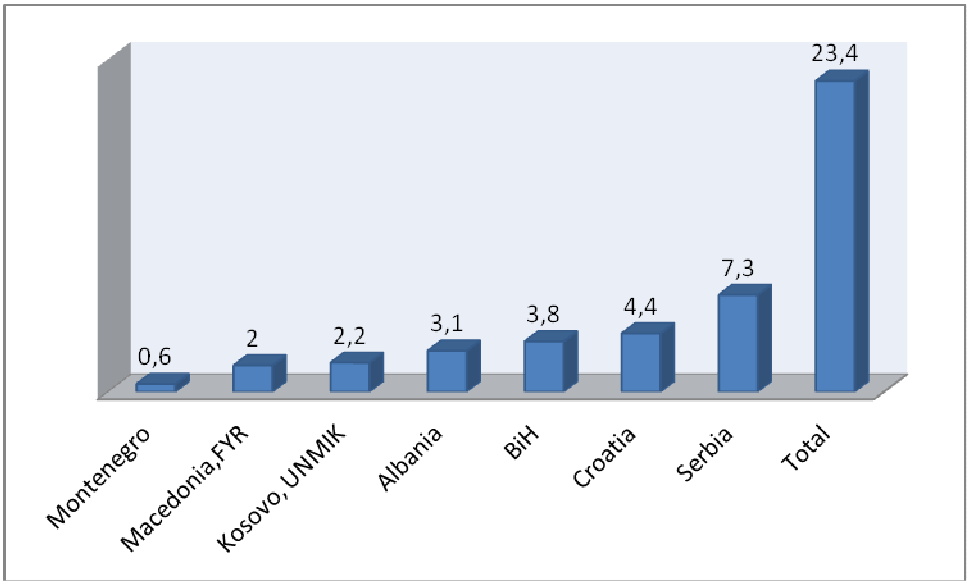
	components			
Croatia	Non electronic machinery, leather products, IT and consumer electronics,	Leather products, IT and Consumer Electronics and non-electronic machinery	Instrument for automatic regulation, sweaters, pullovers and seats	Oil gas, seats, sweaters, pullovers,
Bosnia and Herzegovina	Leather products, products made of wood and clothing	Fresh food, products made of wood and processed wood	Footwear, unwrought aluminium	Electricity, waste and scrap iron and steel, seats
FYR Macedonia	Basic processing industry, clothing and products made of leather	Transportation equipment processed food and leather products	Non alcohol beverages, ladies shirts and ladies apparel	Non alcohol beverages, petroleum oil and ferrous alloy

Source: Bjelic (2010)

Majority of the WBC shares similarities in many sectors that make a good ground for business cooperation and the development of regional system for fostering innovation and technological development. The spatial proximity of the companies in WBC and socio-cultural similarities enable entrepreneurs in the region to operate within regional networks. They could cooperate not only with other firms such as suppliers and clients but also with universities, research and technology organizations and innovation support agencies,

Finally, it is very important to stress that the common market of WBC consists of more than 23 million (Figure 7) of people that is a respectable basis for regional cooperation in many areas, e.g. innovation development, not only in trade that is currently the dominant model of cooperation.

Figure 7: Population in WBC (mil), 2009



Source: Eurostat 2011

In order to make comparative analysis of the main components of the national innovation systems, the national representatives of the WBC at the 1st innovation Dialog Forum held in Becici, Montenegro on November 8-9, 2010 were kindly asked to make a short presentations on the innovation system in their countries. They were also asked to provide a screening table with the basic information on the national innovation systems according to the pre-defined structure that comprises the following nine elements:

1. Main structure and characteristics of the national research and innovation system
2. Education/Research system
3. Enterprise and industrial system
4. Intermediaries and science-industry cooperation
5. Government policy making and coordination of innovation
6. Framework conditions
7. The country's involvement in the regional research, innovation and business development initiatives and projects
8. Main structural deficiencies of research and innovation system
9. Main challenges for governance of innovation

Due to the variability of the provided data a clear and straightforward systematization of NISs and their comparison is not possible. Thus, here we tried to highlight some aspects of NISs which we noticed as important for their deeper understanding and future upgrading including regional cooperation. The Common screening table on the NISs of WBC is provided in the Annex 1 and comprises the data for all the WBC

countries except Serbia[17].Therefore, Serbia is included in the analysis according to the availability of other sources of information. The additional resources are also used for the analysis of the remaining countries. The most important is the study "Mapping of the WBC Innovation Infrastructures: Conclusive summary" carried out by the Centre for Social Innovation (ZSI) in cooperation with all partners from the region and expert subcontractors.

2.2 Comparative analysis of the innovation capacities of the WBC

According to the systemic view of innovation systems (Smits and Kuhlmann, 2004), the innovation policy should ensure the harmonised development of all parts of innovation system that affect dynamic of innovation. They include, in addition to research and development as the main constitutive parts, financing of innovation, legal protection, government competences, etc.

This study will focus on the three main parts of innovation system relates to research and innovation. It will provide the comparative analysis of the three main components of WBC's innovation systems:

- Research capacities and strategic documents (supply side);
- Innovation system and policy programmes for non-research driven innovation including institutional set up for fostering entrepreneurship.
- Innovation system and policy programmes for research-driven innovation and intermediary institutions including the development of specialized innovation sub- systems.

The three of the five types of policies measures are common to all WBCs:

- Research systems and supporting programmes;
- Policy programmes for non-research driven innovation;
- Institutional set up for fostering entrepreneurship.

The remaining two are present only in several countries:

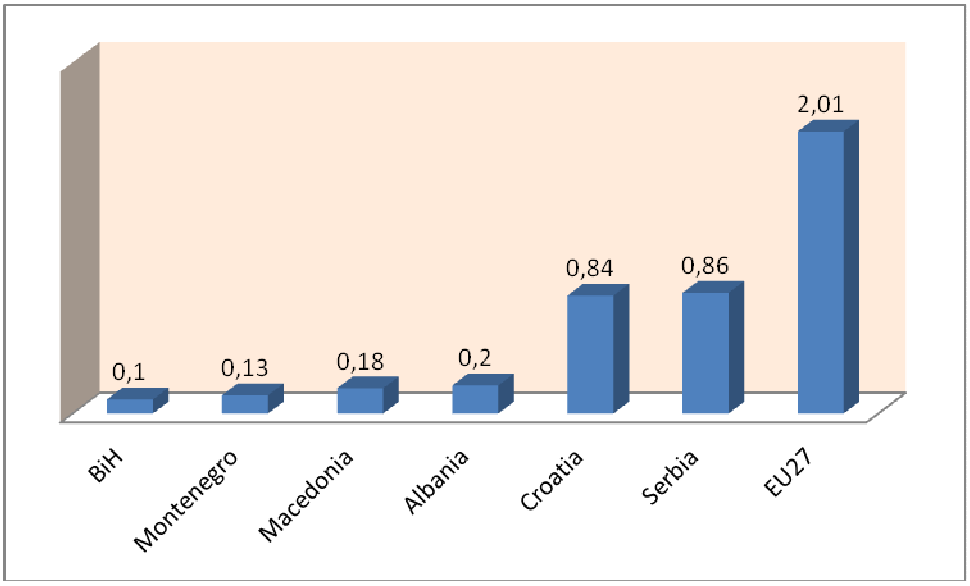
- Policy programmes for research-driven innovation and intermediary institutions;
- Development of specialized innovation sub- systems.

[17] The Serbian representative provided the presentation of the programme "Competition for the Best Technological Innovation in Serbia" instead of the national report according to the template.

2.2.1 Comparative analysis of the research capacities

WBC significantly differs in regard with the research and development expenditure as a percent of GDP (GERD) (Figure 8). The research intensity is highest in Serbia and Croatia (Serbia surpassed Croatia recently) but still it is significantly lower than in the EU[18].

Figure 8: WBC by GERD in 2009 or closest



Sources: EU27, Croatia – Eurostat; Serbia – Erawatch web page; FYR Macedonia-Erawatch report, Montenegro, Albania and BiH – presentations at the Innovation Dialog Forum in Bečići, Montenegro, 8.-10.11. 2010

Business sector investment is low in WBC. For example, 40 percent of R&D in 2009 was conducted by the private sector in Croatia whereas in other countries the business sector appears to a smaller extent (FYR Macedonia, 12.3 %, ahead of Montenegro with 5.2%). For other countries reliable data are missing, but it could be supposed that other countries are lagging behind Croatia. In brief, in the majority of the WBC total investments in R&D, except Serbia and Croatia, is negligible, while business R&D barely exists.

[18] However, all the values except for Croatia should be taken with caution since the official statistics does not exist. It seems that values for Macedonia and Bosnia and Herzegovina are underestimated and technical assistance in collecting data is definitely required in both countries. Similarly, low values of GERD appear in 2003 for Serbia (0.54). After technical assistance received from the experts methodology was adopted from the Bureau of Statistics, in Serbia and values went up.

The most developed research and higher education systems are established in Croatia and Serbia. The public research sector in Croatia consists of seven universities, 14 public and 18 private polytechnic and professional higher education institutions, three academies and 26 public institutes. It also includes about fifty "other" public research institutions such as the Croatian Academy of Arts and Sciences or research units within health care institutions. Croatian scientific community has 2500 researchers per million inhabitants, which is only 57% average in the EU 27, which has about 4300 researchers per million inhabitants. Croatia has a small share of researchers (head count) of the business sector that is only 22% of the EU average (0.14% in Croatia versus 0.62% in the EU 27).

The public R&D sector, with universities playing a leading role, is the largely dominant sector in both research manpower (80% of total researchers) and performing research activities (59% of R&D). As reported in 2009, the business sector employs a modest 20% of total researchers and invests 0,4% of GDP in R&D. This indicates a substantial lack of critical mass of researches and investments for technological accumulation and transition to knowledge economy. The majority of GERD (51.1%) is financed by the government while business sector contributed with 40.0%. The business research sector includes 13 private scientific institutions, six of which are in-house institutes affiliated with large industrial corporations while remaining are research institutes which operate independently in the market. The majority of business research is financed by business companies themselves (86% in 2009) while the government with the modest 2.1%.)

Research and higher education system of Serbia consists of 7 national Universities with 78 Faculties, 7 private universities with 45 faculties, Academy of Sciences with 10 Institutes , 28 scientific institutes and one Centre of excellence (Kutlaca, 2010).

The research community of FYR Macedonia consists of 2394 researchers of which 79 are in the business sector, 668 in the government sector and 1647 are at universities. The percentage of gross domestic product (GDP) devoted to the R&D in 2007 was 0.18% which represents a decrease from the previous years when investments in R&D were over the 0.2%of GDP. BERD amounts to 0.04% of GDP, GOVERD to 0.09% of GDP and HERD 0.09% of GDP. The leading scientific institution in FYR Macedonia is the Macedonian Academy of Science and Arts (MANU) that consists of five departments and 5 research centres. The two of them - Research Centre for Genetic Engineering and Biotechnology, and the Research Centre for Energy, Informatics and Materials are internationally recognised (Polenakovik and Pinto, 2010). FYR Macedonia has also 5 state universities with 60 faculties, 18 private universities with 79 faculties, 7 public research institutions

The research community of Montenegro consists of about 766 researchers, 117 part-time, 480 full time or external associates. The greatest number of researchers is in humanities and social sciences it has 3 Universities: University of Montenegro with

19 faculties and 3 research institutes, University Mediteran with 6 faculties, and the University Donja Gorica.

The most important subjects in the area of scientific and research in Bosnia and Herzegovina are two academies – the Academy of sciences and art of Bosnia and Herzegovina in Sarajevo and Academy of sciences and art of Republic of Srpska in Banja Luka. There are 8 public universities - 6 in Federation of B&H and 2 in Republic of Srpska. Since 2008, the nine private universities has been established, 3 in Federation of B&H and 6 in RS. In total, there are 140 private and public faculties exists, 10 academies, 16 higher schools, 4 theological faculties and 4 international studies. The total number of academic staff that works at the Universities in RS is 2456. Out of the total 50% are PhD holders and 15% Master degree holders. There are 1423 permanent (58%) and 1033 (42%) part time staff. According to the rough estimation of the Ministry of Science and Technology of RS, there are 1.2 researchers per thousand active populations (ERAWATCH BiH, 2010)

There is no data on size of the research system in Kosovo UN Res.1244, in relation to the economy (GDP), structure of GERD, number of researcher by sectors, share of R&D personnel in the business enterprise sector as the % of the labour, etc. For the first time in 2010, the government devoted €1m for research only for public institution. Around 0.1% of the Kosovo UN Res.1244's budget is devoted to research projects. There is one public university (another one is established in 2010) and around 30 private colleges/universities mainly involved in teaching, very limited in research

As recorded in 2009, the research community of Albania consist of 77 researchers in state research institutions and 1693 in public & private institutions of higher education (assistant and full professors). Albania has 12 public higher schools and 17 private higher schools. The latter are "younger", with the first being opened only 6 years ago. Nevertheless, some of these have shown potential even in the field of research.

Albania has made one of the biggest steps forward when government undertook a comprehensive reform of the scientific research system in 2006. The Academy of Sciences of Albania was re-organized according to the European model and its research institutes were integrated into the higher education system. The public research Institutes were also re-organized while twelve technology transfer centres and agencies were created. Their main mission consists of transfer of technologies and knowledge and provision of the expertise to policy-making in relevant fields.

Differences among the WB countries exist in the field of R&D output as well. Croatia (74.4) and Serbia (56.2) are leading countries in terms of patent applications by residents per million population, by far ahead of FYR Macedonia (16.7) and B&H (14.5) (WB 2011:13). The number of patent application has been decreasing or stagnant during the period 2004-2009 in all countries. Croatia's patent application to the European Patent Application EPO applications (per million inhabitants) declined

from 9.46 in 2003 to 7.21 in 2008 (EUROSTAT). According to UNESCO (2010: 192), Engineering and Technology and Biomedical Medicine are dominant science sectors measured by scientific publications. These two areas account for from 35.5% in FYR Macedonia to 73.5% in Bosnia and Herzegovina.

2.2.1.1 Research and technology strategies

All the WBCs, except Kosovo UN Res.1244, have the strategic documents related to research policies in place and coordinated by the line ministries, i.e. ministries of science. The strategic documents usually consist of laws or strategies for scientific-research activity and related action plans. For example, **FYR Macedonia** adopted the Law for scientific-research activity in 2008, **Serbia** adopted a National strategy for scientific and technological development 2010-2015 in February 2010 [19], **Montenegro** adopted the Strategy for scientific research activities (SRA) (2008-2016) in June 2008, while **Croatia** currently prepares the new science and technology policy since the last one has expired in 2010.

B&H has adopted the common low[20] which regulates scientific and research issues on the state level, but the Republic of Srpska has its own "Law on the Research and Scientific activities (OG 112/07) while in Federation of Bosnia and Herzegovina each of the ten cantons has its own legislative regulating this issue. For example Canton Sarajevo has "Law about scientific and research activities" (2004). Moreover, B&H proposed document Strategy of Development of Science in B&H 2010-2015 where a raise of R&D investments are proposed 1% of GDP by 2015.

Albania signed the Stabilization and Association Agreement (SAA), which created opportunities for international financial assistance through CARDS, IPA and FP programmes. **Albania** has also demonstrated the highest enthusiasm in strategic programming on technology transfer and innovation. They developed the National Strategy for Development and Integration (NSDI), the Business & Investment Development Strategy (BIDS) 2007-2013[21] and the National Strategy on Science, Technology and Innovation (STI Strategy) 2009-2015[22]. The latter is the first comprehensive policy document that sets the guidelines for future developments in

[19] The Key relevant findings from the Enlargement report - November 2010 http://www.euraxess.rs/sitegenius/article.php?id=812

[20] The "Framework Law on the Basics of Research and Development Activities and Coordination Internal and External Scientific and Research Cooperation of Bosnia and Herzegovina

[21] BIDS comprise specific objectives and measures particularly in respect to the measure aiming at increasing competitiveness through technology transfer and innovation

[22] According to the World Bank (WB, 2011: 41):, in 2010, Albania proposed policy development plan until 2015 with five main programmes a) Research Infrastructure Fund, b) Creation and Development of Albanian Centers of Excellences in Science, c) Research Eagles Grants Program, d) National Technology Program and Science Promotion and Education Program

STI and provides also a current picture of the STI situation in Albania. It also addresses the issue of lack of financial resources so far, and the need to increase the overall support in the future.

Albania also developed the Cross cutting strategy on Information Society with the objective to create an information based economy. Finally, a Business Innovation and Technology Strategy (BITS) is drafted to assist and stimulate firms to innovate and upgrade technologically. It follows the European model of two independent agencies dealing with innovation: one as a science and research-driven innovation agency, and another as an economy and business driven innovation agency.

The specially tailored action plan on investment in research with the stress to stimulate private sector investments is developed only in **Croatia**[23] but it does not increase investments in R&D. Other countries integrate this task within the more general strategic plans. For example, in **Montenegro**, the action plan that sets up the aim of increasing investment in scientific and research activities up to 1.4% of GDP in 2013 is integrated within the Strategy for scientific research activities (SRA).

The governments of **Croatia** and **Montenegro** launched fiscal incentives for better RTD investment through the remissions of VAT and import duties on research equipment. In order to raise the level of private investments in R&D **Croatia** also introduced the tax deductions for R&D in private companies harmonised with the European regulations (Becic and Svarc, 2010). **FYR Macedonia** do not have special tax deduction for R&D but companies are exempted from the corporate tax on all profits that are re-invested into the development of a company including R&D[24]. Tax incentives are not introduced in **Kosovo UN Res.1244** and **B&H**.

None of the countries developed a special strategy or action plan on innovation or technology development based on the assessment of technological and innovation potentials or foresight exercises. Therefore, the first lesson of innovation policy –that innovation development should be based on country-specific science, technology and production framework conditions has not been met in WBC.

In **Croatia**, technology policy is a part of the Science and technology policy 2006-2010 and is outlined in rather general manner relaying upon the first and rather comprehensive innovation policy programme (HITRA) launched in **Croatia** in 2001. The strategic innovation or technology plan for the forthcoming period is yet not envisaged. **Serbia** has made progress in strategic planning by Innovation Law,

[23] The "Action plan for Fostering Investments in Science and Research", passed by the Croatian parliament in April 2008, known also as the "3% Action Plan"

[24] ERAWATCH Research Inventory Report: The Former Yugoslav Republic Of Macedonia

introduced in 2005 (OECD, 2009) which enables: the formation of organizations for support of innovation activities and technology transfer centres, defines intellectual property rights, and establishes a Serbian Innovation Fund (Kutlaca , 2010).

The main difficulties with the 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 far away from the local problems and circumstances

For example **Serbia** has produced from 2005 to July 2011 around 90 strategic documents on innovation, SMEs, research and technology. Each of them has stressed the knowledge economy as the final aim of development (Kutlaca and Mosurovic-Ruzicic, 2011).

On the other hand, many strategic documents, at least in **Croatia**, presents only a copy the European schemes and approaches while lacking down-to-earth analysis of national competences, national innovation needs and corresponding strategies. The widespread practice to follow strategies, priorities and solutions formulated by the EU is also partly a consequence of the: "Europeanisation" of innovation and research policies through policy learning from EU, strong dependence of the national polices upon EU monitoring, approval and financing. Commonly, these processes reduce the abilities, independence, self-confidence and efforts of the national political and economic elites to develop their own strategies and solutions.

Therefore, despite many strategic documents **WBC are lacking in reality innovation and technology development strategies.** It illustrates that public administration and socio-economic elites which are responsible for overall development are not aware (or do not have abilities) for long-term planning and do not recognise the importance of innovation for economic development. The variety of reasons could cause such a negligence of knowledge and innovation resources, such as:

- lack of understanding of the relationship and inter-dependence of research, innovation and economic growth; conceptual confusions of the role of research sector, companies' technological abilities and innovation for development;
- lack of trust in the concept of innovation system and related knowledge flow as the mechanism for technology transfer development;
- too much trust in neo-liberal mechanism and market as regulatory mechanism for overall development inducing technologies and innovations;
- vested and non-transparent interests of various rent-seeking groups which prefer technological backwardness to maintain their monopolistic position and rents without competition and investments;

Therefore, one of the important measures for fostering innovation in WBC is developing the innovation governing abilities of national and regional administration and institutions involved in strategic planning and supporting programmes. For example, the main shortcomings observed by the OECD experts (OECD, 2007, p.31) of the government measures in **Croatia** focused on enhancing the entrepreneurial capacity, concern:

- conceptual confusion among ministerial officials and staff about policies and programmes since they often see programmes as policies;
- although many programmes exist, they are fragmented, not well connected and overlapping, while the performance measures are missing;
- institutional arrangements in delivering policies and programmes are complicated, not transparent and usually ministry-centred.

We can conclude that the research and higher education systems of WBC significantly differ. For example, research system in **Kosovo UN Res.1244**, are in the phase of infancy while **Croatia** is faced with various reforms of rather inert HE and R&D sectors towards greater efficiency and business needs. All the WBCs, except Kosovo UN Res.1244, have the strategic documents related to research policies in place and coordinated by the line ministries, i.e. ministries of science.

2.2.2 Innovation system and policy programmes for entrepreneurship and SMEs (non-research driven) innovation

2.2.2.1 Brief overview of the governance of the NISs

The innovation systems of the WBC are highly centralised “top-down” systems coordinated by the line ministries, primarily ministries of science and education and ministries of economy. This governance model is typical for less developed countries and technological followers that suffer a lack of market forces and established relationship between the innovation stakeholders that drive technological development by “invisible hand” of business interests and mutual co-evolution. Thus, government interventions related to emerging innovative businesses, supportive regulations and incentives for development provided by the high-policy levels are needed. The leading roles in innovation governance in WBC have the ministries of science/education and ministries of economy while remaining ministries like ministry of agriculture, ministry of health, etc. have the minor role (e.g. in Albania and Macedonia). Only Albania has established the Ministry for Innovation and for Information and Communication Technology.

The strong “division of labour” and competences within these two leading ministries exists even in the countries with the most developed innovation infrastructure (like in Croatia) and points not only to the lack of cooperation between the government bodies on strategic development but also to the gap of knowledge producers and

knowledge users. It is well known that there is a strong mismatch between the supply and demand side for innovation in WBC (Radosevic, 2004) as well as the large disconnection of research and business sectors. It influences the relationships between government bodies and their jurisdictions and vice versa. Ministries of science are the principal financer and coordinator of scientific research (and higher education in some countries) that serves to create and preserve the national educational and knowledge base. On the other hand, ministries of economy are mainly in charge for development of SMEs. They devise strategies for SME's' development and set up the SME/entrepreneurship infrastructure such as business centres, business incubators, clusters, regional development agencies, etc. They are also responsible for industrial polices, exports polices, administrative regulations and other aspects of SMEs competitiveness. This could be explained by the fact that WBC are small, with up to 10 million inhabitants, hence the SME sector is the most important. Large enterprises in these countries found a new (mainly foreign) owner in the last fifteen years, thus the development of innovation activities is result of their competitive position in the national and international markets. Moreover, there is no observed programme aimed at promoting international innovation cooperation financed by the national government in these countries. This could be explained by the fact that countries are involved in international programmes of technical assistance (IPA, CARDS), so internationalization could be a result of capacity building. Serbia is only exception, as an initiative called the Innovation Fund is currently under consideration with a view to promote entrepreneurship and research and development of market oriented technologies and establish partnerships with domestic and foreign corporations (Kutlaca, 2010).

Development of new technologies and research-based innovation is regularly concentrated within the ministries of science and education (e.g. Ministry of Science, Education and Sports (MSES) in Croatia, Ministry for Education and Science (MoES) in FYR Macedonia, Ministry of Education and Science (MES) in Albania, Ministry of Education, Science and Technology (MEST) in Kosovo UN Res.1244, etc. Such ministries usually stress the supply side of innovation system lacking at the same time the connection with production sphere both in manufacturing and services.

From the presented data, only Albania and Croatia have established, in addition to ministries as government bodies, the independent and specialised agencies for development of innovation and technology system: BICRO in Croatia and the Agency for Research, Technology and Innovation (ARTI) in Albania. While BICRO has more than 10 years of experience in managing innovation programmes ARTI was established in August 2009 and is at the beginning of its demanding way towards the national innovation agency. In Serbia, the establishment of the Innovation Fund is currently under consideration with a view to promote entrepreneurship and R&D of market oriented technologies and establish partnerships with domestic and foreign corporations (Kutlaca, 2010).

In BiH, the research and technology polices are operationally and legally in the jurisdiction of the two constituent entities - Federation of Bosnia and Herzegovina and Republic of Srpska.

Albania made a significant progress in establishing the new government institutions related to innovation since 2007. They established the National Agency for Information Society (NAIS) in 2007, the Agency for Research, technology and Innovation (ARTI) in August 2009 and the Ministry for Innovation and Information and Communication Technology (MIICT) in April 2010.

