



WESTERN BALKANS REGIONAL R&D STRATEGY FOR INNOVATION

COUNTRY PAPER SERIES

KOSOVO*

WORLD BANK TECHNICAL ASSISTANCE PROJECT (P123211)

OCTOBER 2013

ACRONYMS

ADA	Austrian Development Agency
AUK	American University in Kosovo
BPD	Business Park in Dreams
BSC	Business Support Centre
BSCK	Business Support Centre Kosovo
CITT	Centre for Innovation Support and Technology Transfer
COST	European Cooperation in Science and Technology
DST	Department of Science and Technology
EBRD	European Bank for Reconstruction and Development
EC	European Commission
ECTS	European Credit Transfer System
ERA	European Research Area
EU	European Union
FDI	Foreign Direct Investment
FP6	Framework Program 6
FP7	Framework Program 7
GDP	Gross Domestic Product
HEI	Higher Education Institution
IBRD	International Bank for Reconstruction and Development
ICK	Innovation Centre Kosovo
ICT	Information and Communication Technology
IFC	International Financial Corporation
IP	Intellectual Property
IPA	Instrument for Pre-Accession Assistance
IPH	Institute of Public Health
IPO	Industrial Property Office
IPR	Intellectual Property Right
K-CIRT	Center for International Higher Education, Research and Technology Cooperation
KEK	Kosovo Energy Organization
LHE	Law on Higher Education
MEST	Ministry of Education, Science and Technology
MTI	Ministry of Trade and Industry
NRC	National Research Council
NRP	National Research Program
OECD	Organisation for Economic Co-operation and Development
R&D	Research and Development
S&T	Science and Technology
SEE	South East Europe
SK	Standardization of Kosovo
SME	Small and Medium Enterprises
SMESA	SME Support Agency of Kosovo

STIKK	Kosovo Association of Information and Communication Technology
UBT	University of Business and Technology
UNDP	United Nations Development Program
UP	University of Pristhina
USAID	United States Assistance for International Development
WBC	Western Balkans Countries
WHO	World Health Organization

FOREWORD

This *Paper* was prepared under the *Western Balkans Regional R&D Strategy for Innovation* -- World Bank Technical Assistance Project funded by the European Commission (DG ENLARG – TF011064), as part of the *Country Paper Series*.

The *Country Paper Series* aims to provide for each project beneficiary (Albania, Bosnia and Herzegovina, Croatia, Kosovo*, FYR Macedonia, Montenegro and Serbia) a brief profile of the current conditions of the national research system (rather than an exhaustive assessment of the country's national innovation system). Emphasis on selected issues reflected the priorities identified by participants during the implementation of the Technical Assistance.

ACKNOWLEDGEMENTS

This *Country Series Paper: Kosovo** was prepared by the World Bank team led by Paulo Correa (Lead Economist, World Bank) and Pluvia Zuniga (Senior Economist, World Bank) and comprised of Donato De Rosa (Sr. Economist, World Bank), Dusan Vujovic, Qursum Qasim, and Hari Subhash (World Bank Consultants). The Paper was prepared under the guidance of Ellen Goldstein (Country Director, ECCU4), Gerardo Corrochano (Sector Director, ECSPF), and Lalit Raina (Sector Manager, ECSF3).

The team would like to acknowledge the valuable inputs and comments provided by Avdulla Alija (Associate Professor, University of Prishtina, Department of Biology), But Dedaj (Executive Director, Innovation Consulting), Edmond Hajrizi (Rector and CEO, University for Business and Technology), and Murteza Osdautaj (Director, Department for Science and Technology, Ministry of Education, Science and Technology).

The note was prepared in January 2012 - June 2013 with data available until December, 2012.

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DISCLAIMER

The findings, interpretations and conclusions expressed herein are those of the authors and do not necessarily reflect the view of the World Bank or the Government of the respective country.

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

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EXECUTIVE SUMMARY

1. The long years of conflict in the 1990s have left behind a country lacking the human and technical capacity for research and development (R&D), and innovation. Since the conflict ended, resources were understandably confined to immediate needs related to reconstruction, such as infrastructure and basic schooling. Given the weak nature of the private sector, which is dominated by micro-enterprises, businesses have been unable to step into fill the void in R&D investment and technology transfer left by the state. As a result, Kosovo has been unable to develop its research and technology capacity.

2. This note describes Kosovo's profile in terms of innovation capacity and discusses the main features of the research and innovation system, its weaknesses and strengths, and recent policy trends. It discusses the primary challenges in the area of research and innovation, and identifies potential policy areas suitable to policy collaboration among the Western Balkan countries (WBCs).