Currently, the less developed governance structure for innovation is in Kosovo UN Res.1244, since it has set up only a Department of Science and Technology within Ministry of Education, Science and Technology (MEST) in charge for science and innovation policy. There is also the Center for Innovation and Technology Transfer – QITT within the MEST and the Office of Industrial Property within the Ministry of Trade and Industry. Both centres are in the early phase of development.

According to the available data only Croatia is experienced in running the programmes oriented towards fostering science-industry cooperation and commercialization of research results which are managed by the BICRO and HIT. BICRO has gradually grown into a respectable innovation stakeholder that runs a range of important innovation policy programmes such knowledge-based companies, proof of concept, seed (venture) capital, etc. However, the impact of the programmes on overall development remains very modest that points to the low technology capacities of knowledge users and absorption capacities of companies for innovation and research results.

The common feature of the governance of innovation in WBC is low recognition of science and R&D by policy makers as the key strategic factors essential for long term economic development. This is translated into fragmented innovation policies, lack of effective coordination among institutions within the national innovation system and insufficient resources available for innovation policy measures. The most ambition countries in utilisation of knowledge for economic development are Croatia which runs science-industry cooperation programmes for around a decade and Serbia which perceive academic institutions as a primary source of new knowledge production and innovation (Tekic, Cosic and Penezic, 2010). For example, through the Competition for the Best Technological Innovation in Serbia they succeeded to establish 65 new technology based companies since 2005. The founders are mainly recruited from the students of the Technical University of Novi Sad in Vojvodina (Senk, 2010).

However, the main deficiency of NISs of WBC rests within the production sectors which are mainly low-and medium tech and rarely needs cooperation with research sector. Although the research system is the most developed subsystem of NISs in some countries like Kosovo UN Res.1244, it is still in the phase of infancy. For example, the government of Kosovo UN Res.1244, has devoted for the first time €1m for research only for public institutions in 2010.

However, it should be borne in mind that underdevelopment of research system and research capacities does not necessary hinder the overall economic development. The examples of Asian tigers like Japan in the past and South Korea[25] in the present tell us that underdeveloped scientific system and research capacities are not always the major obstacle to economic development. On the contrary, the most important drivers are production capacities and technological competences of companies that enable technological leapfrogs and changes in the structure of industrial sectors. The technological accumulation and innovation/research competences of industry turned out to be the decisive factors of economic growth.

Therefore, the common challenge for all WBC, regardless the research capacities is to upgrade the technological capabilities of companies and their absorption capacities for using advanced innovation, generic technologies and research results.

2.2.2.2 Policy programmes for entrepreneurship and SMEs (non-research driven) innovation

The policy programmes and institutional set–up for entrepreneurship and innovation which are not based on research are usually administered by the ministries of economy which are responsible for support of entrepreneurship, competitiveness and innovation of SMEs.

Following this task, the national ministries of economies usually establish the ministerial departments in charge for preparation and implementation of strategic policy documents, programmes and projects for supporting entrepreneurship, cooperation with foreign donors, and EU. These activities could be divided in two main groups:

- polices for SMEs that involve supporting programmes for fostering innovation (e.g. buying new equipment, training programmes, promotion of crafts, women entrepreneurship , etc);
- support to business infrastructure that consists of various institutions such as business centres, development agencies, etc.

Since the adoption of the European Charter for Small Enterprises in 2003 the Western Balkans Countries (WBCs) have made substantial progress in the development of enterprise policy. As of 2010, all of the WBCs have in place the basic legal and regulatory frameworks necessary for entrepreneurship and business

[25] Korean national R&D expenditure in 1981 only amounted to 0.8% of GNP and consists of 36 000 R&D personnel. Over the 1980s the national R&D expenditure rose dramatically so that in 1991it amounts to about 2.0% of the GNP (an annual rate of increase of about 23%) while the numbers of R&D personnel rose to 132 000 in 1991. 80% of GERD is financed by the industrial sector (Chung and Lay, 1997).Korea's per capita gross domestic product (GDP) has increased about 160 times from $80 in 1960 to $12,638 in 2003. With GDP per capita over $10,000 and total GDP $605 billion in 2003,Korea was ranked eleventh by GDP and thirteenth by total trade volume in the world (Yim and Kim,2005)

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, however (Roper, 2010).

The comprehensive analyses of the polices for development of SMEs are carried out within monitoring of implementation of European Charter for Small Enterprises in WBC (OECD, 2009).It divides the WBC countries in the three groups according to the level reached in terms of policy performance.

A first group, made up of Albania, Bosnia and Herzegovina, and Kosovo UN Res.1244 was characterised by a level of performance across the ten dimensions around level 2, denoting an institutional and legal framework underpinning SME policy still largely reliant on ad hoc intervention and pilot projects, and in need of further concretisation. A second group, made up of the FYR Macedonia, Montenegro and Serbia, described countries that had largely completed the legislative and institutional framework supporting SME policy and had just entered into the phase of policy implementation. Their performance level was between level 2 and level 3 in most dimensions. Finally the 2009 report confirms Croatia as the region's most advanced country. In each policy, excluding the human capital dimensions and tax policy, Croatia has recorded a performance well above level 3.

However, it is also stressed 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. Albania's policy performance over the last two years has been remarkable and has allowed the country to join the second group. The weak points in Albania's performance remain human capital development and technological capacity of SMEs. Kosovo UN Res.1244 and Bosnia and Herzegovina are still in a phase of completing the basic institutional, legal and regulatory requirements underpinning SME policy:

According to the reports presented in Becici, the possibility of funding innovation in Montenegro relays on several programmes and instruments like: Development fund that is a common instrument of State support to entrepreneurship, Diaspora fund that is the business cooperation programme with Diaspora, founded by Government and SMEDA. There are several other possibilities like: development of credit line to support entrepreneurship in rural areas, implementation of the credit line for the increase of the energy efficiency in SMEs, using of several international initiative, programmes, credit lines and donors like IPA, EBRD, USAID

Kosovo UN Res.1244 has also introduced the Voucher Scheme which provides free consultancy to SMEs. In Kosovo UN Res.1244 there is also an NGO initiative – the Business Support Centre Kosovo UN Res.1244 which provides support through training for business skills, €100 for consultancy, soft loans (less than 5% interest rate up to €10000 for start-ups) and networking.

In the context of policies for innovation development which is not based on innovation, it is worthwhile stressing that a few WBC has outlined the industrial policy. From the presented data, only FYR Macedonia, Croatia and Serbia has adopted some sort of industrial polices. FYR Macedonia adopted the National Industry Policy 2009-2020, developed by the inter-ministerial working group with the following key areas of intervention: applied research and development and innovation, sustainable development, collaborative approaches for competitiveness enhancement (business research, government collaboration, networks, clusters, alliances), SME development and entrepreneurship, human resource development and knowledge creation, Internationalisation and investment enhancement.

Croatia developed the Strategy of the industrial policy in perspective of the forthcoming accession to the EU but its practical implications are rather low. Serbia adopted the Industrial Strategy for the period 2011-2020 in July 2011.

It is symptomatic that the industrial policy is very poorly represented in the strategic plans of WBC 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 WBC was tacitly limited to the processes of privatisation and subsidies to industrial declining sectors (e.g. shipbuilding sector in Croatia). The reasons for negligence of industrial policy could be various, for example:

1. Negative connotation of the traditional type of industrial policy (until the 1980s) related to direct intervention and control by the government over the production sector and exercising the model of “picking the winners” without market competition;
2. Excessive dependence on the European incentives and formulation of strategic policies which are then used for national policies;
3. Uncritical faith in the process of EU integration as a solution for strategic problems and waiting for EU to bring solutions through the accession or structural funds and technical assistance.
4. identification of the new industrial policy with the policy for SMEs that relates to the managing abilities and establishing framework conditions for enterprises’ development;

Regarding the last point, it is worth noticing that the policies related to SMEs are mainly established by the European Charter for Small Enterprises approved by EU

leaders in 2000 which recommends the ten key policy areas[26] of action to support small enterprises. The implementation of actions are analysed periodically and the two studies are carried out for WBC up to now (OECD, 2007; OECD 2009). They brought a rather detailed analysis of the countries' framework conditions and comparisons.

2.2.2.3 Institutional set up for the development of entrepreneurship and innovation

This kind of institutions involves a range of different institutions aimed at provision of the premises for SMEs and various kinds of business assistance and support for networking a connection within the value chain.

According to the Mapping of the WBC Innovation Infrastructures (ZSI, 2011) the key innovation infrastructures in WBC are:

- Technology and innovation centres;
- Clusters
- Technology and science parks;
- Business start-up centres;
- Technology incubators;
- and other related organisations.

The detailed analysis of the innovation infrastructure is provided in the study of ZSI (2011). Here, we can only highlights some facts. Although the study does not provide estimation about the number of different intuitions, there are certainly several hundreds of them in WBC. Only Croatia counts for more than 200 different institutional entities without clusters that are not strictly defined. Croatia has the most developed innovation infrastructure system together with Serbia but with different foci: whereas in Serbia the dominant type of institutions are clusters Croatia has put most focus on business incubators and start-up centres. In Croatia, the institutional infrastructure for local entrepreneurship development and business incubation consists of around 23 business incubators, 44 entrepreneurial centres, 27 development agencies, 13 free zones and 108 entrepreneurial zones (Business navigator). Serbia and Croatia are followed by FYR of Macedonia and Bosnia and Herzegovina. Kosovo UN Res.1244 Montenegro and Albania lag behind.

[26] The SMEs policy areas include: Education and training for entrepreneurship; Cheaper and faster start-up; Better legislation and regulation; Availability of skills; Improving online access; Getting more out of the Single Market; Taxation and financial matters; Strengthening the technological capacity of small enterprises; Making use of successful e-business models and developing top-class small business support; Developing stronger, more effective representation of small enterprises' interests at Union and national level.

FYR Macedonia has developed the Regional innovation centre in Stip, NCDIEL – National Centre for Development of Innovation and Entrepreneurial Learning, IC – Macedonian Innovation Centre, while remaining support organisations consist of 2 business start-up centers, 4 incubators and the MASIT – ICT Chamber.

Federation of Bosnia and Herzegovina shows better results as it accommodates 19 facilities it total, whereas Republika Srpska is the seat of 13 facilities. However, one needs to evaluate these numbers carefully and consider that RS is less populous than Federation of BiH (1.5 million versus 2.4 million) and economically speaking, advances at the faster pace than Federation of BiH. Both of the entities have one technology and science park, comparable number of technology innovation centres and business clusters. The biggest difference is recognizable in the field of business incubators and start-up centres, which are better spread in Federation of BiH (12) compared to RS (6).

Albania, Montenegro and Kosovo UN Res.1244 have national systems with little innovation infrastructures.

Montenegro exhibits a significant increase in the field compared to 2007, where there was only one business start-up and one business incubator active (the first business incubator in Montenegro was launched in 2007- the Business Start-up centre Bar and a similar one in Podgorica). SMEDA has launched a programme initiative under which 4 business centres were established in the various regions of the country as well as 7 local sub-centres. One European Information and Innovation Centre (EIICM), involving SMEDA, Chamber of Economy, Faculty of Mechanical Engineering and Business Start-Up Center was established under CIP programme. It replaced former EURO information correspondence centre.

The environment for entrepreneurship in Kosovo UN Res.1244 is not very supportive. There are 3 incubators established by MTI (not functioning well, the latest initiative to outsources to private sector for managing these incubators).The Business Start-up Centres is established by donors and driven by NGOs. Industrial/Business Parks is under consideration.

In Albania there were several initiatives for establishing business incubators but, none of these is operational till today. Therefore, the designed Business Incubation Programme for Albania will apply a step by step approach, by setting up a pilot business incubator and building on its experience, in parallel taking into consideration the experiences from other countries

From the evolution and historical perspective for the period 2007- 2011 it could be concluded that the Western Balkan region shows a **positive tendency** in the development of innovation infrastructure (Table 3). Overall, all but one country from

the WBC region exhibited an increase in numbers of their national innovation infrastructures.

Table 3: Innovation Infrastructures Status 2011, in absolute numbers (Absolute change[27] compared to 2007)

Innovation Infrastructures Status 2011 (Absolute change compared to 2007)	ALBANIA	BOSNIA and HERZEGOVINA	CROATIA	FYR of MACEDONIA	MONTENEGRO	SERBIA	Kosovo UN Res.1244
TICs	2 (0)	7 (+5)	9 (+3)	7 (+1)	2 (+2)	5 (+1)	1 (+1)
Clusters	2 (-2)	5 (+2)	7 (-4)	13 (+5)	1 (+1)	30 (+14)	1 (-2)
Technology & Science Parks	0 (-)	2 (+2)	5 (+2)	3 (+3)	0	5 (+1)	1 (-)
Business Incubators / Start-up Centres	2 (-)	17 (+4)	25 (+5)	4 (-6)	3 (+1)	17 (+4)	5 (+1)
Total Absolute Change compared to 2007	**-2**	**+13**	**+6**	**+3**	**+4**	**+20**	**±0**

Source: ZSI, 2011

The different colors in the Table 1 serve for better overview of the 2011 status of innovation institutions in the WBC. The table sheds light on the numbers of innovation infrastructures in WBC and helps to identify strengths and weaknesses of the national innovation capacities. Yellow color designates less than 4 innovation infrastructures present in the country, orange colour 5 - 9 and dark orange color designates more than 10 innovation infrastructures. Even though the absolute numbers are suitable to recognize the general tendencies; crude numbers do not provide a detailed picture and differences in the efforts involved to set up different categories of facilities.

With regards to the newly opened facilities, the following can be concluded:

- Serbian innovation landscape has experienced the strongest increase of innovation infrastructures with clusters and incubators growing at the fastest rate.
- Bosnia and Herzegovina ranks second exhibiting growth in all infrastructure categories (two technology and science parks, four business clusters, five technology innovation centres and six business incubators/start-up centres were newly established).

[27] Absolute change is a difference between numbers of closed and newly established facilities

- FYR of Macedonia ranked third with eight new business clusters, three technology and science parks and two technology innovation centres.
- Croatia shows quite a stable development with four new innovation facilities.
- At the same time, Montenegro has improved its situation strongest compared to 2007, when only one business incubator and one business start-up centre were up and running. In 2011, the increase of two technology innovation centres, two business incubators and one business cluster is noted.
- In Kosovo UN Res.1244, two new business advisory centres, one perspective business incubator, one business cluster and one technology innovation centre emerged.
- Albania exhibited a slight improvement with one technology innovation centre and one business incubator being established.

Business incubators are the most spread innovation facilities in WBC with 73 facilities in total, followed by business clusters[28] with 59 establishments within the region. The cluster concept leaves wide scope for interpretation due to its fuzzy, polycentric and hybrid nature and usually is mixed with the notion of the regional innovation system (RIS). For example, Serbia recorded around 44 clusters, FYR Macedonia around 18 clusters while in Croatia there are currently about 50 different clusters[29] coordinated by the Ministry of Economy, Labour and Entrepreneurship (MELE), Croatian Employers Association and Croatian Chamber of Economy. The great difficulty is to get the information which of these clusters are really in function and which exist only formally.

From all innovation infrastructures, business clusters, as the easiest facility to set-up, is also 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 UN Res.1244 and Bosnia and Herzegovina are 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 had to be closed down since 2007. Kosovo UN Res.1244 closed all three of its business incubators (only one start-up centre remained open). FYR of Macedonia

[28] "Clusters are geographically close groups of interconnected companies, suppliers, service providers, and associated institutions in a particular field (…). Clusters are often working in a particular region, and sometimes in a single town" (EC, 2006)

[29] Ministry of Economy, Labour and Entrepreneurship has supported in the period 2005 – 2010 46 cluster initiatives with amount of around €40m. The clusters involve more than 500 companies with around 25000 employees (MELE, 2011).However, they are not reported in the ZSI study since it was not possible to check the functionality of all of them.

also stands out in this respect as 6 incubators out of 10 operating business incubators and start-up centres (in particular, eight incubators + two start-up centres) were closed down from 2007-2011.

Technology and science parks as well as technology innovation centres exhibit relative sustainability in their activities. After the bulk of requirements is overcome, and once the projects are up and running, they succeed to fulfil and pursue their mission.

2.2.3 Innovation system and policy programmes for research-driven innovation

Innovation capacities for research-driven innovation usually involve programmes for knowledge flow between the sectors and sector interactions. Supporting programmes for such innovations consists of the tailored made programmes for science-industry cooperation and commercialisation of research results.

The complex set of these programmes are devised at the moment only in Croatia and partly in Serbia. Similar conclusions come also from the OECD analysis (OECD, 2009:23) which states that „all across the region, government policies directed at strengthening the technological capacities of SMEs are at an early stage of development Croatia is the most advanced in the three areas of technology dissemination, technology co-operation, and research and development of inter-firm clusters. In a number of other countries (Bosnia and Herzegovina, the FYR Macedonia and Serbia), technology support programmes are mostly still in a pilot phase, although progress has been recorded in Bosnia and Herzegovina, and Serbia in the cluster development area. Albania, Kosovo UN Res.1244 and Montenegro are at a very early stage of policy elaboration".

Croatia is still leading the Western Balkan countries in terms of policy framework, number of active programmes and pilot projects. It launched comprehensive technological development programme under the responsibility of Business Innovation Centre of Croatia (BICRO) which runs the several programmes such as: support for knowledge-based companies (RAZUM), the development of the technology infrastructure (TehCro), public-private risk capital fund (VenCro), R&D services for companies (IRCro), business, competitiveness upgrading programme (KonCro) and the Proof of Concept programme (PoC). In addition, there is the TEST programme aimed at developing of new technologies (products/processes/services) up to the stage of commercial application, and programmes run by the Croatia Institute of Technology (HIT). The Unity through Knowledge Fund and the National Science Foundation also carry out programmes for science-industry cooperation (Svarc, 2011). The most recent programme – the Science and Innovation Investment Fund is devised within the IPA and targeted at integration of universities and RTO into the local economic development.

According to OECD (2009) in FYR Macedonia, a new law on supporting and facilitating technological development opens the door for enterprises to apply for government co-financing for up to 50% of research and development project costs. At the end of October 2008, 57 projects proposals were under evaluation. However, budget allocations are limited to €146,920 in 2008).

FYR Macedonia has introduced the Innovative voucher in 2010 by the Agency for promotion of entrepreneurship with the aim to boost the knowledge capacity of SMEs by building links between knowledge providers and SMEs. The specific objectives of the scheme are to enable SMEs to buy knowledge and strategic consultancy from research institutions and to increase the demand-orientation of the public knowledge institutions. The Macedonian government in cooperation with OECD is developing Macedonian Innovation policy 2012-2020

In other countries - BiH, Kosovo UN Res.1244, FYR Macedonia and Albania supporting measures for cooperation between entrepreneurs and researchers are mainly limited, at least judging from the reports presented in Becici.

2.2.3.1 Science-industry interface (intermediary) institutions

Science-industry interface (intermediary) institutions are aimed at provision of the spatial proximity of knowledge users and producers and links between science and industry. These kinds of institutions include technology transfer centres, technology parks, science parks, etc.

This kind of institutions is the least developed in the innovation system in WBC. It is rather natural since innovation in these countries are not research based and companies do not need knowledge or research services provided by the universities or research institutes for their business development.

The most developed landscape of science parks have two most developed countries - Croatia and Serbia. Both have five operating technology and science parks, followed by FYR of Macedonia with three, Bosnia and Herzegovina with two parks and Kosovo UN Res.1244 with one park. Albania and Montenegro are countries with no technology and science parks at the moment.

The most complex institutional set up for knowledge transfer is developed in Croatia and Serbia. Serbia has made progress on the implementation of the Innovation Law, introduced in 2005 (OECD, 2009). In line with the requirement of the law, 3 innovations centres, 20 research and development centres, 39 research and production centres, 2 technological parks and 3 technological incubators had registered with the Ministry of Science and Technology by the end of October 2008.These entities became eligible for financial support covering up to 50% of their R&D projects. Budget allocation in 2008 amounted to € 4.7m. Additional funding has

been provided by the EC-funded the Enterprise Development and Innovation Grant Scheme, mostly channelled through cluster development

Croatia has 5 centres for technology transfer in Zagreb, Split, Rijeka, Osijek and Dubrovnik and three recently established technology transfer offices at universities of Zagreb, Rijeka and Split. There is also an office for technology transfer at the Ruđer Bošković Institute in Zagreb (Ruđer Innovation). In addition, there are technology parks in Zagreb and Varaždin and one university science and technology park attached to the University of Rijeka.

Federation of Bosnia and Herzegovina has established the Technology Park Tuzla, while the Technology Park Zenica is in the final phase. Republic of Srpska has established the Innovative center in Banja Luka in 2010. Technology Business Park Banja Luka establishment is in the process.

In the FYR Macedonia (OECD, 2009) there are four technologies transfer centres (three in Skopje and one in Bitola) established with the support of GTZ, the German technical co-operation agency. Another nine centres are planned, under the USAID-funded Competitiveness Project. In addition, the Agency for the Promotion of Entrepreneurship and the Economic Chamber of the FYR Macedonia is providing technology transfer services in the context of the Enterprise Europe Network since the beginning of 2008, through the European Information and Innovation Centre in Macedonia (EIICM). The first private technology park of SEAVUS company is under construction. Macedonia has reported that 20 development and research units have been established in the economy sector as well as the research centre in pharmaceutical company – Alkaloid, Skopje.

It seems that Montenegro, Albania and Kosovo UN Res.1244 have not yet started to develop intermediary institutions. Kosovo UN Res.1244 has only Center for Innovation and Technology Transfer at the Ministry of Education, Science, and Technology. There is no technology transfer centre as well as technological parks and science parks in Montenegro and Albania. The main initiative in Montenegro is the establishment of a University Centre for Design and Development, based at the University of Montenegro (OECD, 2009).

We can conclude that in the last 10 years WBC countries made a great progress in innovation policy in relation to establishing entrepreneurship infrastructure and supporting programmes for development of SMEs and innovation. However, the results of the intuitional set-ups and policies fall sometimes short of objectives. Although a comprehensive review of these initiatives is missing the slow economic growth and technology lagging suggest that their effects and results are not very promising. For example, S&T parks or business incubation centres that originally were meant to strengthen knowledge exchange and innovation operate as renting areas. Most often they are initiated through foreign assistance programs and operate successfully only as long as foreign assistance is in place. On the other hand, the

presence of science parks signals a relatively better developed innovation environment and ambitious for knowledge based development. Therefore, much more emphasis should be put on the quality instead of quantity of supporting institutions and programmes.

2.2.3.2 Development of specialized innovation sub-systems

In addition to institutional set up with the direct influence on innovations like research institutes, technology transfer centres, science parks, etc, there is also wider institutional context (innovation sub-systems) with the significant impact on innovation activities. These innovation subsystems include for example financial, legal and governance sub-systems.

These innovation sub-systems like financial tools for investing in research commercialisation and innovation, intellectual property regulations in academia or long-term strategic planning are poorly developed in WBC. The most developed subsystem is the one related to the standard intellectual property rights since it is critical for European integration in terms of free trade and investments. There is a lack of data regarding the establishing of the intellectual property rights in academic community related do research commercialisation and university-spin offs. Croatia has carried out the CARDS programme (started in 2003) for developing IPR in academic community which involves several universities. The knowledge collected within the projects is nowadays applied in technology transfer offices at universities of Zagreb, Rijeka and Osijek, Rudjer Innovation and the Technology transfer office of the Croatian Institute of Technology. The latter has developed a Manual for managing intellectual property rights in academic community and research institutes.

According to the available data only Croatia has launched the programme Vencro aimed at initiating venture capital industry while other WBC do not have such initiatives. The exception is the Serbian initiative for the Western Balkan Technology Fund that should collect capital of €100m for ventures in the WBC region. The CRANE - a Croatian network of business angels and private investors interested in investing in innovative companies is in the very early stage of development.

Technology foresight exercises are not carried out in any of WBC.

2.2.4 Main structural deficiencies of research and innovation system

The main deficiency of **research and innovation system** noticed by all WBC is **a lack of leadership and vision in developing NIS**. FYR Macedonia for example, notices that they are missing a clear vision, strategy and policy for developing of NIS. Albania complains about the lack of proactive policies to support technology capacity

building for enterprises, particularly for SMEs, while B&H lacks the strategic documents which will provide the basis how involve business sector to invest in research. In Kosovo UN Res.1244 there is no well defined system of research and innovation and in Montenegro the main structural deficiencies are present in research ambient as well as within the governance structures which did not find efficient legal and policy arrangements that provide a sound and supportive environment for university–enterprise cooperation. Montenegro also notifies that monitoring system for innovation is not placed well both in terms of institutions that monitor innovation activities, as well as indicators used to monitor innovation,

The next large shortcoming is **the lack of technological competences of companies** that create a lack of the interest from the company side for research and innovation. This is a problem not only of technologically less developed Kosovo UN Res.1244 and Albania but also of more advanced countries like Croatia which complains about missing the market for research services and research results (Svarc, Laznjak and Perkovic, 2011). The weakest point of NIS is the absorptive capacity of companies for new knowledge and for adapting imported and purchased technologies. This capability is essential for company to grow and innovate. Without technical capability of companies the measures aimed at science-industry cooperation or intermediary institutions like science parks are in danger of creating an illusion of modernization and progress which actually does not exists. Therefore the prime task of NISs in WBC should be oriented toward upgrading the technological capabilities of companies.

The common feature of R&D systems in WBC is the **domination of public research sector** that perform and finance the most (if not all) part of research activities. The business sector investment is rather low, e.g. 0.4% of GDP in Croatia as the most developed WBC. This is opposed to the industrially developed countries where industry finances and conducts most research and development activities, and hires most researchers. The vast majority of the R&D potentials in WBC are heavily dependent on scarce budget resources that can ensure only maintaining of research sector, not a progress. The underdevelopment of research system seems to be smaller difficulty compared to low absorption capacities of the business for research and innovation. SMEs sector is lacking the critical innovation and research resources for commercially oriented research and cooperation with the scientific sector.

All countries complain about the **outdated and inadequate** s**cientific infrastructure** and low **level of investments** in research and innovation both from public and private resources. Although the differences among the countries are significant since the level of investments varies from a total of €1m in Kosovo UN Res.1244 to 0.9 in Serbia the problem remains the same. More resources are needed in all countries but for different purposes: once for establishing the research system (Albania, Kosovo UN Res.1244) while other countries need to strengthen research excellence as well as capacities for cooperation with the business sector.

Majority of **research policy plans and intentions are not reflected in supporting measures**. The implementation of policy documents, the specific measures are either underfinanced or do not address the policy priorities.

The additional shortcomings by individual countries include:

- In Albania there is no dedicated institutional structure within the Albanian government to coordinate research activities and there is no specific strategic approach to business innovation and technological development; Albania is highly dependent on foreign technology;

- In BiH there is a complicated procedures related to public procurements and tax deliberation;

- In Croatia there is a low level of inventive activities, low complexity of innovation activities and low share of R&D employees in total number of employees compared to the EU 27 average;

- FYR Macedonia suffers from the concentration of research activities at one university - Cyril and Methodius University; there is an overlapping of responsibilities between MoES and MoE and a low level of awareness about need for innovation. There is no tax incentives for companies and more intensive focus on entrepreneurial learning to all levels of education is needed;

- Montenegro put a specially stress on the lack of effective linkages between knowledge institutions (HE and R&D) and industry since there is little awareness of the mutual benefits of cooperation with industry. Although the need for cooperation of universities and enterprises are included in policy documents, an efficient legal and policy arrangements that provide a sound and supportive environment for university–enterprise cooperation do not yet seem to have been established. Universities find difficulties to attract social partners (Chambers of Commerce, Regional Development Agencies, etc.), since they do not consider university–enterprise cooperation as part of their portfolio. Despite universities consider SMEs to be the most relevant and interested partners for cooperation the actual cooperation between university and industry takes place with large companies – often branches of multinationals, because these have a critical mass of qualified staff who can find a common language with teachers and researchers, they have better equipment and infrastructure, longer-term strategies and more money;

  Concerning the public support Montenegro defined several needs that can be also considered as deficiencies:

- Business to business and university to business linkages, in terms of mechanisms to support networking, mechanism to support cooperation between the interdisciplinary research groups and business;

- Infrastructure and support services favouring the emergence of new clusters, in terms of business and technology incubators, science parks;
- Government source for financial support in terms of publicly funded schemes to support technological innovation like credits, vouchers, organizational design or marketing;
- Access to finance, in terms of policies or agencies aimed at fostering seed financing, start-up financing;
- Incentive frameworks for innovation in terms of policies for providing the right incentives, policies aimed at lowering the risks for entrepreneurial ventures

2.2.5 Main challenges for governance of innovation

The main challenges for governance of innovation vary according to the level of development of the R&D system within WBC.

The main challenge for Kosovo UN Res.1244 is to build the research system and integrate the fragmented parts of NIS into a new properly design innovation system. They should also develop statistics on all important indicators regarding innovation, technology and science.

Albania wants to ensure that by 2015 Albanian scientists would be able to generate high quality and internationally recognised research in selected areas. Therefore, their main tasks are related to improvement of basic research infrastructure able to support university training at three levels (BSc, MSc, PhD levels) and creation of scientific excellence in key research areas for the country. They also set a task to increase the public spending on research to 0.6% of GDP by 2015. The share of GERD from foreign sources notably from the EU (FP, etc.) and international donors should cover 40 per cent of all research spending in the period 2010–2015. Internationalization and integration into ERA and the building of national competences are the key factors recognised in Albania. It calls for redesign of the overall legal and institutional framework for research policy-making and research funding and alignments required for European Partnership for Researchers (improving researchers' careers and mobility) and joint programmes. The increased public understanding of science the role of innovation and new technologies for society and economy is needed. In the field of innovation and transfer of new technologies a specific Strategy for Business Innovation and Technology (BITS) would fill the gaps through 4 programmes of Innovation Fund, Business Innovation Services, Incubation Programme and Cluster Development.

The main problem in BIH is perceived in fragile economy and the capacity of the various actors in the innovation system to support knowledge-based economic development. The outdated equipment and infrastructure in the higher education/research sector, insufficient investment in training on new technologies

and technology upgrading in enterprises, and similar problems are perceived as the main obstacles to innovation system.

Croatia should increase effectiveness of the R&D sector and put it into work to achieve broader social economic objectives i.e. increase competitiveness, employment and living standards There is also a lack of an adequate financial system which could facilitate R&D sector

In FYR Macedonia one of the main challenges is to determine inter–ministerial group responsible for development of innovation policy as well as to prepare a solid innovation strategy. The challenge is also to recognise and finance most proactive innovation drivers (both public and private) and to strengthen the capacity of public institutions that deals with STI. The reverse brain drain of high educated people is needed and should be included in regional innovation policies and strategies. The better promotion of the EU mobility programs especially among young researchers is needed. FYR Macedonia also supports the establishment of the regional innovation and patent fund.

Montenegro provides a range of tasks that should be accomplished in order to gain more functional innovation system. The key role has the Governments of the Montenegro that should accelerate a transition of researchers from academic sphere to enterprises through a greater emphasis on the mobility aspects of the best young researchers. It should also introduce tax incentives for projects which involve knowledge transfer from universities to enterprises in order to encourage innovation in SMEs. Establishment of the science and technology parks to promote networking between their tenants as well as the encouragement of the industrial clusters develop an outward exporting orientation and link up with international systems of innovation are seen as important.

Universities in Montenegro are recognised as the key drivers of the local systems of innovation, major source of knowledge in emerging and established clusters, drivers of the regional technology-based development and the source of local innovations and local companies. Universities in Montenegro should establish technology transfer centres to handle property rights issues and licensing of inventions and innovations created in university laboratories. Universities should focus on applied research activities. Collaboration with enterprises and participation in joint research projects should be included in academic staff promotion criteria.

Innovation policy should be seen in Montenegro as the cumulative result of interaction among governments at various levels, businessmen, academics, and social partners comprising membership from all of these spheres, especially at the regional level.

Furthermore, it is necessary to establish new institutional arrangements of university–enterprise–government relations. The common objective is to realize an innovative environment consisting of university spin-off firms, three-lateral initiatives for knowledge-based economic development, and strategic alliances among firms (large

and small, operating in different areas, and with different levels of technology), government laboratories, and academic research groups

It is emphasised that financial resources by themselves will not solve the problem of a low innovation capacity in Montenegro. Instead, the policy focus needs to be shifted to:

- Microeconomic capacity of WB region;
- Quality and specialization of factor conditions;
- Quality of enterprise strategies and entrepreneurship;

An important future step need to be involvement of proposed model of university-enterprise cooperation in corresponding strategic documents such as future Strategy of technological development together with the already existing Strategy for sustainable development (2007).

2.3 Conclusions

It is rather difficult to estimate institutional maturity and complexity of the national innovation systems in WBC since they are in constant flux and subjected to many changes. For example, the reliable information about functionality and success of supporting institutions enlisted in different directories of WBC are missing and call for an in-depth analysis.
The two types of infrastructural institutions can be identified which complement each other and commonly build the national innovation systems:

- Institutions and programmes focused on the development of SMEs and entrepreneurship based on non-research innovations;
- Institutions and programmes for supporting research-based innovation and science-industry cooperation.

As expected, the first kind of programmes and institutions are more common in WBC with less developed innovation system while programmes for research-based innovation are mainly limited to Croatia and Serbia. Countries in WB region have not, except Croatia and Serbia, initiated/developed specific policy programmes and supporting measures aimed at knowledge flow between the sectors and their 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 of the intermediary institutions like technology parks and technology transfer centres but with no evidence about their achievements.

Very roughly, we can divide the countries in the five groups according to their experience in establishing institutional infrastructure and supporting programmes for innovation, as follows (Table 4) :

- Kosovo UN Res.1244 – 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 base innovation; intermediary institutions in the phase of infancy;
- Montenegro and FYR Macedonia - familiar with establishing and implementation of innovation infrastructure for SMEs end entrepreneurship (non-research based innovation);
- Serbia- complex innovation infrastructure for SMEs/ entrepreneurship while its programmes and intermediary intuitions for science-industry cooperation are moderate
- Croatia – complex innovation infrastructure for the SMEs/entrepreneurship and developed policy-mix for science-industry cooperation, yet with the modest influence on economic development.

Table 4: A tentative categorization of WBC by the maturity of innovation infrastructure and programmes

	Research system	Entrepreneurship and SMES (non-research based innovation		Research based innovations	
		Programmes	Institutions	Programmes	Institutions
Croatia	Complex	Complex	Complex	Complex	Complex
Serbia	Complex	Complex	Complex	Moderate	Moderate
FYR Macedonia	Familiar	Moderate	Familiar	Beginner	Moderate
B&H	Moderate	Familiar	Familiar	Beginner	Moderate
Montenegro	Familiar	Beginner	Moderate	Beginner	Beginner
Albania	Beginner	Beginner	Beginner	Beginner	Beginner
Kosovo UN Res.1244	Infancy	Infancy	Infancy	Infancy	Infancy

Infancy-almost no experience; **Beginner**-establishing a few institutions/ programme; **Moderate**- establishing several institutions/ programme; **Familiar**-track record in institutions/programmes; **Complex**-existing of a system of institutions and programmes

Due to the different level of development of NISs in WBC the different measures or specific policy mix should be put in place. For example, in Kosovo UN Res.1244 and Albania important measures should be directed towards energy safety and setting up the research system while in Serbia and Croatia the reforms or R&D and HE systems are needed in terms of achieving both scientific excellence (international recognition) and involvement of research/education sectors in local and national economy. However, WBC shares many common problems in research sector such as law participation in FP, lack of quality assurance system in R&D and HE, low mobility of researchers, obsolete scientific equipment, etc.

The common shortcomings of the innovation systems in WBC identified so far are presented in the Table 5 as well as possible directions of policy measures

Table 5: Some common shortcomings of the NISs in WBC and possible directions of policy measures

Some common shortcomings of the NISs in WBC	Directions of policy measures
WBC suffers from the outdated and inadequate scientific infrastructure and low level of investments in research and innovation both from public and private resources.	More resources are needed in all countries but for different purposes: once for establishing the research system (Albania, Kosovo UN Res.1244) while other countries need to strengthen research excellence as well as capacities for cooperation with the business sector
There is a “flood” of strategic documents, manly copy of EU strategies which never come to realisation. There is a lack of strategic visions and plans based on analytical studies, existing competences and technology foresight exercise or assessments;	There is a need for learning process related to technology foresight and strategic planning which can be organised at the regional level of WBCs; the practical implementation of the finding should be necessarily carried out in the selected sectors on the level of WBC region to put strategic visions into work and avoid being dead letter
The structure of the national economies is dominated by the low-tech sector while lacking the structural reforms to overcome technology obsoleteness;	It calls for a kind of large –scale technology programmes which should involve all the innovation stakeholders at the national level for modernization; it is worth investing the viability of such the programmes at the regional level of

	WBC
Innovation and absorption capabilities of SMEs are weak for both innovations generation and adoption/modification; there is a huge lack of research workforce in the private business sector	There is a need for common programme in upgrading innovation abilities of companies; the programmes for industrial revitalisation could be more efficient than programmes for research commercialisation; it comes from the fact that technology capabilities of companies and knowledge they apply tend to be firm specific and cumulative while assimilation of knowledge from research sector can be ineffective and not sustainable
There is gap between knowledge producers and knowledge users; production and research sector	The programmes for science-industry cooperation should be adapted to the needs of the SMEs; this area provide a wide range of possibilities for WBC cooperation (e.g. vouchers, regional awards, regional training centres, various mobility programmes among countries and sectors, apprenticeship, etc
There is a gap between conceptually correct supporting institutions and measures for innovation and outcomes; Business clusters and incubators are the easiest facilities to set-up, but also most prone to closure	The system of evaluation should be out in place to assure quality and functionality of entrepreneurship infrastructure and programmes. The programmes for research commercialisation and establishment of the sophisticated intermediary institutions such as science parks or technology transfer centres should be fostered wisely so as not to create a false impression of progress and modernization
WBC shares many similarities regarding business and technology development and naturally are oriented towards each other but there is a lack of information of areas of possible cooperation	An exercise in mapping the technologies and research with commercial potentials within WBC region is needed for designing the common thematic (sectoral) programmes; it might be a good starting point in innovation and research cooperation
The markets for innovation products and research results are not developed in any of WBC	The actions to develop the regional market for innovation and research can be initiated; the regional market consist of more than 23 million of people, provides economy of scale, value chain connections and concentration of

	research and technological potentials
Fundamentals that are critical for innovation dynamics are not in place in any WBC	WBC should improve fundamental economic and social stability (fundamentals) which are critical for innovation and economic growth such as stable macroeconomic, fiscal discipline, low inflation rates, opening economies to FDI, etc.
Analytical and statistical data on R&D and innovation are missing in the majority of WBC	WBC should improve statistical system for R&D, innovation and entrepreneurship to enable analytical studies on technological and innovation development

3 PART THREE: RESEARCHING JOINT COOPERATION NEEDS OF THE WBC IN THE AREA OF INNOVATION

3.1 Designing the concept: Multiple approaches to the comparative analysis of the joint cooperation needs of the WBC in the area of innovation

The comparative analysis of the innovation capacities and joint cooperation needs of the WBC in the area of innovation turned out to be a rather demanding task and several methodological and analytical approaches have been employed to come to the final conclusion, as follows:

1. desk research,
2. survey of innovation needs based on two on-line and consecutive questionnaire targeted at two main innovation stakeholders - entrepreneurs and researchers and carried out by JRC-IPTS in cooperation with the Institute Ivo Pilar, Zagreb; the data analysis of surveys on of innovation needs is provided in the report of JRC-IPTS within the task T 8.1(D8.49) while the comparative analysis is given in the Chapter 3.2.1 and 3.2.3 of this report;

3. mapping of the innovation systems carried out by the ZSI and national innovation experts (incorporated in the Chapter 2.2.2.3)[30];
4. analysis of the innovation infrastructure carried out upon national reports presented by innovation experts on the 1st innovation Dialog Forum held in Bečići, Montenegro on November 8-9, 2010 (Chapter 2.2)
5. open questionnaire targeted at selected innovation experts in WBC (Chapter 3.2.3).

The role of innovation for future growth of WBC based on innovation cooperation to accelerate the regional innovation development challenges the representatives of the WBC-INCO NET-ENHCED to define, first and foremost, the concept of "regional innovation needs". The two approaches have been crystallized during the preparatory meeting held in Vienna on September 10, 2009. The first one argued by the researchers from the Institute Ivo Pilar," Zagreb defined the "regional innovation needs" as the structural deficiencies of the innovation systems of WBC which would include educational, financial, political, infrastructural and other obstacles that hinder innovation capacities of WBC and their cooperation. This approach was estimated by some other representatives as too general and rather common to contribute to the innovation cooperation in the region. Therefore, next concept which was represented by the group gathered around JRC-IPTS has been accepted as more convenient to meet the needs of the project. The main aim of this approach was to identify the future innovation research and market needs of WBC using the method of technology foresight already experienced in the similar projects. It assumed identification of the concrete innovation in the companies, preferably by the six research priorities already analysed within the WBC-INCO-NET project (energy, agro&food, transport, ICT, health and transport). The Ivo Pilar group were rather sceptical about the success of this method to achieve such a demanding task due to the rather limited financial resources and possible low respond rate of the companies. Since the Ivo Pilar group hasn't seen much overlapping with JRC-IPTS survey focused on technology foresight techniques, it stared, as the task leader of T 8.1 to design its own questionnaires. Taking into account the critics of the other projects stakeholders, the original concept of innovation needs understood as the structural deficiencies was revised towards better understanding of the needs for innovation cooperation and activities at the national and regional level.

The activities on designing the questionnaires started in October 2010. The preliminary phase included the conducting of the semi-structured interviews with the managers of the regional project initiatives like the SEE initiative supported by the Regional Cooperation Council (RCC) in order to understand more comprehensively the nature of regional cooperation. The intentions of the interviews were to identify the important aspects of regional innovation cooperation which would direct the design of the questionnaires. The interviews involve several aspects: intensity of

[30] A separate study is carried out by the Centre for Social Innovation (ZSI) entitled: "Mapping of the WBC Innovation Infrastructures: Conclusive summary"

regional cooperation, focus on innovations (development of innovations of the new products/processes services), role of the involved stakeholders, obstacles to cooperation, challenges and opportunities (what should be done to intensify the regional innovation cooperation). The two interviews were carried out, one with the Regional Project Manager of the SEE Health Network Project on Tobacco and another one with the Chair eSEE Initiative Working group, Regional Cooperation Council (Annex 2) [31].

However, it turned out that these interviews (methodology) was a kind of a blind alley since the SEE projects collected mainly the political and expert institutions such as ministries and agencies to foster networking needed for carrying out necessary reforms in different sectors like public health, tobacco control, maternal and neonatal heals health, e-government, e-business, etc. Although they were rather successful, they were not focused on innovation development, production, dissemination and utilisation.

Therefore, the activities on interviews were stopped while the design of the questionnaires has been continued based on other resources. The two questionnaires were constructed, one for the companies and another one for both researchers and innovation experts from intermediary institutions and governmental bodies[32]. The idea was to make the questionnaires as much alike as possible to make the comparisons between the groups. By the end of January 2011 the questionnaire were mainly finalised for distribution and data collection.

However, the major challenge has come exactly from the methodology of data-collection from the companies. The original intention was to collect the data by questionnaires in a Word format which would be send to selected respondents with the possibilities of making phone calls and using other “methods of pressure”. Such a method comes from our experience that companies in WBC usually do not answer at any survey, especially not on on-line survey in English. Therefore, we were also prepared to translate it into the “national languages” with the final aim to receive about 100 responses from the six technology sectors which would enable us to make a statistical analysis and to carry out a pilot research.

The collection of data about companies – our potential responders was performed in parallel with designing the questionnaires and covered the whole region according to the six research/technology priority fields. At that time, sample of potential respondents of companies was carefully chosen using the double key: targeted countries of residence (Albania, Bosnia and Herzegovina, Croatia, FYR Macedonia, Kosovo UN Res.1244, Montenegro, Serbia) and economic activity in sectors given

[31] One of the interviews is only in Croatian
[32] On this occasion we would like to thank to Rene Wintjes (UNU-MERIT) for his invested efforts in constructive suggestions and remarks when drafting the questionnaire

priority (Energy, Agro&Food, Environment, Health, ICT - Information and communication technologies and Transport).

The compilation of the WBC companies' database presented a lot of difficulties due to unavailability of data, problems of coordinating the task of gathering many data on companies. Finally, a database of around a thousand addresses was compiled. Additionally, we contacted a number of Chambers of Commerce to kindly ask to send us the company addresses, as follows:

- Croatian Chamber of Commerce in Serbia, Belgrade;
- Croatian Chamber of Commerce in B&H- Sarajevo;
- Croatian Chamber of Commerce, Kosovo UN Res.1244, Pristina;
- Croatian Chamber of Commerce, Montenegro – Kotor;
- Serbian Chamber of Commerce in Serbia, Belgrade;
- Croatian Chamber of Commerce in Croatia, Zagreb.

Some of our contact points33 in the chambers of commerce send us the list of the companies (e.g. Montenegro, Kosovo UN Res.1244) while other like the Croatian Chamber of Commerce in Zagreb and Serbian Chamber of Commerce in Belgrade sent the questionnaires to their clients directly through their dissemination channels not to disclose the contact details of their clients (we do not know how many but can estimate about 300-500 each). The invitation to participate in the survey was also posted on the WBC–INCO.NET site. All these efforts resulted in 20 responses34. However, results can be used as orientation in the field, a sort of a pilot survey to help those who plan conducting similar research on this topic and/or population.

The second questionnaire was targeted at the researchers. Fortunately, these e-mail addresses were based on the mailing list provided by the project coordinator Ms. Elke Dall and our database from previous research on research barriers. It has included 841 e-mail addresses and the respond rate was much higher than in the "company" survey.
Finally, the data on innovation and market needs were collected through two consecutive surveys, the first targeted at companies/entrepreneurs and the second at researchers.

[33] On this occasion we would like to warmly thank to **Jelena Ravlić** from the Croatian Chamber of Commerce in Zagreb who has helped us to make the contacts with the chambers of commerce in the whole Balkan region and collect the necessary data. We owe special thanks to **Nataša Kecman** from the Serbian Chamber of Commerce in Belgrade, **Vjollca Karakashi**, Croatian Chamber of Commerce in Kosovo UN Res.1244 UN Res.1244, Pristina, **Nina Drakic** from the Croatian Chamber of Commerce in Montenegro – Kotor, **Ljerka Nezic** from the Croatian Chamber of Commerce in Zagreb and **Livija Sindik** from the Croatian Chamber of Commerce in Montenegro – Kotor.
[34] One reason of low response rate should be also assigned to the technical errors in the online questionnaire which disabled respondents to fill in and submit their responses

Due to the given circumstances the conducting of surveys on innovation needs was delayed from February to April and May 2011. The on-line surveys for both the questionnaires were performed by the JRC-IPTS.

The data analysis of surveys on comparative analysis of innovation needs is provided in the report of JRC-IPTS within the task T 8.1(D8.49) while the comparative analysis is given in the Chapter 3 of this report.

Since the activities of the task 8.1 have also foreseen interviews and information exchange with innovation experts in the region, a sort of interviews via the open questionnaire has been also designed and sent to selected innovation experts via e-mail. Despite the fact that the response rate was very low it was instructive to learn about the expert attitudes on different topics such as economic success in the last ten years, relationship between science and industry, fostering/hindering factors for regional innovation cooperation, need actions, etc. (see Chapter 3.2.3).

3.2 Data analysis: Survey on market and research innovation needs: a comparative analysis

In order to carry out the comparative analysis of the innovation capacity in the WBC with a focus on joint cooperation needs, the two questionnaires were constructed, one for the companies and another one for both researchers and innovation experts from intermediary institutions and governmental bodies.

3.2.1 The survey of innovation and market needs of the companies

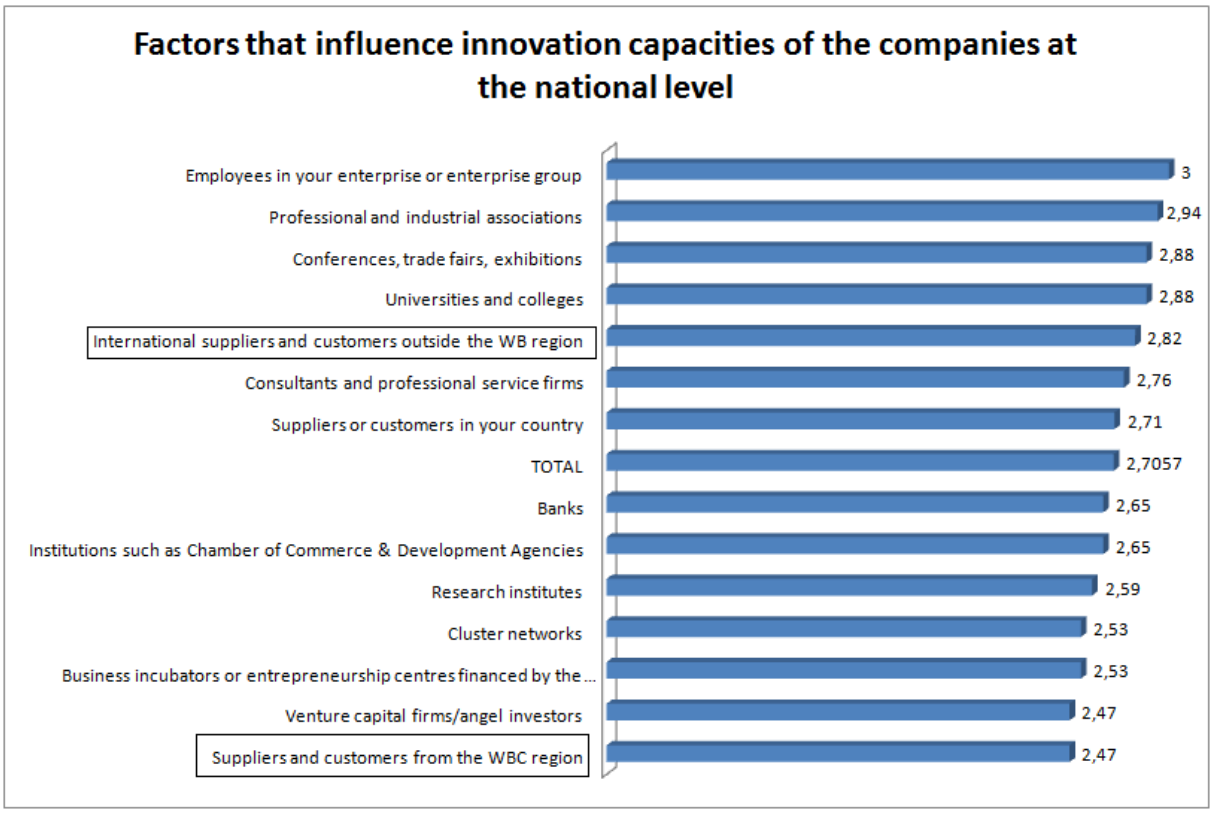
The survey of innovation and market needs of the companies has resulted with only 20 responses due to the applied methodological approach, as explained in the previous chapter. Since it makes comparative analysis of WB countries pointless, only the main findings for the whole set of data will be highlighted here.