3. Some of the major constraints facing the R&D system in Kosovo are:

- Insufficient human capital for technology transfer, research, and innovation, as reflected in the weak number of graduates in science and technology (S&T) and very few researchers working in key priority areas for the economic development of Kosovo.
- Under-developed linkages with global networks of research and innovation, including linkages with the scientific diaspora. The education system has taken important actions towards globalization and the international qualification of students, such as offering MSc and PhDs, but

participation in international technology platforms by research universities remains low. Although the history of the country is recent, research institutions and universities in Kosovo face the challenge of integrating with the European Research Area (ERA) through research collaboration and, at the same time, catching up in terms of human capital.

- Critical need to leverage research infrastructure. There is an inadequate and outdated infrastructure at research centers and universities, including information and communication technologies (ICT) infrastructure and networks.
- Increased support for training of young researchers, graduates, and post-graduates in S&T. For Kosovo to effectively progress in the path towards innovation and European integration, this is fundamental.
- For the private sector to enhance its innovation capabilities, assistance is needed on two levels:
 - 1) Linking with education and research institutions to improve innovation competences through technology transfer, technology absorption, and innovation.
 - 2) Incentivizing private sector investment in R&D through policy incentives (subsidies and matching grants, tax exemption for technology acquisition) and mechanisms to integrate international production networks.

4. Although significant progress has been made in developing the legal and institutional framework to support research and innovation, and steps have been taken toward the creation of

a national innovation strategy, institutional capacity and consultation mechanisms for policy design are yet to be strengthened. Capacity building and human resources are needed at the

level of planning, implementation, and oversight capacity, as well as other good governance mechanisms (monitoring and evaluation; data generation).

INTRODUCTION

6. There is growing awareness worldwide of the critical role innovation plays in economic development. In April, 2009, the WBCs signed a Ministerial Joint Statement of Sarajevo, which called for enhanced regional cooperation to promote innovation. The European Union (EU) has been at the forefront of this approach, urging member countries to spend more and better on research and innovation. To support the effort in the Western Balkans, the EU contracted with the World Bank in June, 2011, to assist the region in developing a Regional R&D Strategy for Innovation.

7. A two-pronged strategy is emerging, following extensive and multiple consultations with public and private sector representatives. This strategy combines: i) the advocacy of policy reforms at national levels to improve the impact of research and innovation on economic growth and job creation for the long term: and, ii) joint investments in selected regional initiatives that will help alleviate existing bottlenecks in the short-to-medium term. At the national level, countries will need to substantially enhance investment in R&D on a sustained-basis, and transform national innovation systems – the research base, public institutions, private sector, market actors, and linkages across them – into more effective, coherent, and competitive systems. In this process, enabling policy frameworks and offering adequate incentives to actors are crucial to stimulate new ideas, their transfer to industry, and private sector investment in risky and long-term projects related to innovation.

8. As a low-income country of recent creation, Kosovo faces great challenges to strengthen and consolidate the national productive sector, based on new economic and technological competencies, while also better integrating into the global economy and improving living standards and employment. As this note describes, limited capabilities in terms of human capital and R&D investment, a continued emigration of highly-skilled workers, under-developed competencies in technology transfer and knowledge absorption, and, more broadly, insufficient investment science and technology (S&T) are fundamental bottlenecks for the growth of private sector innovation and competitiveness. The government has taken steps since 2010 toward the construction of a national policy agenda for education, research, and innovation, and has begun creating enabling policy frameworks to support the nascent stage of the national innovation system.

9. This note describes Kosovo's profile in terms of innovation capacity, and discusses the main features of the national research and innovation system, its weaknesses and strengths, recent policy trends, and possible initiatives. The first section details the importance of R&D and innovation for economic development and growth. The second section describes the current profile of the country in terms of R&D and innovation activities. The third and fourth sections outline the actors, governance, financing, and dynamics of current policy programs and instruments. The conclusion posits possible national actions, as well as areas for collaboration with other WBCs.

THE IMPORTANCE OF R&D AND INNOVATION

10. The capacities to undertake scientific and applied industrial research, and to transfer, adapt, and assimilate new technologies into economic structures and diffuse them into society, are critical to national competitiveness and growth, as nearly everyone can see from the ferocious pace of technological change in consumer goods alone.