1. Companies which have answered the questionnaire comes mainly from Croatia (7 companies or 35%) followed by Serbia and Bosnia and Herzegovina which participated with 3 companies each;
2. Companies were mainly from the ICT sector (45%), while remaining comes from the energy, environment, health and “other” sectors.
3. Share of research personnel in total number of employees is very high in average – 21,65% and indicates that the companies in our sample are mainly research-based companies. This is not so surprising if we bear in mind that almost half of companies in the sample are from ICT sector. Some other companies in other sectors also employ a high number of researches e.g. in a

company from the energy sector 75 employees out of 174 are involved in research;

4. In accordance with the high number of researchers in companies, the expenditure of participating firms in research and development is around the EU target of 3% with only 25% of companies outlining expenditure between 0 and 1%.
5. The **market orientation** of the companies under survey is dominantly towards domestic markets since almost all of the companies' sales are to the customers from their own countries; there is only one exception – a company from Serbia - which provides business services in R&D and sells 85% of their services to the customers outside the region;
6. Companies estimate that **the most important factors for their innovation capacity** are the employees of their own enterprise or enterprise group (mean=3.0 of the 4-level scale) and the professional and industrial associations (mean=2.94) (Figure 9). 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. However, the average value for all the given factors is rather high (mean= 2.71) pointing to the fact that companies regard most of the given factors/stakeholders in their environment as rather important for their innovation capacity (Figure 1). Nevertheless, the innovation activities are influenced mainly by the standard resources: employees, professional associations, fairs and exhibitions. It is interesting that the importance of universities for innovation activities are ranked higher than the entrepreneurship supporting institutions like chambers of commerce, cluster networks, business incubators, etc. It is also interesting that suppliers and customers outside WBC region are estimated to have more influence on innovation activities than from a resident country as well as WBC region. There is high probability that companies in our sample which are mostly research-based are also oriented towards international cooperation. However, it also indicates that they developed better cooperation and networks outside WB region.

Figure 9: Factors that influence innovation capacities of the companies at the national level



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

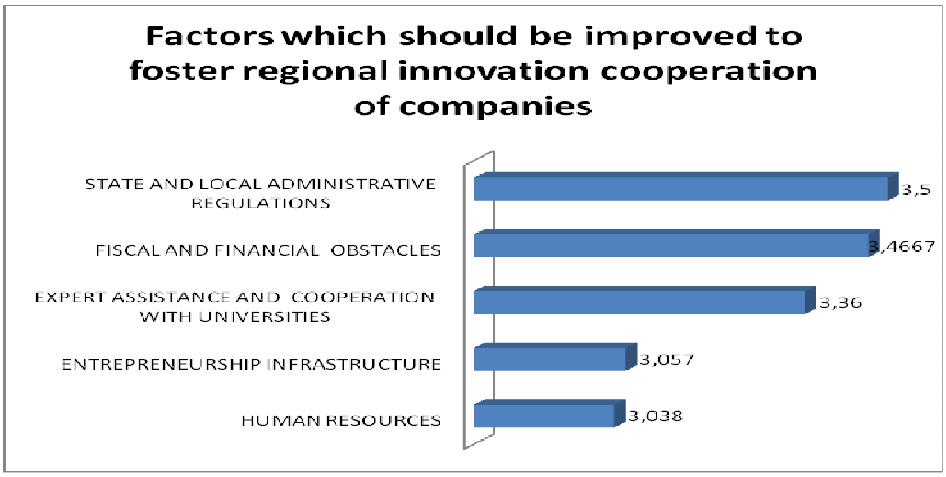
7. The science-industry cooperation is recognised by the companies as important for their innovation capacities. The average value for all the given factors which might improve cooperation between respondents' company and research sector (averages on 1-4 scale) is rather high (mean=3.2) (Figure 10). The three factors 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. (The comparative analysis of WBC is given in the Chapter 3.2.2.1).

Figure 10: Importance of actions for improving cooperation between respondent's company and research sector

Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

8. In the light of the fact that regional innovation cooperation could be beneficial for their companies and the whole WB region, respondents were asked to estimate the **importance of improvement of various factors for fostering regional cooperation.** Factors were divided in five groups: Human resources, Entrepreneurship infrastructure, Expert assistance and cooperation with universities, Fiscal and financial obstacles, State and local administrative regulations.

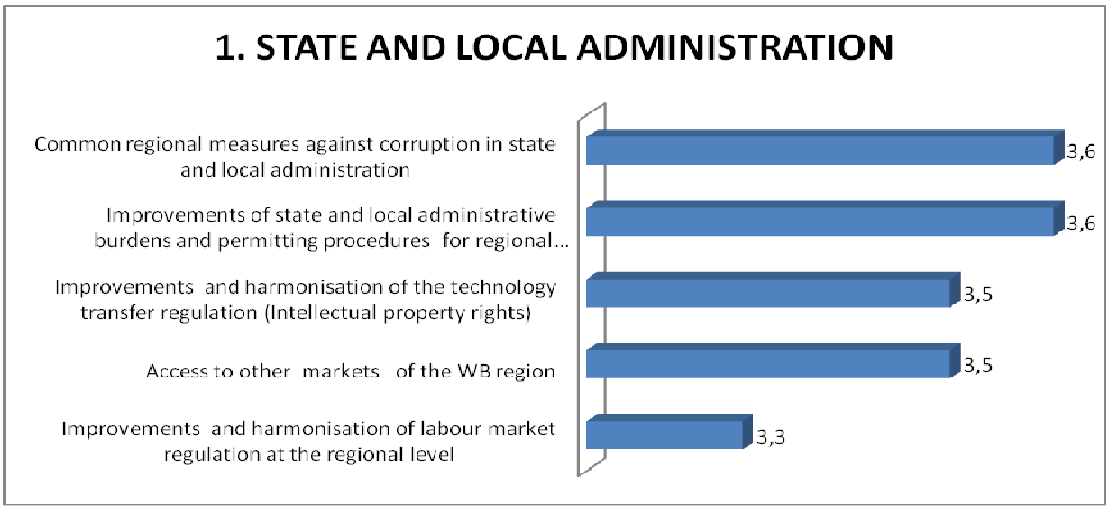
Figure 11: Factors which should be improved to foster regional innovation cooperation of companies



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

Although the improvements of all groups of factors were estimated as rather important for fostering regional innovation cooperation the most important factor which should be improved is the "state and local administrative regulations" (Figure 11). It includes primarily "common regional measures against corruption in state and local administration" and "improvements of state and local administrative burdens and permitting procedures for regional cooperation" Figure 12.1). It means that government structures in WC on both state and local level are perceived more as an obstacle than an accelerator of regional cooperation. However, the "access to other markets of the WB region" and "improvements and harmonisation of the technology transfer regulation (Intellectual property rights)" are also recognised as very important.

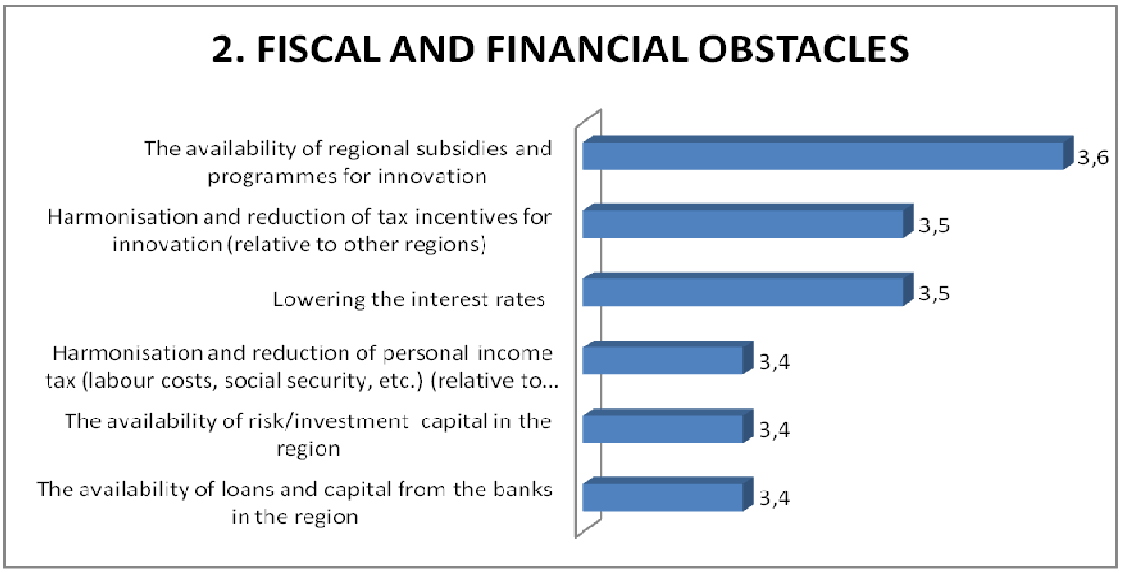
Figure 12: The most important factors of "State and local administration" which should be improved for fostering regional innovation cooperation



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

The next factor which should be improved is the “Financial and fiscal obstacles”. The respondents particularly stressed the need for “regional subsidies and programmes for innovation”. However, “lowering the interest rates “ and “harmonisation and reduction of tax incentives for innovation” are also estimated as very important (Figure 13).

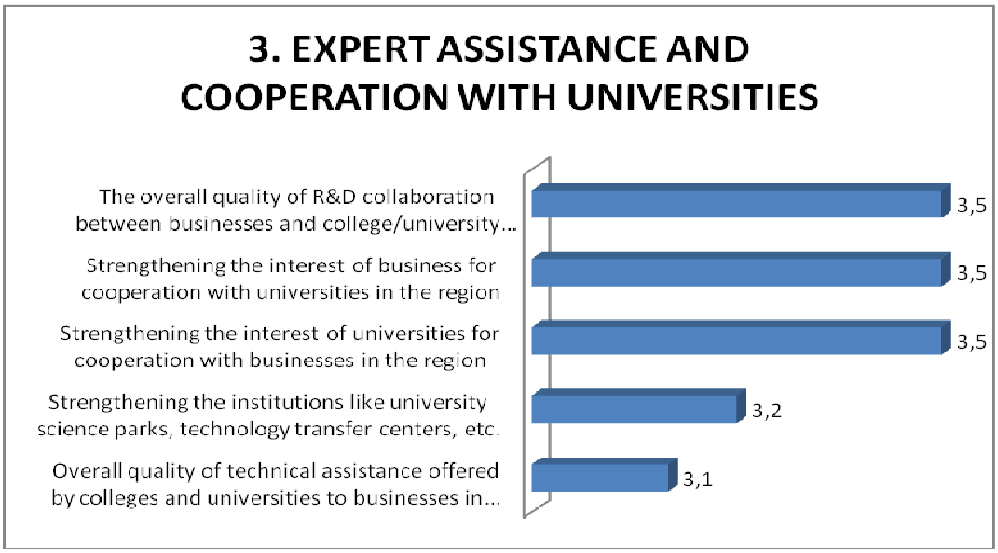
Figure 13: The most important factors of “Fiscal and financial obstacles” which should be improved for fostering regional innovation cooperation



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

On the third place is the “expert assistance and cooperation with universities” with the stress on upgrading the overall quality of science-industry collaboration in the region and strengthening the interest of both universities and businesses for mutual cooperation in the region (Figure 14).

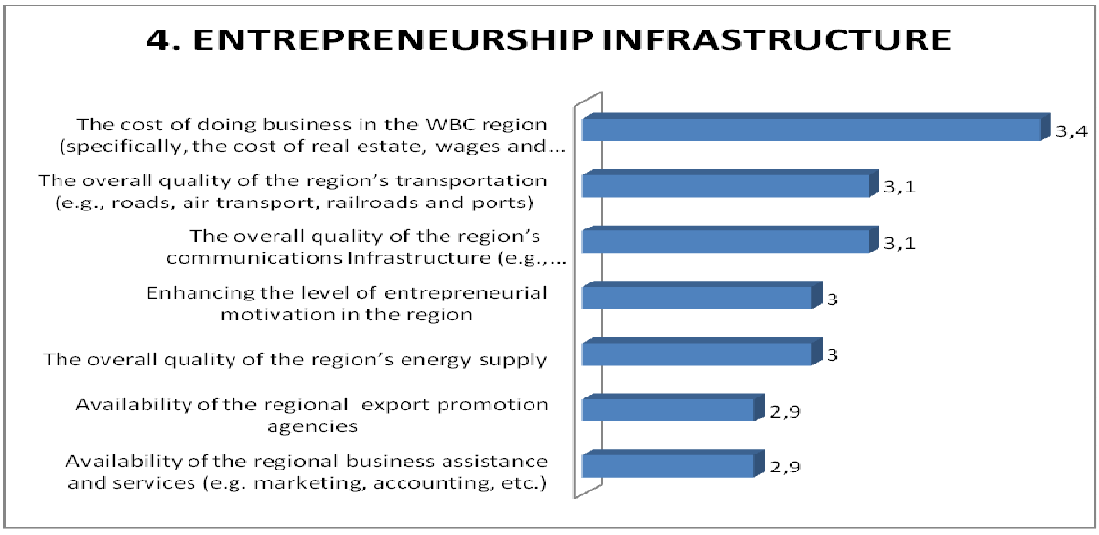
Figure 14: The most important factors of "Expert assistance and cooperation with universities" which should be improved for fostering regional innovation cooperation



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

The next group of factors which need improvements is "entrepreneurship infrastructure" with the stress on the cost of doing business in the WBC region (e.g. costs of real estate, wages and utilities) (Figure15).

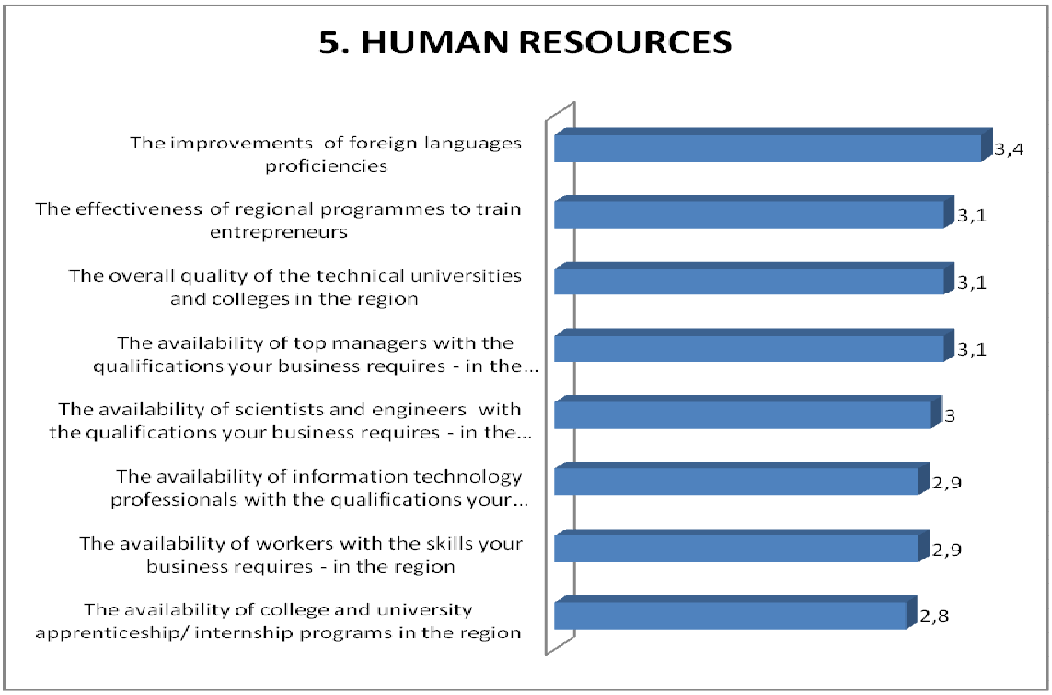
Figure 15: The most important factors of "Entrepreneurship infrastructure" which should be improved for fostering regional innovation cooperation



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

Factors that require the least improvements are those associated with human resources. However, the foreign language proficiencies are estimated as the most difficult and need improvements (Figure 16).

Figure 16: The most important factors of "Human resources" which should improved for fostering regional innovation cooperation

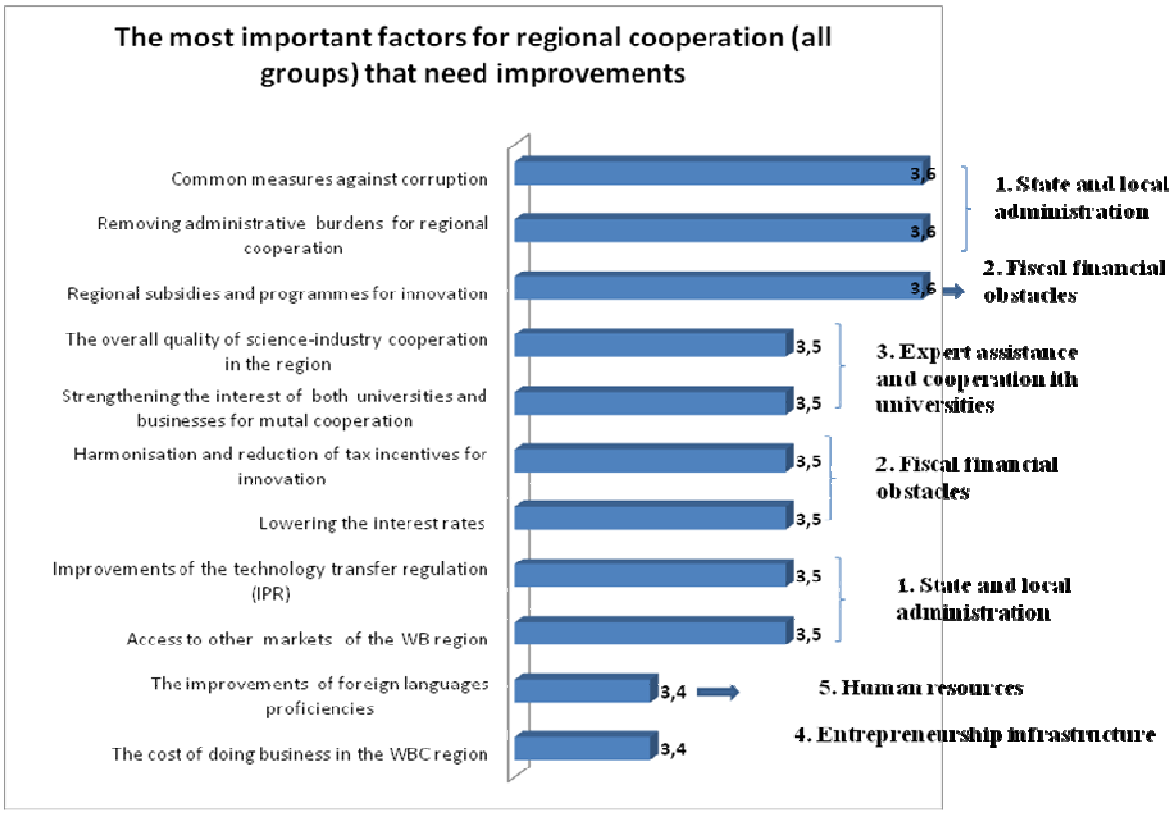


Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

If we take into consideration all the factors for regional cooperation (Figure 17), we can conclude that the most important factors which need improvements are classified as "State and local administration" and the "Fiscal/financial obstacles" and 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.

The following factors that needs improvements are related to science-industry cooperation and considers overall quality of science-industry cooperation on regional level and strengthening the interest of both businesses and universities for mutual cooperation. Among the factors of human resources the foreign language proficiency needs the most improvements while the most important factor of business infrastructure is related to the costs of doing business in the WBC.

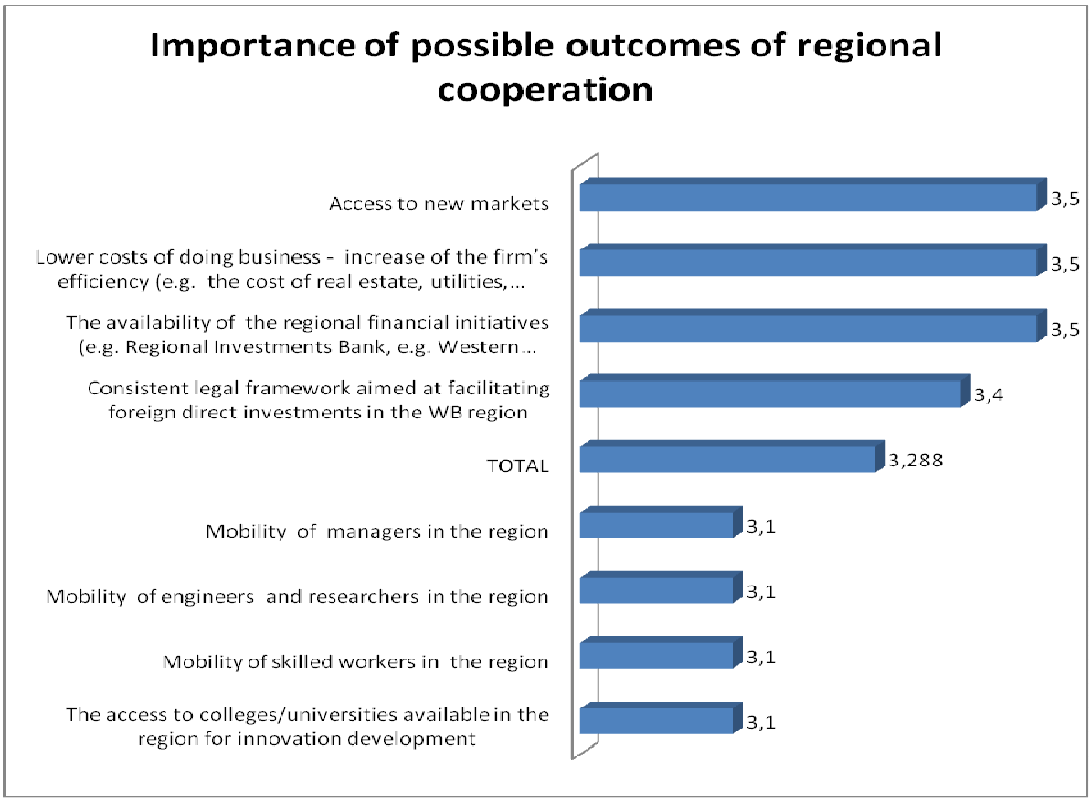
Figure 17: The most important factors for regional cooperation (all groups) that need improvements



Scale: 1-No importance; 2-little importance; 3- medium importance; 4- high importance

9. As far as possible **outcomes of regional cooperation** are concerned, the respondents estimate that they would benefit the most from the three factors that share the same value (mean=3.6): /1/ access to new markets, /2/ availability of the regional financial initiatives (e.g. Regional Investments Bank, e.g. Western Balkan Investments Fund), and the /3/ lower costs of doing business- increase of the firm's efficiency (e.g. the cost of real estate, utilities, lower labour costs, etc.) (Figure 5). It means that 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. It is interesting that also perceive the possible regional initiative such as Regional Investments Bank, e.g. Western Balkan Investments Fund as highly beneficial for their companies. It indicates the need of inclusion of such initiatives into the future strategic plans of regional cooperation.
Respondents also estimate the "legal framework aimed at facilitating foreign direct investments in the WB region" as rather important. The mobility of mangers, researchers, skilled workers as well as the access to the universities is less, but still, rather important

Figure 18: Importance of possible outcomes of regional cooperation



10. When **public support for innovations** is considered (in the last three years), large majority of respondents claims they received none. Only two respondents answered positively naming following supporting: 3TreCon.spa, Almer.spa, RAZUM and BICRO. Data on this topic remains insufficient and allows no further generalisation.

11. When the **importance of the different regional innovation actions** is considered for improving regional innovation cooperation, the respondents were asked to rank the twelve options from 1 to 12 (where 1 is the highest importance and 12 is the lowest importance). Although the difference between ranks is mostly rather small when answers are compared, it is possible to create a common rank of importance of proposed actions as shown in the Figure 19 (for comparison with the researchers see the Chapter 3.2.2.9).

Figure 19: Importance of regional innovation actions for improving regional innovation cooperation

12. Respondents were also asked to draw a few ideas stemming from industry to check whether research stakeholders in the region would have an interest in, as well as with whom they could collaborate in undertaking such research. These research topics are:

- 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 IT services and products within the Western Balkans;
- Research on new approaches and frameworks to enhance FDI and cross-regional investments in the region.

Although all respondents were asked to express their opinion on actions and policies necessary to realize such innovation ideas, only one respondent stated, in relation of FDI that governments, especially ministries of economy should take necessary steps to make WB region more attractive for FDI.

3.2.2 The survey of innovation and market needs of the researchers

The second questionnaire is addressed to the researchers and other innovation stakeholders in WBC. Since the data were collected via on-line questionnaire which included 841 addresses we have succeeded to collect 79 responses.

The questionnaire was constructed in such a way that majority of estimations requested by the responders were asked for two periods: the present and the future in 2030.

The main findings are, as follows[35]:

3.2.2.1 Science – industry cooperation (Q4)

The science-industry cooperation, as described in the previous chapter is recognised by the companies as important for their innovation capacities (the averages of all factors on the scale from 1 to 4 is rather high; mean=3.2). The two most important actions for fostering science-industry cooperation that needs improvements (Figure 16) are recognised by both companies and researchers and address:

a) more funding for collaborative research between universities and businesses;
b) more funding for knowledge/technology transfer activities and expert consultations.

A high percentage of around 74 % of researchers think that “More funding for collaborative research between universities and businesses” is critical today and even more, around 81% believe it will become more important in the future. Also, more than 60% of researchers think that “More funding for knowledge/technology transfer activities and expert consultations” is critical today and even more so in the future, around 80%.

The difference between entrepreneurs and researchers regarding the most important factors appears in relation to the next or the third most important factor. Entrepreneurs think that the “Greater understanding by researchers of the needs of business companies and industry” is of critical importance and ranked it in the third place. Researchers perceived the “Introduction of regular business/technical advising

[35] It should be noticed that statistical analysis was carried out by the project partner JRC-IPTS responsible for the sub-task of WP 8.1 related to identification of future research and market needs and presented in the study, entitled: “Results of the survey on market and research innovation needs”. Since JRC-IPTS has not provided us with the source of data suitable for statistical analysis but only the data in Word format were available, we can only (re) interpret the results shown in the JRC-IPTS study.

services at universities for the needs of businesses" as the third most important factor which is, however, perceived by entrepreneurs as the least important factor. It might indicate that companies already have experienced such advising activities without an impact on their businesses. This also indicates real communication barriers between entrepreneurs and scientists and a lack of understanding of each other needs. It suggests that a dialog between innovation stakeholders should be established in the future. It could take different models like thematic workshops, exchanging of idea, brokerage events, etc. Of course, funding of collaborative research and technology transfer activities which are highlighted by the both sides as critical for science-industry cooperation could play a leading role.

Figure 20: The most important factors for science-industry cooperation

	Companies	Researchers - Today	Researchers in 2030
More funding for collaborative research between universities and businesses	1	1	2
More funding for knowledge/technology transfer and expert consultations	2	2	1
Greater understanding by researchers of the needs of business companies and industry	3	6	8
Development of local partnership/inclusion of universities in clusters or business associations	4	9	9
Greater understanding by researchers of intellectual property rights (IPR) and its implications	5	6	10
Easy access to professional technology transfer officers (or similar staff)	7	11	6
Establishing of university incubators or science parks	8	10	9
Financial incentives for university staff which cooperate with companies	9	8	11
Better mobility (exchange) of researchers between universities and industry	10	5	5
Organization of specialized training courses by universities for the needs of industrial sectors and companies	11	4	4
Creation of specialised large-scale programmes for cooperation of companies and research institutions (e.g. technology platforms)	12	7	7
Introduction of regular business/technical advising services at universities for the needs of businesses	13	3	3

3.2.2.2 The factors which should be improved for fostering regional innovation cooperation (Q5)

The factors which should be improved to foster regional cooperation, as explained in the analysis of companies' survey, were divided in five groups: Human

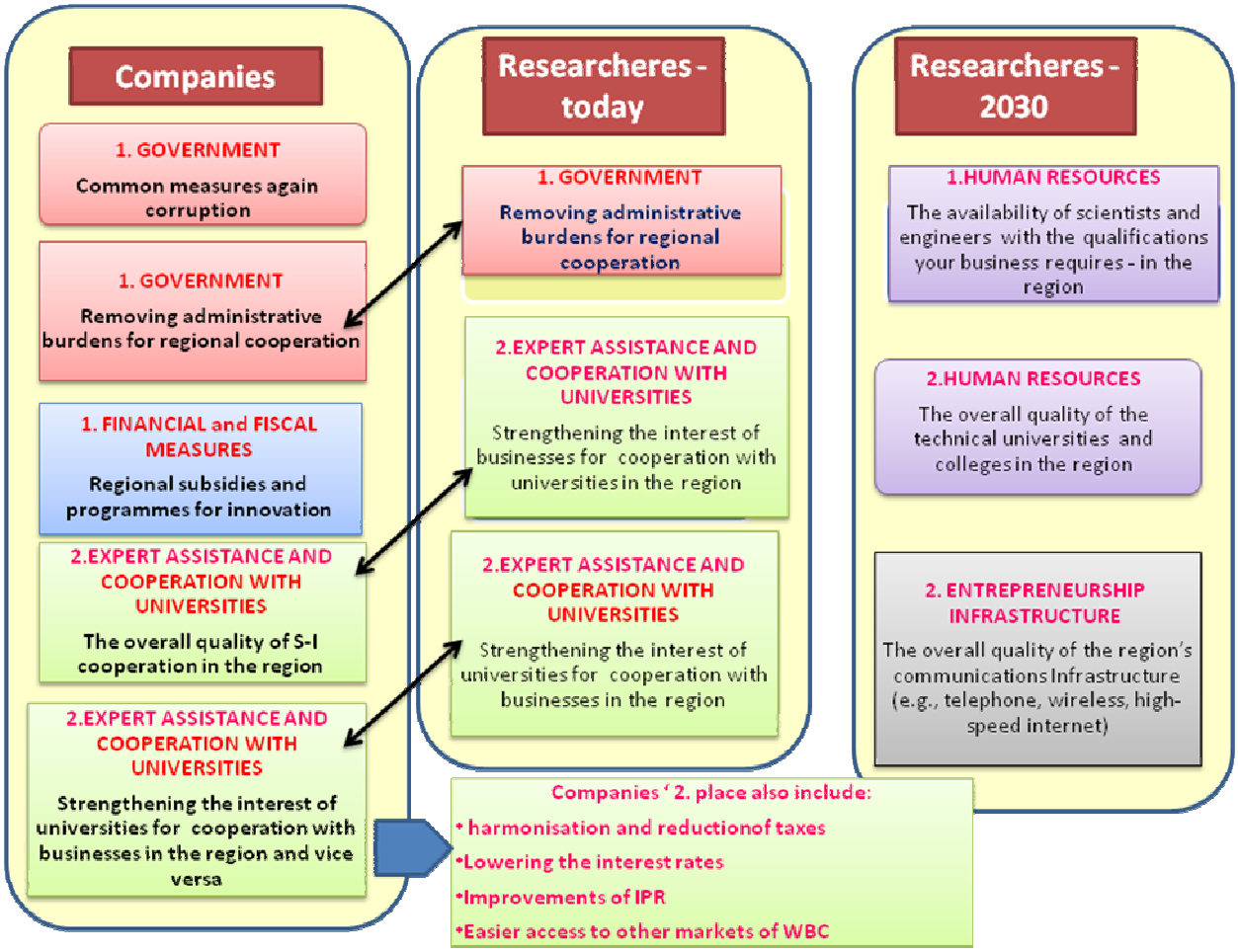
resources, Entrepreneurship infrastructure, Expert assistance and cooperation with universities, Fiscal and financial obstacles, State and local administrative regulations**.**

The factor “Removing administrative burdens for regional cooperation” appears as the most important factor that needs improvement for fostering regional innovation cooperation. It is ranked by researchers at the first place while for entrepreneurs it share the first place together with another two factors - “Common measures against corruption” and ““Subsidies and programmes for innovation at the regional level” (Figure 21).

Unlike entrepreneurs, researchers classified “Expert assistance and cooperation with universities” (i.e. Strengthening the interest of businesses for cooperation with universities in the region and vice versa”) amongst the critical factors. However, science-industry cooperation is also estimated by entrepreneurs as the very important factors for regional cooperation since they ranked “the overall quality of science-industry cooperation” and “strengthening the interest of universities for cooperation with companies and vice versa” at the second place.

Researchers believe that in the future, the “Human resources, i.e. “availability of scientists and engineers with the qualifications for the business in the region” and “overall quality of the technical universities and colleges in the region” will have the decisive role. They also recognised the importance of the entrepreneurship infrastructure – „overall quality of the region’s communications infrastructure (e.g., telephone, wireless, high-speed internet) and put it on the third place by importance.

Figure 21: The groups of factors that needs improvements for regional innovation cooperation ranked the first and second place by all the countries



The overview of factors for fostering regional cooperation perceived **by researches by countries** give us slightly different results, probably because of the great scattering of answers provided by the respondents (Table 6).

Table 6: The factors that needs improvements for regional innovation cooperation ranked first and second place by researchers, **by countries**

	1. place		2. place		
Albania	Improvements and harmonisation of **labour market regulation** at the		2. The overall quality of the region's **energy supply**	2. The overall quality of the region's **transportation** (e.g., roads, air transport, railroads)	

	regional level				
Bosnia and Herzego-vina	The improvements of **foreign languages proficiencies**		The overall quality of the region's **energy supply**	The overall quality of the region's **transportation** (e.g., roads, air transport, railroad	
Croatia	The overall quality of the **region's energy supply**	Improvements of **administrative burdens** and permitting procedures for regional cooperation	Common regional measures against **corruption** in state and local administration	The availability of regional **subsidies and programmes** for innovation	The overall quality of the region's **communications infrastructure** (e.g., telephone, wireless, high-speed internet)
FYR Macedonia	Strengthening the **interest of universities** for cooperation with business in the region		Strengthening the institutions like **university science parks, technology transfer centers**, etc.		
Montene-gro	The improvements of **foreign languages proficiencies**		**Energy supply**, **transportation**, cost of doing business, technical universities, university apprenticeship, top managers, scientists and engineers, etc.		
Serbia	Strengthening the **interest of business** for cooperation with universities in the region		Common regional measures against **corruption** in state and local administration		

The overview of factors (ranked in the first and second place by researchers) that need improvements for fostering regional cooperation by countries reveals that:

- The regional energy supply is recognised by all the countries except Serbia and FYR Macedonia as the critical factor for regional cooperation;

- The improvement of the foreign languages proficiencies is placed first by Montenegro and Bosnia and Herzegovina.
- For Albania the most critical factor is improvements and harmonisation of labour market regulation at the regional level.
- For Serbia and FYR Macedonia the most important factor is the strengthening of interest of universities and business for mutual cooperation (FYR Macedonia stresses strengthening the interest of universities for cooperation with business while Serbia stresses, contrary to FYR Macedonia, strengthening the interest of business for cooperation with universities);
- Corruption is recognised by Serbia and Croatia as an important barrier for regional innovation cooperation since they placed it among the second most important factors;
- The overall quality of the region's transportation (e.g., roads, air transport, railroads and ports) is recognised as the second most important factor by Albania, Bosnia and Herzegovina and Montenegro;
- Communications infrastructure is highlighted only by Croatia;
- Strengthening the institutions like university science parks, technology transfer centres is highlighted only by FYR Macedonia

The analysis of factors important for regional cooperation perceived by researchers in particular WB country revels that researchers in WB region, similarly to entrepreneurs perceive a variety of barriers to innovation cooperation. Unlike entrepreneurs who see the main barriers in administrative obstacles – corruption, administrative burdens and a lack of financial and fiscal supporting measures for regional innovation cooperation, researchers perceive as the most critical the following factors: energy supply, foreign language proficiencies, harmonisation of labour market regulation, strengthening the interest of universities and business for mutual cooperation, corruption and a quality of the region's transportation.

3.2.2.3 Expected Outcomes (Q6)

Researchers believe, similarly to entrepreneurs (Figure 14) that the main **outcomes from regional cooperation** are: lowering costs of doing business (ranked first) and availability of the regional financial initiatives (e.g. Regional Investments Bank, e.g. Western Balkan Investments Fund) (ranked second place). Contrast to entrepreneurs who emphasised the access to new markets as very important outcome, researchers sorted out at the third place the " access to colleges /universities in the region for innovation development"

Similarly to entrepreneur, researchers also estimate the "legal framework aimed at facilitating foreign direct investments in the WB region" as rather important. The mobility of mangers, researchers, skilled workers as well as the access to the universities is less, but still, rather important

3.2.2.4 Most important actions for improving regional innovation cooperation (Q7)

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 (Figure 18).

The three actions least important for industry are among the four most important for researchers. They include:

a) common programmes for mobility of personnel in the region between universities and business to establish cooperation between science and industry;
b) consistent legal framework aimed at facilitating foreign direct investments in the WB region;
c) 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. The establishing of the regional venture capital fund which is perceived by the companies as the most critical factor for improving regional innovation activities is next to the least important factors for researchers. The similar is with the “Creation of regional financing programme for innovation” which is ranked third by the companies and sixth by researchers.

Figure 22: 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

The only action which appeared important for both business and researchers is ranked third for both of them, and addresses the "Developing regional initiatives for large infrastructural projects". Therefore, it could be stated that despite substantial differences in perceiving the most important factors for improving regional innovation cooperation both the sides are aware of the lack of infrastructural projects that are sufficiently large and capital intensive to demand cooperation of several WBC and could have, thus, significant influence on the development of several partners or the whole region. Since the large infrastructural projects are not precisely specified in the questionnaire we can supposed that respondents refer to infrastructural projects in areas such as information and communication (ICT) networks, transportations (modernization of railways, highways), energy resources, clean technologies (water supply and purification) business-innovation infrastructures (e.g. large storages) and similar projects that are usually supported by the EU structural and pre-structural funds

3.2.2.5 Interest to work in a few research topics/fields (Q8)

The analysis shows that researches share interest with industry in three research topics, as follows:

- environment surveillance through ICT;
- automation of information management systems through artificial intelligence and agent based software;
- research on new approaches and frameworks to enhance FDI and cross-regional investments in the region.

It can be supposed that WBC shares many similarities regarding business and technology development and naturally are oriented towards each other. However there is a lack of information of areas of possible cooperation. The attempt to identify cooperation areas within this analysis which results in the three areas of potential interest emphasises the need of making an exercise in mapping the technologies and research with commercial potentials within WBC region.

3.2.3 Open questionnaire to selected innovation experts

Since the response rate on questionnaires were rather poor and since the project work plan has also foreseen the interviews with the different stakeholders of the innovation system in the WBC we tried to collect the data on innovation performance and regional innovation needs by the semi-structured interviews in the form of questionnaires distributed by the e-mails (Annex 3). Although only four respondents were selected from each country, the response rate was very low. We collect only two responses from Croatia, four from Montenegro, two from F.Y.R. Macedonia, and one from Kosovo UN Res.1244, while there were no responses from Serbia, B&H and Albania. Anyway we are of the opinion that analyses of the statements of these nine innovation experts are rather inserting and valuable contribution for highlighting and understanding the whole situation in the region.

The responses resulted in the following findings:

The **economic development in the five last years** of **Croatia** and **Kosovo UN Res.1244** were estimated as unsuccessful. Both respondents from **FYR Macedonia** estimated that FYR Macedonia was both – successful (since government managed to pass the world economic crisis without significant drop of GDP and some sectors like textile and metal industry were developed) and unsuccessful because the unemployment rate is still very high around 31%, as well as the degree of poverty is also very high around 35%. Two (out of four) respondents from **Montenegro** estimate that their country was successful despite financial crisis that started in 2007 and despite decreasing of industry and exports. FDI rate raised by 99% and GDP raised by 33% while unemployment decreased to 11%.

The main **catalytic event that led to relative success** of the **Macedonian** economy is the government policy focused on supporting domestic industry and construction sector, in order to compensate for the loss of external demand during the crisis and immediately in the post-crisis period. Besides, state budget in 2011 increased capital expenditures by 30%t compared to 2010. In **Montenegro** the main driver was FDI (FDI rate raised by 99%), government programmes for entrepreneurship, employment and foreign investments, development of higher education, innovation strategies and SMEs. The catalytic even are not stated in **Croatia** and **Kosovo UN Res.1244.**

The **major barriers to economic prosperity** are:

- In **FYR Macedonia** - global financial crises since Macedonian trade balance highly depends on export in black metallurgy and agriculture, both of which were severally affected by the economic crises; the crises negatively influenced the great efforts undertaken by the government to attract direct foreign investments through lowering the taxes and creating free economy zones. In 2009-2010 FDI were less than €20m. There is also a lack of national innovation strategy and very small percentage of GDP is devoted to R&D (only 0.11% of GDP for 2010, while less than 0.01% from business sector);
- In **Kosovo UN Res.1244** there is a lack of strategic plan for economic development and unstable institutional environment; innovation policies are not in the agenda of government at all;
- In **Montenegro** the main barriers for entrepreneurs are high labour costs, local taxes and contributions, lack of favourable financial means and administrative barriers and weak exports abilities;
- In **Croatia** – the government (at all levels) is incompetent for strategic development and focused on membership in the EU not on the economic prosperity of the country.

The **good example of government polices for fostering innovation** are;

- In **Montenegro** - good example is establishing of two business incubators, business start up centre Bar with 17 tenants, Innovation incubator in Podgorica, IT incubator with 6 tenants. Moreover, network of 11 business centres is functioning along with European Centre for Information and Innovation. Plan is to develop Strategy for clustering and Centres of excellence. Remaining good examples are tax incentives and establishing of business incubators;
- In **FYR Macedonia** – Macedonia become in 2010 a part of the European Innovation Scoreboard (Innovation Union Scoreboard) for the first time. This research provided important data for locating the crucial aspects of the Macedonian Innovation System, and good benchmark with the other European countries. Based on this data, the Macedonian government in

cooperation with OECD is developing Macedonian Innovation policy 2012-2020. However, there are only a few start-up centres ad incubators and while there no technology parks yet[36];

- In **Croatia** – good example is Technology park Zagreb (initiative of the City of Zagreb), the whole innovation system and tax incentives for R&D in the business sector;
- I **Kosovo UN Res.1244** - tax incentives and business incubators.

Polices which help firms to innovate are in **Croatia**: tax incentives, subsides for start-up enterprises and subsides for R&D within business entities and programme for commercialisation of innovation managed by the BICRO. In **Montenegro** these polices include: transfer of technology, access to credits, access to consulting services, possibilities for networking/clustering, partnership and cooperation, tax incentives, information dissemination, industry-academy cooperation. In **FYR Macedonia**, the Agency for Promotion of Entrepreneurship in 2010 started to issue the "Innovation Voucher", a state tool for fostering innovation in SMEs. Support from Ministry of education and science to technological-development projects that are implemented with business sector helps companies to innovate.

The **policies which hinder innovation** include in **Kosovo UN Res.1244** a lack of fair competition. Informal economy and corruption influenced firms to compete with means rather different from innovation. **In Croatia** the hindering polices are monetary and fiscal policies as well as orientation of economy towards imports of goods. In **FYR Macedonia** the factors that hinder innovation are: lack of tax incentives, not clear responsibility who will run NIS in FYR Macedonia (there is already established dialog and base between the Ministry of economy and Ministry of education and science, but it must be officially structured), lack of innovation fund and venture capitalists, business angel network is missing.

In **Montenegro** these factors include: low implementation level of strategic documents and laws; shortage of researchers and experts for innovative activities, law level of cooperation between firms and science and absence of funding for all stages of innovation cycle.

The **governments' effectiveness in fostering innovation** in **Montenegro** is limited to legislative and declarative level. Montenegro has recently adopted the Strategy for scientific-research activity 2008-2016 while the creation of legislative and institutional framework in innovation field is at the beginning. Creation of links between firms and RD institutions are in early phase. The effectiveness of government in **FYR Macedonia** is estimated as moderate, but more qualified estimation is not possible since FYR Macedonia is beginner in establishing the innovation system. The effectiveness of the **Kosovo UN Res.1244** government is estimated as low and in Croatia as not effective.

[36] This information is not in compliance with previous data

The **contribution of universities to innovation** in **Montenegro** is estimated as rather weak (or left with no answers) in all given categories (research partnership, partnership in research commercialisation, provision of qualified employees). In **Kosovo UN Res.1244** the role of universities in innovation creation is also estimated as weak. In **Croatia** it is estimated that universities do not provide any input to innovation on the one hand, and, on the other hand, it is estimated that there are good examples of their contributions. Despite,, universities are not interested in cooperation with industry while the expert knowledge of university staff has been worsening since they are lacking the experience outside universities.

Contrasts to other countries, respondents from **FYR Macedonia** think that the contribution of universities to innovations is important since innovation are mainly coming from academia. Besides, significant part of the research activities in the country is carried out at the universities while universities' researchers and professors are included in the development of policies and strategies. However, this is based on the individual initiatives and does not present an organised system. In some cases the universities and research centres assigns contract with the companies to work together and to stimulate researches.

There are success stories where the player (academia and SMEs) have achieved significant results working together on innovative products or services. However, commercialization of the research is one of the weakest points in the universities' activities.

Although universities tend to develop theory based curricula, the graduates are rather prepared for the needs of the industry. In the last period, especially in the process of the adaptation of curricula to meet the requirements of the Bologna process most of the Universities made efforts to base their curricula on competences needed for the industry. But there is a lack of well qualified researchers. Postgraduate studies are mainly connected with innovative companies to develop new innovative products

The respondents from **all involved countries** estimated that **companies** also are not prepared to cooperate with universities since they **do not perceive universities' research as useful** and they do not expect valuable results. There is a lack of communication between universities and industry.

The **regional innovation cooperation** is perceived by **all the respondents but one from Croatia** as necessary and welcome. The reasons are as follows: the WBC individual markets and industrial capacities are too small to be strengthen independently; the WBC, because of the similar economic development level, common history and common future in the European Union have to work together on the innovation capacities of its industry; WBC share similar background while the models of business activities are quite similar; the countries of the region are small with very limited human and infrastructural resources; EU is going to foster smart specialisation as a regional approach, as written in the strategy Europe 2020 and for this reason the region needs to develop its joint competitiveness.

The main **benefits from the regional cooperation** are estimated, as follows:

- Networking, partnerships, clustering;
- Information flow, sharing experience, joint efforts and results;
- Overcoming the limitations of the small markets (expended markets);
- Providing better position for access of EU funds;
- Rivalry and constructive completion with the aim of developing and transfer knowledge and technology;
- Outsourcing of activities that cannot be performed in a particular (less developed) country;
- Joined research capacities, transfer of know-how between countries, joint projects;
- Joint development of new products and services with bigger value added;
- Increase of confidence;
- Global problems needs a global responses (e.g. financial crisis), and answering to these challenges requires regional cooperation to respond.

The **major obstacles to regional cooperation** are, as follows:

- Tensions between countries due to the war of independence;
- Lack of trust;
- Motivation, low readiness for cooperation;
- Political relations, political barriers;
- Differences in the level of development;
- Information about partners and policies to foster and help these partnerships; a lack of investments and skilled labour.

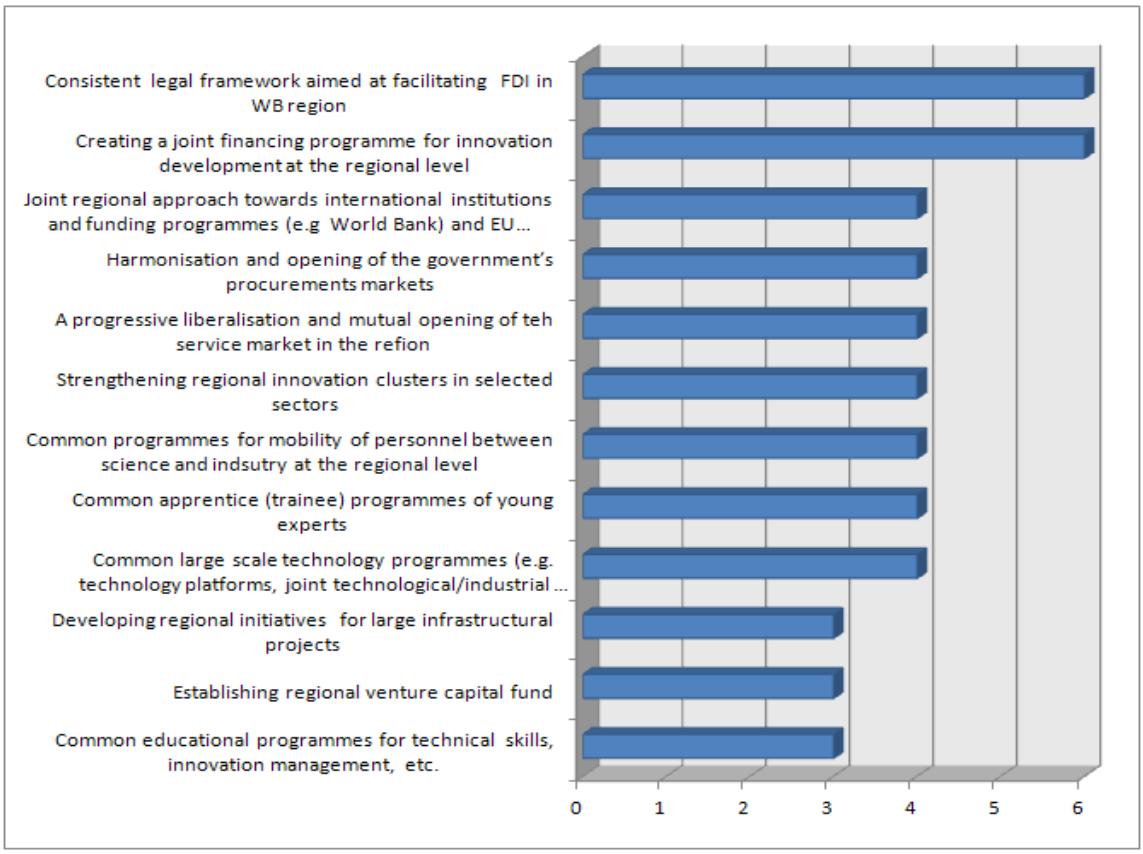
The ideas for **government actions that should foster regional innovation cooperation** are, as follows:

- Provide joint programmes for funding, offer incentives;
- Develop the common public regional database for innovation, subjects of works and innovations;
- Foster the three-party cooperation among the academia, government and businesses at the regional level;
- Establish tax incentives for the regional partnerships;
- Encourage public procurement to enforce innovative products and services;
- Initiate regional financial schema or regional development bank;
- Create specific programmes for innovation and cooperation between institutions and/or firms;
- Better involvement in EU regional structure funds, foster cross-border cooperation regarding to innovation;
- Establish an agency for innovation at the regional level.

Finally, selected innovation experts, thinks that the most important **joint actions** to be taken for better regional innovation cooperation, are: consistent legal framework for facilitating FDI in the region and crating joint financing programme for innovation at the regional level. These preferences are a certain combination of joint actions suggested by both entrepreneurs (who perceive establishing of the **regional venture capital fund** and **regional financing programme** for innovation as

substantial) and **research who perceive** legal framework for fostering FDI as important as mobility of personnel and opening and liberalisation of service market (probably for R&D services) (Figure 23).

Figure 23: Actions at the regional level for improving regional innovation cooperation



3.3 Conclusions and recommendations

The main factors which need improvements to foster regional cooperation perceived by both **entrepreneurs and researchers** are**:**

a) state and local **administrative burdens and procedures** for regional cooperation;
b) expert assistance and **cooperation with universities** that involves two sub-factors:
   - enhancing the overall quality of science-industry cooperation in the region;
   - strengthening the interest of universities for cooperation with industry and vice versa.

Since we are missing the precise data about administrative obstacles to regional cooperation it could be recommended that further studies should involve identification of the **administrative burdens and procedures in order to remove it and facilitate** regional innovation cooperation.

Both sides, companies and researchers, estimate that the **interest for science–industry** cooperation is weak and both sides plead for more **understanding of each other needs. It points to the communication barriers** between entrepreneurs and scientists and emphasise the need to establish a dialog and communication between science and industry sphere (e.g. thematic workshops, exchanging of idea, brokerage events, etc.).

Contrast to the state and local administrative regulations and cooperation with universities which are presently regarded as important to both business and research stakeholders, investing in **human resources** (scientists and engineers; quality of technical universities) and in the **entrepreneurship infrastructure** (telephone, wireless, high-speed internet, etc.) seems to be critical to enhance cooperation in the region in the **future.**

The **remaining** most important factors that need improvement for fostering regional cooperation perceived by **entrepreneurs** are:

a) Common measures against corruption;
b) Regional subsidies and programme for innovation cooperation.

It calls for additional measures against corruption at the national level and investigating the possibilities of establishing common measurers at the regional level. The measures for financial and fiscal support for innovation at the regional level should be set-up.

The main barriers to regional cooperation perceived by **researchers by countries** are slightly different from results on the aggregate level, probably because of the great scattering of answers provided by the respondents, and involve:

/1/ regional energy supply, /2/ foreign language proficiencies, /3/ strengthening the interest of universities and business for mutual cooperation, 4/ corruption and /5/ quality of the region's transportation, harmonisation of labour market regulation.

There is a need to: /1/ identify and solve the problems of energy supply at the regional level, /2/ strengthening educational programmes for foreign languages, /3/ identify and upgrade quality of the region's transportation, /4/ harmonise the labour market regulation.

The two most important actions for **fostering science-industry cooperation** are recognised by both companies and researchers and address:

c) more funding for collaborative research between universities and businesses;

d) more funding for knowledge/technology transfer activities and expert consultations.

It calls for the establishing of the different supporting programmes and policy instruments for science-industry collaboration and technology transfer. Some models will be proposed within the T8.2 -Identification of good practices in innovation policies with a view of adaptation and adoption of the good practices.

With regard to **joint actions** to be taken for better regional innovation cooperation, there are **substantial differences** between entrepreneurs and researchers. **The three actions least important for industry are among the four most important for researchers, as follows:**

1. mobility of personnel;
2. legal framework for fostering direct foreign investments (FDI);
3. opening and liberalisation of service market (probably for R&D services).

Entrepreneurs, contrast to researchers, perceive the establishing of the **regional venture capital fund** and **regional financing programme** for innovation as substantial for **regional innovation cooperation.**

Despite the above differences, both parties recognised the **lack of infrastructural projects** for fostering regional innovation cooperation. We may conclude that there is a need to identify, create and implement infrastructural projects that are sufficiently large and capital intensive to demand cooperation of several WBC: ICT, transportations, energy resources, clean technologies, etc. This finding **corresponds** to the main identified barriers to regional cooperation identified by research in individual countries: problems of **energy supply** at the regional level and upgrading the quality of the region's **transportation.**

Besides, results suggest that companies are in favour of establishing of the **regional innovation venture capital fund. This is consistent to the previous finding that entrepreneurs are lacking regional funding programmes for developing.**

The expected **outcomes** from regional cooperation, for both researches and entrepreneurs are lowering costs of doing business and availability of the regional financial Contrast to entrepreneurs who emphasised the access to new markets as very important outcome, researchers sorted out the " access to colleges /universities in the region for innovation development" at the third place

Finally, this research succeeded to identify **three areas of potential** science-industry cooperation in the WBC. It seems that such a research might be rather interesting in future and an exercise in mapping the technologies of mutual interests could facilitate innovation cooperation.

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5 ANNEXES

5.1 Annex 1: The Common Screening Table on the NISs of WBC

Country	Main structure and characteristics of the national research and innovation system
Albania	Science system in Albania includes the higher education, scientific research, knowledge and technology (innovation) development. As such it includes not only the public and non-public institutions of higher education and basic research, but also entrepreneurships operating in the field of research, development and innovation **I**nnovation **S**ystem: **Central Government** • National Council for Science and Innovation • Ministry of Education and Science MES • Ministry for Innovation and for Information and Communication Technology • Line Ministries o Ministry of Economy, Trade and Energy o Ministry of Agriculture o Ministry of health o Ministry of |Defence o Ministry of Environment **National Institutions** • Agency for Research, Technology and Innovation (ARTI) • National Agency on Information Society (NAIS) • Patent Office **Research Bodies** • Universities • Centers of Excellence • Academy of Scienc***e*** **Annual Gross domestic expenditure on R&D** (GERD) amount to around 15 million EUR in 2009, i.e. less than 0.2 percent of GDP. This expenditure is almost exclusively funded by the public sector and by foreign sources. The government is committed to increasing funding for higher education and scientific research. In this view, the 2009 budget is 2.2 times higher than in 2005. Actually, the only 'research-funding' programme is a small scale competitiveness funding programme (currently 132 projects for a total budget of $5m, implemented over 2–3 years) run by MES. In 2006, the Albanian government undertook a comprehensive reform of the scientific research system. The main outcomes of this reform are

	summarized as follows: a) the Academy of Sciences of Albania was re-organized according to the model of many European countries: it now operates through a selected community of scientists organized in sections and no longer administrates research institutes b) the research institutes of the Academy were detached and integrated into the higher education system. c) *Research Institutes* (RIs) under the line ministries were re-organized and twelve Technology Transfer Centers and Agencies were created, having as their main mission the transfer of technologies and knowledge and provide expertise to policy-making in relevant fields. Completion of the structural reform in 2008 with the integration of RIs of the Academy of Science and line ministries in universities brought Albanian research system in line with those of most European countries in which higher education and research are integrated together, as a fundamental principle of modern science systems. At present, it is difficult to make a precise estimate of STI investment levels, the performance of public, academic and business organizations that conduct research, or of the "innovation system" in general. R&D and innovation statistics are collected not in line with international (OECD, Eurostat or UNESCO) standards.
Bosnia and Herzegovina	Bosnia and Herzegovina according to its Constitution is consists from two entities: Federation of Bosnia and Herzegovina Republic of Srpska "Framework Law on the Basics of Research and Development Activities and Coordination Internal and External Scientific and Research Cooperation of Bosnia and Herzegovina" regulating scientific and research issues on the State level. Scientific and Research and Technology issues are operationally and legally in the jurisdiction of the entities in accordance to entities and cantonal legislative: This issue is Repulic of Srpska is regulated by the "Law on the Research and Scientific activities in Republic of Srpska (Sl.Gl.112/07) In Federation of Bosnia and Herzegovina which is consists from ten cantons, each canton has its own legislative regulating this issue. For example Canton Sarajevo has "Law about scientific and research activities" (2004). According to the official data very low level and structure of science and research financing: Total budget is below 0,1% of GDP, and participation of the State (entities and state) is over 80%, Participation of business sector is around 10%

<table>
<tr><td></td><td>Participation of the education institutions and others is below 10%;

According to the Statistical Agency of Bosnia and Herzegovina in 2006/2007 percentage of high educated population was 6-7%.</td></tr>
<tr><td>Croatia</td><td>The composition of GERD:
Business 40.7%, HEI 33.7%, Government 25.5%

Slow restructuring of the public institutions coupled with secondary role of innovation in business strategies

Low base of research with a commercial potential

Technology transfer processes and institutions are being developed

Solid, but underfunded support measures</td></tr>
<tr><td>Former Yugoslav Republic of Macedonia</td><td>A. Public sector:
- Ministry for Education and Science (MoES)
- Ministry for Economy (MoE)
- Other ministries:
o Finance
o Agriculture
o Information society
o Transport
o Local self-government
o Environment and physical planning
- Universities
- MANU (Academy)
- Research institutions
- Agency for promotion of entrepreneurship
- State office for intellectual property
B. Private Sector
- Chambers of commerce
- Private universities
- Research centers within companies
- Individuals – inventors
- NGO’s
C. R&D costs (table 1)
Table 1. R&D costs as percentage of GDP
<table>
<tr><th>Kind of costs</th><th>2003</th><th>2004</th><th>2005</th><th>2006</th><th>2007</th></tr>
<tr><td>% of GDP for science/research</td><td>0.22</td><td>0.25</td><td>0.24</td><td>0.21</td><td>0.18</td></tr>
<tr><td>Participation of the business sector/ GDP</td><td>0.003</td><td>0.015</td><td>0.03</td><td>0.03</td><td>0.04</td></tr>
</table>
</td></tr>
</table>

	<table><tr><td>Funds from the state budget/ GDP for science and research</td><td>0.14</td><td>0.12</td><td>0.11</td><td>0.10</td><td>0.09</td></tr><tr><td>Participation of the higher education/GDP</td><td>0.08</td><td>0.11</td><td>0.10</td><td>0.08</td><td>0.05</td></tr></table> **Table 2. Employees in the field of science and research** <table><tr><th>YEAR</th><th>2003</th><th>2004</th><th>2005</th><th>2006</th><th>2007</th></tr><tr><td>Total</td><td>2589</td><td>2552</td><td>2642</td><td>2373</td><td>2394</td></tr><tr><td>Business sector</td><td>67</td><td>136</td><td>158</td><td>78</td><td>79</td></tr><tr><td>Government sector</td><td>829</td><td>754</td><td>754</td><td>671</td><td>668</td></tr><tr><td>Higher education</td><td>1693</td><td>1662</td><td>1730</td><td>1624</td><td>1647</td></tr></table>
Kosovo, UN Res.1244 , UNMIK	No national research and innovation system in place There is no data on size of the research system in relation to the economy such as structure of GDP (GVA), structure of GERD, number of researcher by sectors, share of R&D personnel in the business enterprise sector as the % of the labour, etc For the first time, this year government devoted 1 million Euros for research only for public institutions. 0.1% of the Kosovo, UN Res.1244 's budget is devoted for research projects
Montenegro	Researchers' community consists of about 766 researchers, 117 part-time, 480 full time or external associates. The greatest number of researchers in humanities and social sciences. Gross domestic expenditure on RTD was o,13% in 2007, the same as in 2002. Gross government expenditure on RTD- ratio to GDP was 0,053% in 2007, relate to 0,044% in 2002. Gross business enterprise expenditure for period 2002-2008 is not available. The same situation is for gross foreign investment in RTD. No action plan for increase of investment. Action plan within the Strategy for scientific-research activities envisaged the overall investment (public and private)as 0,8% of GDP in 2010, up to 1,4% GDP in 2013.
Country	**Education/Research system**
Albania	***Higher schools*** are academic & research institutions Actually; there are 12 public higher schools and 17 private higher schools. The latter are "younger", with the first being opened only 6 years ago. Nevertheless, some of these have shown potential even in the field of research. ***The number of researchers in 2009:*** - 77 in state research institutions - 1693 in public & private institutions of higher education (personnel with graduation Phd, As. Prof, &Prof)

	• ***National research centers*** Center of Albanologic Studies • ***Public Centers/Agencies of technology transfer and development*** - 6 centers/agencies in the Ministry of Agriculture, Food and Customer Protection - 1 agency in the Ministry of Environment, Forests and Water Administration - 1 centre in the Ministry of Tourism, Culture, Youth and Sports - 2 centers/agencies in the Ministry of Economy, Trade and Energy - 2 centers in the Ministry of Public Works, Transports and Telecommunication. • Centers/agencies/institutes and other private entrepreneurships dealing with research and technology and knowledge development and transfer. The institutions were established or re-affiliated as follows: *1) three inter-disciplinary research centers:* •Centre of Albanologic Studies •University Research Centre of Energy, Water and Environment in the Polytechnic University of Tirana •Geo-Science Centre in the Polytechnic University of Tirana *2) two new faculties:* •Faculty of Information Technology in the Polytechnic University of Tirana • Faculty of Biotechnology and Food in the Agricultural University of Tirana 3) *a new centre and new a department* (as part of the Faculty of Natural Science of the University of Tirana) • Applied and Nuclear Physics Centre • Biotechnology Department The policy intervention to be developed over the six year period from 2010 to 2015 around five main programmes, in addition to the existing baseline funding is foreseen to be made, as follows: • **Research Infrastructure Fund** improving the equipment and facilities available in the public and university research institutes to a level permitting research projects to be executed to international standards • **Albanian Centers of Excellence in Science** (ACES) with the objective of developing 4-5 centers of excellence bringing together a minimum of 20 researchers (principal researchers, post-university researchers and PhD candidates) • **Research Eagles Grants Programme** aimed at increasing the number of Master's and Doctoral graduates in science and

	engineering, carrying out post-university research or projects in Albania. The programme will fund both young researchers to undertake PhDs in Albania and mobility to pursue PhD training in the EU27, as well grants for returning researchers from abroad • **National Technology Programme** aimed at bringing together consortia of academic research institutes with the private sector or other public sector organizations (e.g. water or energy utilities) in order to develop a medium-term programme of applied research with a social or economic impact. • **Science Promotion and Education Programme** aimed at promotion of science towards young people and funding of a limited number of graduate schools to boost PhD numbers. Various science mentoring and ambassador schemes or 'innovation awareness' initiatives in the EU27 could serve as models. All of the above programmes will be administered on the basis of competitive calls for projects or applicants. An initial investment in scientific infrastructure of $4.9m was made with the support of the World Bank, but amounts committed remain small and are focused on teaching laboratories. In 2007, the Albanian government introduced a programme for PhD studies, 'The Excellence Fund', which supports partially or fully the best PhD candidates to complete PhD studies abroad. A total of 27 PhD students were supported by this fund during 2007–2009. Under the medium-term plan (2008–2009) of the Brain Gain Programme, the Albanian Government for the first time committed State budget funds and opened 550 vacancies in higher education and scientific research institutions. To date, 82 assistants and lecturers with a MA or PhD degree have been qualified and appointed through open competitions in public and private universities.
Bosnia and Herzegovina	The most important subjects in the area of scientific and research in Bosnia and Herzegovina are generally: Academies of Sciences Universities (Faculties and Institutes) Institutes which are legally public or private owned Enterprises Research centers or company's institutes; There are two academies of sciences and art in Bosnia and Herzegovina as higher level of scientific institutions: Academy of sciences and art of Bosnia and Herzegovina in Sarajevo and Academy of sciences and art of Republic of Srpska in Banja Luka.

	There are 8 public universities in Bosnia and Herzegovina, 6 in Federation of B&H and 2 in Republic of Srpska. Since 2008.godine 9 private universities has been established, 3 in Federation of B&H and 6 in RS. In the scope of private an public universities 140 faculties exists, 10 academies, 16 higher schools, 4 teological faculties and 4 international studies. Number of publications in the referent journals, per 100.000 inhabitants was 0.61 in 2000, in pre war period it was 1.95 (1990), which is very low comparing to surrounding countries Serbia (11.34), Croatia (26.00) (Source: Fourth Inernational Congress on peer Review in Biomedical Publication, Barcelona, 2001). According to ISI (Institute for Scientific Information) number of publications in 2008 per million inhabitants was 103.05, which is also low comparing to Serbia (365,82) and Croatia (738,03). Number of graduated students in 2007 (12199), magister and specialists (436), doctor of sciences (144) (Source: Statistical Agency of Bosnia and Herzegovina, 2008).
Croatia	The education / research system is in flux, as exemplified by the current public debate regarding the new laws related to research, higher education and the organisation of universities The key challenges include: defining strategic priorities and institutional setup, securing sources of funding, opening up to ERA, increasing mobility of students and researchers
Former Yugoslav Republic of Macedonia	• Universities - State universities (5) with 60 faculties - Public research institutions (7) - Private universities (18) with 79 faculties • Macedonian Academy of Sciences and Arts - Departments (5) - Research Centers (2) • Independent researchers (21) Number of employees in the field of science and research **(table 2)**
Kosovo, UN Res.1244 , UNMIK	1 public university (another one recently established this year) and around 30 private colleges/universities -Mainly involved in teaching, very limited in research Best practice: brain gain program, 1 million Euros for science and research from Kosovo, UN Res.1244 consolidated budget; National Program for Science and research
Montenegro	3 Universities (University of Montenegro- 19 faculties, 3 research institutes, University Mediteran- 6 faculties, University Donja

	Gorica-5 faculties), & private faculties), 4-non university laboratories, not jet licensed as the scientific-research institutions There is no private foundations and research centres. There are still some former industrial development centres (al, steel, agro-complex), which are dealing with the commercial technical services now like environmental monitoring or consultancy. MOES is the basic governmental institution which funds research projects on national and regional level. The types of the activities that are funded are applied research (up to 70%) and basic/fundamental research (up to 100%). Programme funding of Montenegrin Academy of Science and arts (MASA).
Country	**Enterprise and industrial system**
Albania	The contribution of SME toward GDP is about 80%. The share of small and medium-sized enterprises is 99.9% of the total number of companies in 2009. SMEs participate with 81.8% of the total number of employees. SME contribution to exports in the year 2008 is about 69 %. In Albania there are about 133 large enterprises, 667 medium enterprises and around 105.677 small businesses. Foreign and joint venture enterprises in Albania make 2.2% of the total number of active enterprises in the country or 2336 in 2009. • **Policy development for SME – best practice** According to Doing Business 2010, in ease of doing business, Albania is ranked 82 (from 181 countries analysed) Several reforms undertaken by the government and that have improved the business climate are: • Registration of business within a day and with a minimal cost of **100 ALL** (**0.81 EUR**) through the establishment and operation of **National Registration Centre (NRC)** which function as a one stop shop • **The reduction time and cost for starting a new business**. Now it is needed 5 steps to open a new business compare 10 steps in the previous year and only 5 days compare 36 days in the previous year, which is also connected with the cost reduction to open a business. • **Functioning of National Licensing Centre as a one stop** **shop** for licensing and permits that were previously obtained at various ministries. • **Fiscal reforms** undertaken recent years with income tax at the level 10%, and social security contribution at the level of 15 % becoming Albania one of the countries with lowest fiscal burden in the region • **E-learning regarding** the usage and impa**c**t that int**e**rnet has in development and activity of electronic commerce. • ***Public procurement*** since the early of 2009 all public procurements are submitted electronically. The e-procurement platform contains all the tender documents and in this system all the operations, including downloading the tender documents and proposal submission,

	are free of charge. • ***Tax Administration*** *o*n-line services help facilitate downloading the business tax declaration forms, and to declare business taxes on-line. Payers of the Value Added Tax (VAT), who are making on-line payments through the banking system, are enabled to declare monthly VAT on-line. • **On line service** at **Customs** Since 2008, with the computerisation of all customs and using the **Asycuda** programme, it is significantly improved the service toward business, reducing the time of completing the documents and goods' control. **AIDA (Albinvest) in supporting SME manages:** The government Competitiveness Fund 200.000 Euro/year and Export Credit Guarantee Fund (ECGF) – 1.68 Mln Euro for a period of 6 years
Bosnia and Herzegovina	For the illustration: small and medium enterprises recruiting 71% of total employees in Republic of Srpska. According to some data from CPU (Center for Policy and Governance) total estimated number of producers in B&H is 26.000 to 29.000. It is estimated that about 97% of enterprises makes micro, small and medium. Small and medium enterprise makes around 60% of GDP in Bosnia and Herzegovina and generate most of the working places.
Croatia	Traditional R&D performers have largely downsized their R&D activities, whereas SMEs have not been able to compensate for these losses The lack of greenfield FDI with strong technology capabilities has reduced the role of technology spillovers from abroad Technology infrastructure is being developed, but the lack of industrial policy at the national and regional levels is likely to slow down the

	development of NTBF and attraction of technology-based FDI
Former Yugoslav Republic of Macedonia	• Total number of companies (end of 2009)[37] – 101323, while active: 70710 companies: ○ Micro (<9): 59398 ○ Small (10-49): 3706 ○ Medium(50-249): 1159 ○ Big (>250): 204 • Organised in 4 main Chambers ○ Economic chamber of Macedonia ○ Association of chambers of Macedonia ○ Economic chamber of Northeast Macedonia Chamber of small businesses
Kosovo, UN Res.1244 , UNMIK	99.8 % of total firms are SMEs majority of them operating in trade and services There is no data on new technology based firms and multinational companies There is no data on SME contribution to employment or GDP Policy developments include SME European Charter that is being implemented, but still lagging behind the countries of the region Best practice of SMEs include: Voucher Scheme which provides free consultancy to firms; industrial park in Drenas, Initiative to improve the functioning of existing business incubators Several laws has been put in place that regulate various issues of innovation: LAW NO. 02/L-54 ON TRADEMARKS LAW NO. 2004/45 ON COPYRIGHT AND RELATED RIGHTS LAW NO.2004/49 PATENT LAW LAW NO. 02/L-45 ON INDUSTRIAL DESIGN
Montenegro	Industrial system is designed according to the presence of big national companies which has, mainly, been privatized recently. The companies are Aluminium plant, Steel factory, Electrical supply system, communications. Share and role of SMEs in the overall industrial scene is like this: The percentage of micro enterprises is 78,02% or 11883, out of 15229, small enterprises are present in 9,83% or 1497, the lowest is the number of medium enterprises, about426 or 2,8%. Key governmental players in innovation policy are: Ministry of economy, Ministry of education and science, directorate for development of small and medium enterprises(SMEDA). Recently Government has improved the environment for business and innovation by introducing several legislative documents and strategies like: Law on business organizations, Law on Business organization insolvency, Law on Company insolvency, law on Fiduciary Transfer of Property rights, Law on Value added tax, Law on accounting, Foreign trade law,

[37] Source: Central Registry of Republic of Macedonia

	Customs law, Law on Free zones, Competition protection law. Several strategic documents have also been launched like: Strategy of development of small and medium enterprises (2007-2010), Multi annual indicative Planning document (2007-2009). Statistical business register has been developed also. The possibility of funding innovation in Montenegro relays on several programmes and instruments like: Development fund- common instrument of State support to entrepreneurship, Diaspora fund-business cooperation programme with Diaspora, founded by Government and SMEDA. There are several other possibilities like : development of credit line to support entrepreneurship in rural areas, implementation of the credit line for the increase of the energy efficiency in SMEs, using of several international initiative, programmes, credit lines and donors like IPA, EBRD, USAID.
Country	**Intermediaries and science-industry cooperation**
Albania	In Albania there were several initiatives for establishing **business incubators** earlier. Nevertheless, none of these is operational till today. Therefore, the designed Business Incubation Programme for Albania will apply a step by step approach, by setting up a pilot business incubator and building on its experience, in parallel taking into consideration the experiences from other countries. The aim is to generate new jobs, new enterprises and increase competitiveness through development of entrepreneurs and enterprises in the Republic of Albania. The purpose of the Business Incubation Programme is to establish and develop permanent infrastructure that will support the emergence of innovative start up companies. This involves actions in finding and equipping premises, developing and maintaining business support structures and promotion of the concept and contents of business incubation to stakeholders in Albania. **Clusters** in Albania have firstly been developed with the support of donor organizations. In the framework of Enterprise Development and Export Market Services Project (EDEM), financed by USAID four new clusters have been created in tourism, meat processing, medical herbs and leather goods production industry. Having been very important as a starting point in terms of collaborative approaches within the Albanian business community, these initial efforts did not succeed in establishing sustained cluster structures and activities. UNDP is considering providing support to strengthen the capacities of the Ministry of Economy, Trade and Energy (METE) in relation to cluster development and assessment of clustering potential in Albania. The Regional Competitiveness Initiative for the Western Balkans 3-year project, supported by the European Commission from 2010-2013, with the total budget of EUR 3.8 M involves among other activities strengthening the innovative capacities of the region and expedite development and implementation of reforms for sectors with comparative advantage. METE is currently in the process of formally adopting a National Business Innovation and Technology Strategy (BITS), which integrates the Albanian Cluster Programme (ACP). The Albanian Business Relay and Innovation

	Centre (BRIC), which will be the operative arm of METE to implement the BITS, will start operating shortly.
Bosnia and Herzegovina	Framework Law on the Basics of Research and Development Activities and Coordination Internal and External Scientific and Research Cooperation of Bosnia and Herzegovina" define: particular interest in the area of the science and technology, basic principles of scientific and research activities, establishment of the scientific and research international cooperation and cooperation inside of the country. the way of coordination establishment between institutions in charge for area of science and technology, forming of Bosnia and Herzegovina's Science Council, As well as coordination of informatics system for the area of science and research activities and Bosnia and Herzegovina. The Law on Science and the Strategy of Science at the state level provide the legal basis for coordination of innovation policy in the country. Both document call for the improvement of co-operation within the 'triple helix' of public-private-research communities in BiH. Entites' ministries are in the process of development their research strategy which will tackle the issues of inovation. Strategy of development of BiH recognises the need for a development of society based on knowledge and innovation.
Croatia	There are several financial instruments aimed at financing the cooperation TEHCRO – organized by BICRO MELE financed six technology parks; NZZ – managerial instruments in basic research HIT foresight programmes seeking to envisage future technology demand

	(R&D investements demand
Former Yugoslav Republic of Macedonia	- 20 development and research units in the economy; - Technological cores: Natural Sciences and Mathematics, Mechanical Engineering, Faculty of Medicine and faculty; - Centers for transfer of technologies: Faculty for Mechanical Engineering, Faculty of Agriculture, Technical Faculty in Bitola and TMF; - Regional innovation center in Stip - NCDIEL – National Centre for Development of Innovation and Entrepreneurial Learning[38] - IC – Macedonian Innovation Centre[39] - European Enterprise Network[40] Introduction of Innovative voucher in 2010 by the Agency for promotion of entrepreneurship
Kosovo, UN Res.1244 , UNMIK	• Center for Innovation and Technology Transfer (Ministry of Education, Science, and Technology) • Industrial/Business Parks (ongoing projects) • Business Start-up Centres (mainly donor driven and NGOs) • Research institutes 3 incubators are established by MTI (not functioning well, the latest initiative to outsources to private sector for managing these incubators)
Montenegro	No solid and intensive science-industry cooperation. The former links have been broken, as well as industrial development offices, by the privatization process. At the moment, at the level of academia, there is only an evidence of existing of RTD service centres which should turn out in Technology transfer offices in the second phase. There are no technology transfer agencies at the moment. Industry is dominated by the large companies which chase profit with no interest toward clustering. SMEs are mostly oriented toward the food production and services. Only meat processing has been carried out as a basis for developing cluster programme. There are no Technology innovation centres operating in the country, as well as technological parks and science parks. First business incubator was launched in 2007- Business Start-up centre Bar. There is also the similar centre in Podgorica, operating now. SMEDA has launched and programme initiative under which 4 business centres were established in the various regions of the country as well as 7 local sub-centres. One European Information and Innovation Centre (EIICM), involving SMEDA, Chamber of Economy, Faculty of Mechanical Engineering and Business Start-Up Center was established unde CIP programme. It replaced former EURO information correspondence centre.

[38] Funded by Austrian Development Agency

[39] Funded by USAID

[40] Funded by EU (IPA funds) and Government of Republic of Macedonia (EEN is located at the University Ss. Cyril and Methodius with branches at Agency for entrepreneurship promotion and Economic Chamber of Macedonia)

Country	Government policy making and coordination of innovation
Albania	**Strategic programme** on technology transfer and innovation. •*The National Strategy for Development and Integration (NSDI)* •*The Business & Investment Development Strategy (BIDS)* BIDS 2007-2013 comprise specific objectives and measures particularly in respect to the measure aiming at increasing competitiveness through technology transfer and innovation •*The National Strategy on Science, Technology and Innovation (STI Strategy) 2009-2015* The STI Strategy is the first comprehensive policy document that sets the guidelines for future developments in STI. This document provides for a current picture of the STI situation in Albania. It also addresses the issue of lack of financial resources so far, and the need to increase the overall support in the future. •*Cross cutting strategy on Information Society* The objective of the strategy is the reviewing and coordinating of the commitments related to the creation of an information based economy and therefore to ensure a coordinated society wide execution of the responsibilities from the relevant actors. Priority areas within the strategy that require immediate action are identified and the designation/ specification of the main activities within those areas will be laid out in the action plans of the divisions, in line with vertical strategies. • *A Business Innovation and Technology Strategy* (BITS) is drafted to assist and stimulate firms to innovate and upgrade technologically. Albania will follow the European model of two independent Agencies dealing with Innovation: One as a Science- & Research-driven Innovation Agency, and another as an and another as an Economy- & Business driven Innovation Agency. It's in place the **legal framework**: • Law on the Academy of Sciences No. 9655, date 11.12.2006 • Law on Higher Education No. 9741, date 21.03.2007 • Law No. 9880, dated 25.02.2008 "On electronic signature"; • Law No. 10128, dated 11.05.2009 "On electronic commerce" • Law No 9643 date 20.11.2006 "On public procurement" • Law "On electronic document", • Law "On electronic Commerce", Soon "On protection of electronic data" and Cyber crime legislation for databases. Government **institutions** are established • National Agency for Information Society **(NAIS)** established in 2007 • Agency for Research, technology and Innovation **(ARTI)** established in August 2009 • Minister for Innovation and Information and Communication Technology (**MIICT)** established in April 2010 • Business Relay Innovation Centre **(BRIC)** – to be set up

Bosnia and Herzegovina	Framework Law on the Basics of Research and Development Activities and Coordination Internal and External Scientific and Research Cooperation of Bosnia and Herzegovina" define: particular interest in the area of the science and technology, basic principles of scientific and research activities, establishment of the scientific and research international cooperation and cooperation inside of the country. the way of coordination establishment between institutions in charge for area of science and technology, forming of Bosnia and Herzegovina's Science Council, As well as coordination of informatics system for the area of science and research activities and Bosnia and Herzegovina. The Law on Science and the Strategy of Science at the state level provide the legal basis for coordination of innovation policy in the country. Both document call for the improvement of co-operation within the 'triple helix' of public-private-research communities in BiH. Entites' ministries are in the process of development their research strategy which will tackle the issues of inovation. Strategy of development of BiH recognises the need for a development of society based on knowledge and innovation.
Croatia	The Ministry of Science, Education and Sport (MSES) is a key institution charged with the design of the national research policy, parallel with the Ministry of Economy, Labour and Entrepreneurship (MELE). MELE autonomously designs and finances the programs of strengthening R&D investments, promotion of science and business infrastructure and entrepreneurial education. Moreover, the National Foundation for Science, Higher Education and Technological Development of the Republic of Croatia (NZZ) was established by the Croatian Parliament, with the basic goal of promoting science, higher education and technological development in Croatia in order to ensure economic development and support employment creation. The main policy documents are: The Science and Technology Policy of the Republic of Croatia 2006-2010, an Act adopted by the Croatian parliament in May 2006; The Action plan for the period 2007-2010 Science and Technology Policy of the Republic of Croatia» with a detailed outline of the main planned activities for national innovation system development. The Action plan for Fostering Investments in Science and Research», passed by the Croatian parliament in April 2008. This Action Plan, known also as "3% Action Plan", is aimed at stimulating investments needed for structural reforms of science and higher education sector in order to

	facilitate Croatian development based on the knowledge-based economy model.
Former Yugoslav Republic of Macedonia	A. Ministry for education and science - Law for scientific-research activity (2008); - Law for the Macedonian Academy of Sciences and Art (1996/2009) - Law for encouraging and facilitating technological development (2008); - Law for encouraging and assisting the technical culture (2000). *Programming function of MoES* is determined by: - Programme for scientific research; - Programme for technological development; - Programme for technical culture; - Strategic documents in the state. *Financing function of MoES is accomplished through:* - Budget funds (**Table 3** for R&D projects funded from government); - Allocations from the business community ; - International financial support. B. Ministry for economy B1. Sector for industry B2. Sector for SME development and competitiveness Key documents: - Industry policy 2009-2010 - SME strategy 2010 – 2013 **+ NO GOVERNMENTAL BODY RESPONSIBLE FOR INNOVATION** **+ NO INNOVATION POLICY OR STRATEGY FOR F.Y.R MACEDONIA**
Kosovo, UN Res.1244 , UNMIK	• There is a department within Ministry of Education, Science and Technology called *Department of Science and Technology.* • There is also Center for Innovation and Technology Transfer - QITT • Within the Ministry of Trade and Industry there is a Office of Industrial Property (both of them in their early phase of development) No tax incentives
Montenegro	There is no national action plan on investment in research. The action plan within the Strategy for scientific research activities (SRA) (2008-2016) adopted in June of 2008, sets up the aim of increasing the investment in scientific and research activities up to 1,4% of GDP in 2013. New Law on scientific research activities (2010) declares the uniform access to all the players to the research funds so the industry is highly recommended to apply, especially considering the fact that there is the compulsory funding of applied research in all the applied research

	projects funded by the Ministry of Education and science. Government has launched several incentives for better RTD investment through the remissions of VAT and import duties on research equipment. Tax and customs duties are laid down in Law on scientific and research activities, Law on Value added tax, Customs Law, Instruction of Ministry of finance on the manner of carrying out the rights on remission of VAT
Country	**Framework conditions**
Albania	During the last years the Government has undertaken encouraging policies for development of information technology, starting from students to entrepreneurs in order to increase competitiveness of Albanian businesses in regional and global market. Big investments are made on **banking system**, which are evaluated in approximately 200 million EUR. There are 16 foreign banks in Albania. Credit to economy, which is an important indicator, rose by approximately 32% during the last 5 years, and crediting power to the private sector accounts for 39% of GDP in 2009 On average crediting in Albania is close to other countries of the region which indicates an acceptable norm of crediting by Albanian banks to private companies in the country. Careful crediting measures have kept Albania untouched by the global financial crisis, being an important contributor in the positive GDP (%) of Albania in 2009. New products implemented in recent years confirm that bank customers are increasingly using electronic access products provided by their banks –through payment cards, PCs or recently even telephones. The increased use of cards has been supported by the increased number of ATMs throughout the country, and more facilities to get internet access. In addition to expanding their electronic products and services, banks are also focusing on providing better security and protection for their customers. **Telecommunication sector** in Albania has become an important factor in the expansion of services provided by businesses and the government, where we can mention the introduction of e-Gov which has facilitated communication and interaction with the government & private sector o The penetration rate of mobile telephony reached 129/100 inhabitants in 2009. o PC/100 inhabitants 2.3 in 2008. o Internet penetration 31.2% in 2009. o The time to install a line of telephone for businesses in Albania is comparable to other countries of the region. It is approximately 7 days. o The cost of service for the fixed-line and the mobile telephony is the lowest in the region.
Bosnia and Herzegovina	Federation of Bosnia and Herzegovina: Technology park Mostar, Technology Park Tuzla, Technology Park Zenica is in the final phase. Republic of Srpska:

	Innovative center has established in Banja Luka in 2010. Technology Business Park Banja Luka establishment is in the process. It is important to emphasize that in Bosnia and Herzegovina exists some societies, registered as NGOs, dealing with innovations, and they are quite active: Association of the Innovators of Bosnia and Herzegovina Association of the Innovators of RS Some city Innovators Associations as Tuzla, Bihac, etc. , It is important to emphasize that in a last years most of the patents coming not form research institutions, but from the individuals.
Croatia	In Croatia there are 26 public institutes and 13 private research centres/institutes. The substantive part of the innovation system related to entrepreneurship and business infrastructure development (supporting entrepreneurial zones, incubation centres, business centres and regional development agencies) rests within the Ministry of Economy, Labour and Entrepreneurship (MELE) The entrepreneurial infrastructure supported by MELE is comprised of 27 business centres, 16 business incubators and six regional development agencies. In addition, there are 15 economic free zones and 235 entrepreneurial zones, out of which 140 are fully functioning. Fourteen incubators out of the16 established are in the early stages of development
Former Yugoslav Republic of Macedonia	Support organisations: - 2 business start-up centers - 4 incubators - 1 private technology park – SEAVUS company (under construction) - Plans for ERA city (science park) - MASIT – ICT Chamber - Alkaloid company (developed research center in pharmacy) Funding possibilities (**table 4)** Missing: - Business angel network - Early stage finance mechanisms - Innovation advisors Much higher R&D investments form public and private sector
Kosovo, UN Res.1244 , UNMIK	• Environment for Entrepreneurship not very supportive • There is no bank that provides loans to new companies (an exception are micro financing institutions which provide loan which very high interest rates – around 24%) • No venture capital

	• There are only NGO initiative e.g. Business Support Centre Kosovo, UN Res.1244 provided support through training for business skills, 100 ours free consultancy, soft loans (less than 5% interest rate up to 10000 Euros for start-ups) and networking. • Good example from public initiative is Voucher Scheme
Montenegro	There are no measures to facilitate the venture capital. Access to ICT networks: there are around 15229 active companies in Montenegro. The official records of sales show that the number of sold internet business packages is around 6000. Here, it should also be added that many of them use `regular` home packages. E-Government status indicator is less than 20%. Internet penetration as the 5 of total population is 41,3%.
Country	**The country's involvement in the regional research, innovation and business development initiatives and projects**
Albania	Internationalisation and integration into ERA and the building of national competences are mutually reinforcing. Albania is committed playing its role in European level research Programmes and initiatives, in proportion with its financial means and strategic interests, and promoting participation of Albanian researchers in the EU's Research Framework Programme and integration into other European research initiatives (COST, EUREKA, etc.). Through COST great potential is offered as a bottom-up tool for networking with other European scientists and participation of Albanian researchers in different projects Since 2008, Albania participates in the "7th Framework Programme for Research and Development (2007 to 2013)". Albania is entitled to participate in all four pillars of the programme (Capacities, Cooperation, People and Ideas) as well as the Euratom and the Joint Research Centre (JRC) initiatives. The participation of the Republic of Albania to the Community Programme FP7 since 2008, in the "Entrepreneurship and Innovation Specific Programme (**EIP)** of the Competitiveness and Innovation Framework Programme **(CIP)".** Within CIP programme there are three main sub-programmes which are focused in SMEs with that type of technology that protect the environment: -Entrepreneurship and Innovation Programme (**EIP).** -**ICT** policy support programme -The intelligent energy-europe programme **(IEE).** In the framework of **IPA 2007**, on 20 October 2009 started the project "Support SMEs to become more competitive in the EU market, through innovation and technology transfer" (**first** component). Project's activities are: Innovation and Technology Strategy, Business Relay and Innovation Centre in Albania, Training Needs Analysis for SMEs, National Competitiveness Programme for SMEs, Albanian SME Development Programme.

	Second Component of the project IPA/ TAM, with a value of 1 million EUR is managed by EBRD-TAM programme. This programme has started its implementation in December 2008 and there are selected 18 companies that will gain technical assistance in improving their management for the purpose to increase their competitiveness. **Europe for Citizens** As from entering in force of the MoU participation of all Albanian stakeholders promoting active European citizenship shall be open. **Culture Programme** Albania has entered into advanced discussions with DG Education and Culture regarding the signature of a MoU for her participation in the Culture programme. The signature of this MoU and its subsequent ratification by the Albanian Parliament is anticipated during 2010 **Coordination** The Ministry of European Integration (MEI) is the overall coordinator of the Community Assistance Programmes in Albania. The Ministry of Economy, Trade and Energy (METE) is responsible for the participation and management of the CIP/EIP and the Ministry of Tourism, Culture, Youth and Sport (MTCYS) is responsible for participation and management of the Europe for Citizens and Culture programmes. The Agency for Research, Technology and Innovation (ARTI) was established in August 2009 with a mission to be a coordinating structure for national and international programmes, including FP7, COST and EUREKA
Bosnia and Herzegovina	Basic international cooperation activities in scientific, research and technology area are performing through Ministry of Civil Affairs of Bosnia and Herzegovina, as the institution coordinating activities other entities ministries or directly trough EC and some specific program (Tempus, FP7, etc). According to Constitutional authorization, entities and cantons have authorization to act bilaterally and realize different projects in the area of science research and technology development with European regions, and World. In FP6 Bosnia and Herzegovina has over 40 approved projects. Since start of FP 7 Bosnia and Herzegovina has 20 institutions involved and applied on 29 projects. Bosnia and Herzegovina is a part of COST program since 2009. SEE-ERA.net – about 70 projects are applied to this programme. TEMPUS – since 1997 around 90 projects has been realized
Croatia	In order to finance regional development projects, Croatia relies on EU pre-structural funds like Phare, ISPA, SAPARD and CARDS but also on other available resources such as

	World Bank, UNDP, EBRD USAID, etc. In the last several years there are growing number of the regional (Western Balkan) initiatives and projects , and among them the most important are: • Regional Strategy for Research and Development for Innovation for the Western Balkans; • Western Balkans Regional Competitiveness Initiative
Former Yugoslav Republic of Macedonia	Partner in many FP6, FP7, Tempus, IPA, Transnational programs, Bilateral programs, donor driven programs (USAID, ADA, GTZ, SIDA, UNIDO, COST, EUREKA, ...)
Kosovo, UN Res.1244 , UNMIK	Kosovo, UN Res.1244 participated in Tempus
Montenegro	On the state and academia level, country is involved in several development initiatives and projects dealing with innovation and business like; SEE-ERA.NET, SEE-ERA.NET plus, WBC-INCO.NET, NATO programme Science for peace and security, CIP EU programme (EU competitiveness programme), 4 TEMPUS programme with the complementary subject "Education-research-innovation, triangle". Within one of these projects RTD service centre was established at the university of Montenegro, FP7 projects (REGPOT, PEOPLE) dealing with the evaluation of research capacities of the universities and Strategic planning of research, IPA for the same purposes of evaluation of research capabilities, COST programme (Montenegro still does not participate in COST, but action plan for participation has been adopted by the Ministry of Education and Science. Several new attempts for reaching the existing COST actions are already present. No participation of Montenegro in EUREKA, although some official steps have been carried out in Lisbon Conference in 2009, IDEALIST2011 (ICT NCPs cooperation), SEERA-EI (SEE research area for e- infrastructure, WINS ICT (WBC INCO-Net support in ICT)
Country	**Main structural deficiencies of research and innovation system**
Albania	Albania is performing poorly on innovation. It is ranked at **96 out of 133** in the world according to Global Competitiveness Report **Capacity and competence** to manage both basic and applied research in Albania are limited and generally far from standards that would enable co-operation and participation in European or international programmes. Equally, **scientific infrastructure** is outdated and inadequate to support quality research. The very **low level of expenditures** dedicated to science and research despite the increasing trend last years. Albania relies heavily on foreign funding and in particular on the very competitive structure of the EU's 7th Research Framework. Science and technology system undertook radical

	reforms and transformations. Albania is the seat of **very few of transnational corporations**. Non existence of important **clusters** in economy which would use the innovation potential. Poor financing of research activities in the business sector and insufficient market with venture capital. The innovation system in Albania is in its earlier stage of functioning and has institutional gaps. There is **no dedicated institutional structure** within the Albanian Government to coordinate such activities (World Bank). There is no specific strategic approach to business innovation and technological development. • Albania is **highly dependent on foreign technology** • **Albanian firms' "technological capacity"** to upgrade by absorbing existing advanced technologies **is weak** • The insufficient innovation culture of SME and low motivation of businesses to introduce innovation '**Albania lags behind** all other countries in Eastern Europe in establishing **proactive policies** to support **technology capacity building for enterprises**, particularly for SMEs.' (WB)
Bosnia and Herzegovina	Lack of the strategic documents which will provide the basis how involve business sector to invest in research. Lack of financial programmes which support these two sectors. Lack of technological competences of our companies. Lack of the interest from the company side. Complicated and procedures related to public procurements and tax deliberation.
Croatia	Low level of Inventive Activities Low Complexity of Innovation Activities Low share of R&D Employees in total number of employees compare to the EU 27 average
Former Yugoslav Republic of Macedonia	- Mainly located at Ss. Cyril and Methodius University (Faculties/departments for Chemistry, IT, Mechanical engineering, Technology, Metallurgy, Medicine, Pharmacy, Agriculture and food, etc. - Overlapping of responsibilities between MoES and MoE - Not clear vision/strategy/policy for developing of NIS - Very low level of finance support from the Government - Low level of awareness about need for innovation - No tax incentives for companies - Very low level of investment in research infrastructure (space and labs)

	More focus on entrepreneurial learning to all levels of education
Kosovo, UN Res.1244 , UNMIK	• There is no well defined system of research and innovation • The main deficiency is the low share of budget to GDP devoted to science and research • Very limited number of firms ever take innovative practice; if they do, these are very minor From 11 dimension of SME European Charter Kosovo, UN Res.1244 scored lowest on strengthening technological capacity (SME Policy Index, 2009, pp 222)
Montenegro	• Main structural deficiencies are present in research ambient as well as within the governance structures: • There is the lack of effective linkages between knowledge institutions (HE and R&D) and industry. Although universities and enterprises have policy in their mission statements that mention the need to cooperate, efficient legal and policy arrangements that provide a sound and supportive environment for university–enterprise cooperation do not yet seem to have been established (3,6,7) • Universities find it difficult to attract social partners (Chambers of Commerce, Regional Development Agencies…), who do not consider university–enterprise cooperation as part of their portfolio; • There is little awareness of the mutual benefits of cooperation with industry; • Actual cooperation between university and industry takes place with large companies – often branches of multinationals, because these have a critical mass of qualified staff who can find a common language with teachers and researchers, they have better equipment and infrastructure, longer-term strategies and more money; • Despite of fact that universities consider SMEs to be the most relevant and interested partners for cooperation (98,9% of regional enterprises are SME), cooperation with them. Concerning the public support there are defined several needs that can be also considered as deficiencies: • Governance structures in terms of national committees or councils that coordinate innovation policies, involvement of public agencies and policy makers in innovative policy design, key strategy documents or relevant laws, • Monitoring system in terms of institutions that monitor innovation activities, indicators used to monitor innovation, • Business to business and University to business linkages, in terms of mechanisms to support networking, mechanism to support cooperation between the interdisciplinary research groups and business • Infrastructure and support services favouring the emergence of new clusters, in terms of business and technology incubators,

	science parks, • Government source for financial support in terms of publicly funded schemes to support technological innovation like credits, vouchers, organizational design or marketing • Access to finance, in terms of policies or agencies aimed at fostering seed financing, start-up financing • Incentive frameworks for innovation in terms of policies for providing the right incentives, policies aimed at lowering the risks for entrepreneurial ventures
Country	**Main challenges for governance of innovation**
Albania	The government seeks to ensure that by 2015 Albanian scientists to be able to generate international-quality research in certain selected areas. • improvement of basic research infrastructure able to support sufficiently university training at three levels (BSc, MSc, PhD levels) • creation of scientific excellence in key research areas for our country • education and retaining/attracting qualified people in the Albanian research system • increased public understanding of science and an improved awareness of the role of innovation and new technologies for society and economy. *Increase public spending on research to 0.6% of GDP by 2015*. *Increase the share of gross expenditure on R&D from foreign sources* notably from the EU (FP, etc.) and international donors to cover 40 per cent of all research spending in the years 2010–2015. *Improving the legal and institutional framework for research* *policy-making and research funding* Redesign of the overall legal framework is part of the process of Albania's integration into ERA and should include aspects related to the legal alignments required for European Partnership for Researchers (improving researchers' careers and mobility), joint programming, etc., as well as adjustment of Albanian laws to the EU's State Aid rules on R&D and innovation Internationalization and integration into ERA and the building of national competences The creation of a specific government funding measure to stimulate the companies in the field of innovation and transfer of new technologies A specific Strategy for Business Innovation and Technology (BITS) that is proposed to meet the needs of the enterprises and so fill the gaps in activities that will enable the innovation system as a whole to function. Through 4 programmes of Innovation Fund, Business Innovation Services, Incubation Programme, Cluster Development Programme
Bosnia and Herzegovina	The economy of BiH remains fragile and the capacity of the various actors in the innovation system to support knowledge-based economic development are limited by a lack of structured co-operation between, outdated equipment and infrastructure in the higher education/research

	sector, insufficient investment in training on new technologies and technology upgrading in enterprises, etc..
Croatia	The increase of effectiveness of the R&D sector need to be connected with achieving broader social economic objectives i.e. increase competitiveness, employment and living standards Existence of an adequate financial system which could facilitate the R&D sector!!!
Former Yugoslav Republic of Macedonia	- To determine inter – ministerial group responsible for development of innovation policy (there is already established dialog and base, but it must be officially structured) - To prepare solid innovation strategy - To recognise and finance most proactive innovation drivers (both public and private), - To Strength capacity of public institutions that deals with STI related issues - To reverse brain drain of high educated people (stronger relations with wide speeded Macedonian researchers) - To be included in regional innovation policies / strategies - To allow to more younger researchers to apply on EU mobility programs (better promotion of programs in Macedonia) - To create regional innovation + patent fund
Kosovo, UN Res.1244 , UNMIK	- Designing and installing properly the innovation system - Integrating fragmented pieces of work by different institutions within new innovation system - Lack of data and statistics on all important indicators regarding innovation, technology and science

Montenegro	• Governments of the Montenegro should accelerate a transition of researchers from academic sphere to enterprises through a greater emphasis on the mobility aspects of the best young researchers. • Governments of the Montenegro should also introduce tax incentives for projects which involve knowledge transfer from universities to enterprises in order to encourage innovation in SMEs. • Establishment of the Science and Technology Parks should be encouraged with activities to promote networking between their tenants. • Industrial clusters should be encouraged to move to internationalization so that they develop an outward exporting orientation and link up with international systems of innovation. • Universities should boost their centres to provide more support to researchers to commercialize their application oriented research results though the creation of new spin-off enterprises. • Universities in Montenegro should establish Technology Transfer Centres to handle property rights issues and the licensing of inventions and innovations created in university laboratories and to encourage patenting and licensing of technologies to enterprises. • Universities should focus on applied research activities. A record of collaboration with enterprises and participation in joint research projects should be included in academic staff promotion criteria. To improve **innovative capacity in Montenegro** in particular, more resources for science and R&D will not be enough. The focus needs to shift to: • The microeconomic capacity of WB region; •Quality and specialization of factor conditions; •Quality of enterprise strategies and entrepreneurship; These are the qualities of the business environment that enable the transformation of scientific knowledge into new products, services and competitive firms. Universities in Montenegro should be important elements of their local systems of innovation: • Driver of regional technology-based development and the source of a major proportion of local innovations and local companies; • A good contributor to local knowledge and to the development of local technology clusters; • A major source of knowledge in emerging and established clusters. As an important future step need to be involvement of proposed model of university-enterprise cooperation in corresponding **strategic documents** such as future **Strategy of technological development** together with the

	already existing **Strategy for sustainable development** (2007)**.** Innovation policy should be seen as the cumulative result of interaction among governments at various levels, businesspersons, academics, and social partners comprising membership from all of these spheres, especially at the regional level. Furthermore, it is necessary to establish **new institutional arrangements of university– enterprise–government relations**. Next step will be generating a knowledge infrastructure in terms of overlapping institutional spheres with hybrid organizations emerging at the interfaces. The common objective is to realize an **innovative environmentv**consisting of university spin-off firms, tri-lateral initiatives for knowledge-based economic development, and strategic alliances among firms (large and small, operating in different areas, and with different levels of technology), government laboratories, and academic research groups

5.2 Annex 2. Interviews with the managers of the regional project initiatives

Interview with Dr Marta Čivljak

7.12. 2010.

Priority: Health

Regional Project Manager of the SEE Health Network Project on Tobacco

Andrija Stampar School of Public Health, Zagreb, Croatia

The interview was conducted with the aim to investigate the innovation orientation of the WBC regional initiative in the area of health. One of the existing regional initiative in health is the SEE Health Network that consist of the 8 projects (see Annex) .

1. **How the cooperation is established (who has initiate the cooperation – government institution, business, science); how many countries are involved, what type of institutions, who are the main financiers)**

The SEE Health Network is, in essence, a political forum set up to coordinate, implement and evaluate regional projects for developing health policy and services. It is initiated by the Stability Pact for SEE followed by the two follow-up political initiatives: Dubrovnik Pledge in 2001 and Skopje Pledge, 2005. The goals of the initiatives are:

- Stressing the importance of peace and stability
- Regional collaboration; public health priority areas (regional projects) of common concern – 8 projects have been initiated (see Annex)
- Stressing the importance of investing in health/economic development
- Reinforcing the regional collaboration on public health priority areas
- Achieving and sustaining regional ownership

The SEE Health Network involves 9 SEE countries: Albania, Bosnia and Herzegovina, Bulgaria, Croatia, Moldova, Macedonia, Romania and Serbia. It also involved 4 international organizations (CoE, CEB, WHO/EURO and SP-SCI).

The projects are financed by 9 donors/partners such as France, Norway, Slovenia, etc. Over 8 million Euros have been raised and implemented. The national contribution was not needed.

One of these 8 projects was the “Public Health Capacity Building for Strengthening Tobacco Control in South-eastern Europe” The implementation of the project started in 2005, following the commitment made by the South-eastern Europe health ministers on 2 September 2001 by signing the Dubrovnik Pledge. The project was led and coordinated by Marta Čivljak, Zagreb. It involves all partner countries, mainly the

political institutions such as ministries responsible for tobacco trade and control and institutions in charge for the public health protection.

In addition to partner countries, the project received a great support from the World Health organisation (WHO) Regional Office for Europe in fundraising and administrative activities. The Government of Norway and the Government of Slovenia funded the project.

2**. Does the initiative involve cooperation on innovative projects? (innovative projects are the projects that result in innovation – technological, organisational, service innovation); Is the scientific sector involved? What is the intensity of cooperation?**

The aim of the project was not scientific research and innovations but to enhance to capacity of the countries in various components of successful tobacco control, most notably in improving the knowledge and skills of policy-makers and public health leaders in comprehensive tobacco control. The project strengthened intersectoral cooperation and a multidisciplinary approach. It mainly involves political institutions and institutions responsible for public health i each of the countries, such as:

- Ministry of Finance – set an optimal level of prices and taxes of tobacco products;
- Ministry of Interior – acted on the trade in illicit tobacco and tobacco products;
- Ministry of Economy – explored the influence of international trade agreements on tobacco;
- Ministry of Health and Republic Institute for Health Protection – set regulations for preventing smoking;
- Republic Institute for Health Protection and Institute of Occupational Health in partnership with the Agency for Sport and Youth – developed new approaches for preventing smoking among children, adolescents and women
- Ministry of Agriculture – researched alternatives to tobacco production;
- Ministry of the Environment – found an association between tobacco production and the destruction of ecosystems;
- Ministry of Health along with nongovernmental organizations – studied smoking in various population groups, especially vulnerable groups

The first component of the projects was very successful since most of the countries in south-eastern Europe (Albania, Bulgaria, Croatia, Montenegro, Romania, Serbia and the former Yugoslav Republic of Macedonia) have ratified the WHO Framework Convention on Tobacco Control and are parties to the Convention

3. To what extent can collaboration between WBC improve the innovation capacity of these countries - their ability to produce innovative products and international competitiveness;

The cooperation of WBC could significantly improve the innovative capacity of these countries at least judging from the experience of " tobacco project" which achieved major successes (ratification of the WHO Framework Convention on Tobacco Control) and significantly contribute to the increasing public health capacity in tobacco control, including those of government and nongovernmental institutions (e.g. enforcing legislation, taxes on tobacco products, etc,)

4. What are the main obstacles to better cooperation of WBC on innovation (institutional environment, including technical standardization, strategic direction and vision of development, economic and sectoral policies (eg employment policy, subsidies, competition, taxes ...), administrative obstacles, the role of the educational system (human resources), the role of scientific, financial and fiscal system, legal system, the technological competence of enterprises and industrial structure, lack of regional initiatives and programs;

The main obstacle is the lack of financial means for regional projects. For example, when Norway ceased the funds the further implementation of the project was stopped. The project had an excellent administrative assistance from the WHO but the support of the national political bodies (responsible ministries) were pretty poor. Therefore, the main obstacles are financial means and political support.

5. What should be done in order to enhance the cooperation of WBC in innovative projects and innovations (challenges and opportunities);

The crucial factor is political support and securing of financial means. The lack of financial means stopped the further realisation of our project.

6.a. Do you think that joint strategic and action plan to stimulate innovation activities in the WBC countries (so-called Regional R & D strategy for innovation) would accelerate cooperation among providers of innovative activities in the region (companies, agencies and scientific institutions, etc.)

Judging from the experience of this project, the common action plan would be crucial for cooperation

6.b. Do you think that the WBC countries should establish their own regional funds and programmes or they should limit their cooperation within the ongoing bilateral and EU programs such as CIP, EUREKA, SEE-programs, technology platforms, etc.

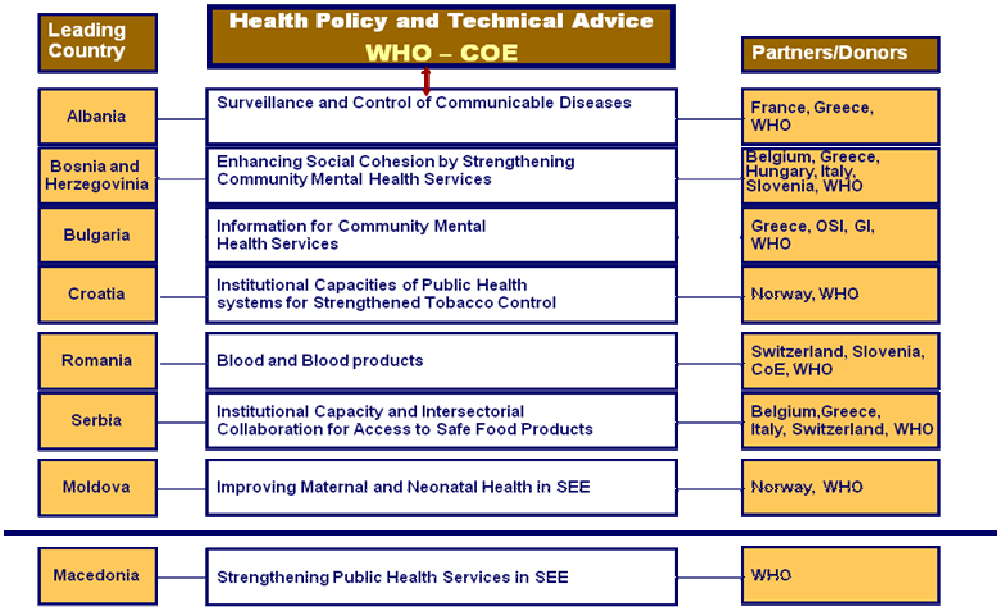
It would be useful to create a joint fund on a regional level but usually national governments do not have sufficient financial resources for such funds. There is another problem that could arise in the context of the Western Balkans, which is equality and uniformity in the distribution of funds. Therefore, such a fund should be carefully designed and organised especially in terms of supervision of the allocation of budget. The supervision body should involve the representatives from all the countries. Besides, the principle of "equal" distribution of money involve the problem of great differences in purchasing power which make that the same amounts of money has different values in different countries.

6.c. What mechanisms for innovative collaboration seems to be useful from your point of view

- **Creating a joint financing programme at the regional level**
- **Programs mobility of personnel in the region to establish cooperation between science and industry**
- **Evaluation and benchmark innovation activities in the region**
- **Joint regional approach towards international institutions and funding programmes (e.g (eg World Bank) and EU programs**
- **Something else is the key to you, what?**

All the mechanisms are useful.
Annex

THE ONGOING PROJECTS



Intervju Dr. sc. Diana Šimić - konačni izvještaj

1. Kako je došlo do suradnje (inicijative – političke, gospodarske, znanstvene), koliko zemalja sudjeluje, tipovi institucija; tko su glavni financijeri;

eSEE Inicijativa je pokrenuta u Istanbulu u listopadu 2000, a konstituirana je u siječnju 2001. Ova je inicijativa bila pokrenuta unutar Pakta Stabilnosti[41]. Ciljevi e SEE Agende su se odnosili na: 1) Razvoj dugoročne strategije eSEE; 2) Pomaganje zemljama pri donošenju i implementaciji nacionalnih eSEE strategija; 3) Koordinaciji sa sličnim organizacijama; 4) Uključivanje digitalne problematike unutar ostalih inicijativa u regiji; 5) Osnivanje radnih skupina zaduženih za dalji razvoj eSEE goverment, eSEE obrazovanje, eSEE poslovanje. Od 2002. ova inicijativa dobiva i formalnu strukturu, odnosno tajništvo eSEE, je u UNDP uredu u Sarajevu.

Ono što je zanimljivo da se Hrvatska našla kao role model unutar agende eSEE i to zahvaljajući **Strategiji Hrvatska 21 stoljeće** koju je Vlada usvojila u 2002. godini i pri tome je nacionalna strategija za razvoj ICT sektora doživjela svoju implementaciju unutar države. Tako da je praksa koja je stvorena u Hrvatskoj uspješno preslikavana na ostale zemlje ponajprije Zapadnog Balkana kao i na ostale zemlje Jugoistočne Europe. U Hrvatskoj se projekt prvotno razvijao unutar Ministarstva Znanosti da bi projekt počeo 2003. odvijati unutar **Središnjeg državnog ureda za e Hrvatsku**, a riječ je instituciji koja je pod izravnim nadzorom Premijera države odnosno riječ je o tijelu državne uprave[42]. To znači da je tom tijelu dan veliki prioritet u Hrvatskoj. Među ostalim danas Središnji državni ured za e-Hrvatsku obavlja upravne i stručne poslove koji se odnose na razvitak informacijskog sustava državne uprave; uspostavu tehnološke i sigurnosne informatičke infrastrukture u tijelima državne uprave; racionalizaciju uporabe informatičkih resursa u tijelima državne uprave; povezivanje informacijskih sustava tijela državne uprave kroz jedinstvenu informacijsko komunikacijsku mrežu; donošenje tehničkih i normizacijskih pravila uporabe informatičke opreme u tijelima državne uprave te donošenje stručnih i normativnih podloga za pridruživanje Republike Hrvatske Europskoj uniji u područjima razvitka i primjene informacijsko komunikacijske tehnologije.

Usporedno s razvojem institucija na nacionalnoj razini razvijale su se i druge inicijative unutar Jugoistočne Europe kao što je **INA Academy 2004- 2005.** koja omogućuje usluge i treninge u području telekomunikacija zakonodavnih institucija u Jugoistočnoj Europi i osigurava stalne napore usmjerene prema izgradnji kapaciteta transfera dobre prakse za Vlade, telekomunikacijske operatore i građane unutar informacijskog društva. Druga važna poluga odnosila se na razvoj **Centra za eGovermence Development (CeGD)** zaklade koja je

[41] Inicijative usmjerene prema dugoročnoj suradnji u regiji osnovane 1999, koja je nastala pod izravnim političkim nadzorom SAD i EU

[42] Kao i što postoje još dva takva tijela kao što je SDOURF, i Državno tijelo za upravljanje imovinom

javno privatno partnerstvo za razvoj e-Upravljanja[43]. Ono što je Važno da je Stability Pact u međuvremenu zamijenilo **Regionalno Vijeće za Suradnju** koje je ujedno i osnivač CeGD u 2007. Za razliku od Pakta za Stabilnost Regionalno vijeće za suradnju ima isključivo predstavnike iz zemalja Jugoistočne Europe[44] u svom menadžmentu. Osnovna je uloga stvaranje i koordinacija projekata kao i kreiranje političke klime usmjerene implementaciji projekata a koja su u svojoj su u svojoj osnovi projekti regionalnog karaktera od kojih imaju koristi sve zemlje.

U 2007. godini održana je konferencija u kojoj je potvrđena provedba eSEE agende (npr. više od 90% eSEE Agenda provedeno u regiji), samim time su se stvorile pretpostavke za donošenje nove agende **eSEE Agende plus** i to za razdoblje 2007. -2012.

Među priortiete ove agende postavljeni su **1) Jedinstveni informacijski prostor,** koji uključuje dostupnost široko pojasne mreže, razvoj digitalnih sadržaja, uspostavljanje interoperabilnost elektroničkih javnih usluga u skladu s Europskim okvirom interoperabilnosti i usklađivanje zakonodavstva u području elektroničkih komunikacija i medija s EU zakonodavstvom; **2) Inovacije i ulaganje u ICT istraživanja i razvoj i obrazovanje** (dostupnost kompjutera u školama, curriculum ICT vještina, sustav treninga u ICT, izgradnja nacionalnih akademskih i istraživačkih računalnih mreža; **3) Uključivo Informacijsko društvo** – pristup tehnologiji, javne usluge i e Goverment usluge, Knjižnice, e Business, e Participation i eDemocracy. **Provedba ovog dokumenta je prioritet kako regije tako i nacionalnih zemalja u području ICT.**

2. Postoji li suradnja na inovativnim projektima (inovativna aktivnost je ona aktivnost koja rezultira nekom inovacijom – tehnološkom, organizacijskom, uslužnom tj. novim proizvodima/procesima/uslugama; da li je uključen znanstveni sektor; koji je intenzitet te suradnje;

Suradnja se odvijala ponajprije unutar FP programa kao što su: FP 6 eGovernemment priotitet, WB eGovernment dva projekta. Pretpostavlja se da je razina suradnje znatno šira i to unutar poslovnog sektora.

[43] Pri tome su ciljevi ove organizacije: 1) Povećati učinkovitost demokratskih i gospodarskih procesa u Jugoistočnoj Europi prema izgradnji informacijskog društva; 2) Podrška programima eUprave sudionika u eSEE (Electronic SEE) i bSEE (Broadband SEE) inicijativama; 3) Izgraditi regionalnu koordinaciju kao i mrežu čvorova programa i obuke u području eUprave; 4) Olakšavanje optimalne institucionalne veze kao i odnosa između zemalja jugoistočne Europe (iskustva, liderstva, odnos s donatorima i vlada; 5) Promicanje regionalnog vlasništva i usko koordiniranih s onima regionalnim inicijativa koje će imati koristi od SEE eUprave inicijativa; 6) Potpomoglo sudjelovanje regionalnih vlada koje podržavaju praćenje, izradu i provedbu politika vezanih uz elemente suvremenog informacijskog društva.

[44] Regionalno vijeće za suradnju se usmjerava prema regionalnoj suradnji u Jugoistočnoj Europi putem regionalnih projekata kao i uz pomoć izgradnje okvira koji podupire Europske i Euroatlanske udruženja.

3. **U kojoj mjeri može suradnja među WBC poboljšati inovacijski kapacitet WBC zemalja – njihovu sposobnost proizvodnje inovativnih proizvoda i međunarodnu konkurentnost;**

Teško je govoriti u ovom trenutku o inovacijama. One su ušle u eSEE Agendu plus 2007. Najveći potencijal se vidi za organizacije na daljoj prijavi FP 6 projekta, dalja promocija best practice modela kao i bolja koordinacija politika u ovom području mogu biti načini na koji se može unaprijediti inovacijski kapaciteti. eSEE Agenda u svojim specifičnim ciljevima govori o infrastrukturi u ovom području stvaranje i otvaranje domaćih baza za istraživače profesionalce analiza kapaciteta ICT industrije. Osim toga važna je i promocija eBusinessa predviđenog unutar eSEE Agendi a koja može dovesti do daljeg jačanja suradnje u ovom području.

4. **Koje su glavne prepreke za bolju suradnju WBC zemalja na inovacijama (institucionalno okruženje uključujući tehničku standardizaciju, strateška usmjerenja i vizije razvoja, ekonomske i sektorske politike (npr. politike zapošljavanja, subvencija, natjecanja, poreza...), administrativne prepreke, uloga obrazovnog sustava (ljudski resursi), uloga znanstvenog sustava, financijski i fiskalni sustav, pravni sustav, tehnološke kompetencije poduzeća i struktura industrije, nedostatak regionalnih inicijativa i programa;**

Ponajprije se to odnosi na institucionalni kapacitet, tehničku standardizaciju u području ICT tehnologije, kao i što su važni kapaciteti organizacija koje stoje iza eSEE inicijative a riječ je o RCC i CeGD. Dodatno dosta toga ovisi o političkom determinzmu odnosno odlukama politike, jer je država glavni izvor financiranja kao i što ga je potrebno razmatrati u kontekstu izbora ljudskog potencijala pri provedbi zamišljenih projekata. Diskontinuitet ljudskog potencijala može biti ozbiljna prepreka provedbi projekta.

5.3 Annex 3. Platform for the interviews with the innovation experts:

In the globalised economy, economic growth is linked to the capacity for innovation — the ability to transform knowledge and ideas into new products, processes or services.

As opposed to individual countries, regional cooperation of companies at the level of the Western Balkan (WB) might strengthen the innovation capacity of companies by offering the diversity of people, new markets, specialized infrastructure, educational institutions, workforce and other assets that supports innovation capacities and economic development.

This interview is targeted at the different stakeholders in the WB region with the aim to develop a deeper understanding about the forces that could help and hinder possible cooperation of companies at the level of WB region.

Overall development

- Do you think your country has been successful in the last 5 years regarding economic development?

- If yes, what, if any, are the catalytic events that led to its success?

- If not, what are the major barriers to economic prosperity that have appeared?

Government

Which type of measure of your state and local government is most important for fostering innovation activities of the companies? (business incubators, entrepreneurial centres, clusters, business associations, tax incentives for company' research, science-industry cooperation etc.). Could you mention any good example?

- Which policies help firms innovate?

- Which policies hinder innovation?

- How effective is your state and local government in fostering innovation and the development of innovative firms?

- What else the state or local government should do to foster innovativeness of the companies?

Universities and research institutions

- Are research institutes and universities valuable partners in innovation processes and business development of your country? Please, explain!

- How do they contribute to business innovation?
  – Basic research partnerships?

– Commercialization partnerships?

– Providers of employees (faculty, researchers, graduates)

- Something else

- Do businesses frequently and clearly state their needs for the university/institutes partnership? Why?

Regional cooperation

- Do you think that cooperation of the companies in the WB is necessary for innovation capacity of the companies in your country? Please explain!

- Can you say, what would be the main benefits of regional cooperation?

- What you consider to be major obstacles to regional cooperation?

- What the state or local government should do to foster regional cooperation of the companies in developing innovation?

Which of the following actions at the regional level could improve the innovation performance of companies in your country? (mark with x)

	Very important	**Medium importance**	**Low importance**
Creating a joint financing programme for innovation development at the regional level			
Common large scale technology programmes (e.g. technology platforms, joint technological/industrial activities)			
Common educational programmes for technical skills, innovation management, etc.			
Common apprentice (trainee) programmes of young experts			
Common programmes for mobility of personnel in the region between universities and business to establish cooperation between science and industry			
Strengthening regional innovation clusters in selected sectors			
Consistent legal framework aimed at facilitating foreign direct investments in the WB region			
A progressive liberalisation and mutual opening of the service market within the WB region			
Harmonisation and opening of the government's procurements markets			
Establishing regional venture capital fund			
Developing regional initiatives for large infrastructural projects			
Joint regional approach towards international institutions and funding programmes (e.g World Bank) and EU programs			
Something else, what?			