11. Ample and compelling evidence confirms this perception. Several international studies demonstrate that R&D spending increases result in a corresponding increase in productivity, leading to per capita income growth. These increases mutually reinforce each other and lead countries to long-term sustained growth rates. At the country level, R&D explains up to 75 percent of the differences in total factor productivity growth rates, once externalities are taken into consideration.² R&D expenditures of enterprises often correlate to higher sales and productivity growth, as well as a propensity to export. Furthermore, product innovation, which results from R&D efforts, leads to employment growth, and more highly skilled and better paid jobs, by expanding demand and new business opportunities.³

12. The potential impact of investments in research and innovation on productivity growth is even higher for developing countries, given the opportunity for “catching up” associated with larger investments in innovation.⁴ Results from a study using firm-level data for the Western Balkans show that innovative firms grow 15 percent faster in sales and 8 percent faster in labor productivity than do non-innovative firms.⁵ Firm R&D expenditures significantly contribute to growth in sales, by 14 percent, and labor productivity, by 7 percent. Furthermore, when firm R&D, training, and infrastructure services are compared, R&D is shown to have the highest correlation to sales growth. For neighboring countries, similar evidence is reported.⁶ Reaching the Lisbon Agenda target (R&D spending of 3 percent of GDP) could generate a permanent increase between 8 and 13 percent in Bulgaria and Romania’s export levels, for example.

13. Investing in R&D is necessary not only to enhance firms’ innovation capacity but also to absorb external technology properly. To do this, a nation must screen and identify technology options, adopt and adapt foreign technology and knowledge, and benefit from spillover effects from foreign direct investments and from other sources of knowledge transfer. As is well recognized, informal knowledge activities and day-to-day learning are also sources of ideas. Formal R&D is important, however, as it represents a systematic and more effective approach to technological innovation – both radical and incremental innovation – in both the manufacturing and non-manufacturing sectors.

14. Public support for research and innovation is critical, particularly in the context of stagnant economies. Public investments in research and innovation consistently have been a priority in economic stimulus packages for Organisation for Economic Co-operation and Development (OECD) economies. In this sense, a growing consensus on the importance of counter-cyclical innovation policies – increasing R&D investment and improving framework conditions – is emerging. Finland and South Korea are at the

² Griliches (1979).

³ Harrison et al. (2008).

⁴ See Lederman and Maloney (2003) for estimates of social rates of return for R&D.

⁵ Seker (2012).

⁶ World Bank (2011).

forefront of this approach, increasing public spending on innovation even in the context of tighter fiscal policies.⁷

15. Building an environment conducive to enduring innovation requires a comprehensive policy agenda and multiple resources, which are often scarce in developing countries. Smart policy design is needed, which requires devising cost-effective and sustainable strategies that will bring results in both the short and long run. Market and coordination failures may hinder progress. The lack of linkages among actors in an innovation system – between public research institutions and the private sector, within and across industries – can prevent innovation investment and business from reaching their growth potential. Failures in financial services and other specialized resources discourage private investment in innovation and new business creation leading to an inefficient allocation of resources. Interventions are therefore needed at different levels and through different mechanisms, in collaboration with the private sector and other relevant decision-makers.

1. WHERE THE COUNTRY STANDS

Economic Performance and Structure

16. The Republic of Kosovo is a lower-middle-income country with solid economic growth performance since the end of the war. Kosovo's economic growth has averaged over 4 percent since the end of the conflict in 1999, and it has remained positive throughout the global economic crisis. Growth peaked at 6.9 percent in 2008, before declining to 3 percent in 2009 in the wake of the crisis. The overall impact of the crisis was smaller than in neighboring countries, largely because of Kosovo's limited integration into the global economy and increased public spending on reconstruction and private sector investment.⁸ The diaspora, especially to the German-speaking countries of Central Europe, remains an important source of remittances, although they have been affected by the international state of affairs.⁹ The country continues to depend on both the diaspora and the international community for financial and technical assistance.

17. Largely reflecting historical legacies, Kosovo remains one of the poorest countries in Europe, with a per-capita gross domestic product (GDP) of about €2,700 and about one-third of the population living below the poverty line; roughly one-eighth are in extreme poverty. Unemployment in particular, estimated at about 40 percent, remains a central economic-policy challenge. However, in relatively little time, Kosovo has slowly transitioned to a market-based economy with macro-economic stability. Since the end of the conflict, Kosovo has privatized several state-owned enterprises, signed free trade agreements, embarked on economic projects with multilateral agencies, and managed a budget surplus until 2011.

18. International economic integration has yet to be fully accomplished. Kosovo does not have a competitive and export-friendly economy, and the external imbalances continue to be high.¹⁰ The level of

⁷ World Bank (2009).

⁸ World Bank (2013).

⁹ Remittances from Germany, Switzerland, Italy, and the Nordic countries (mainly Sweden) account for over 15 percent of GDP, while aid and donor-funded activities account for another 7.5 percent of the GDP. (USAID, 2010).

¹⁰ http://www.switzerland-ge.com/en/filefield-private/files/42915/field_blog_public_files/9804

private investment is growing, but investment efficiency is a major concern. A number of serious obstacles need to be addressed. The 2010 BEEPS report for Kosovo points to five sets of obstacles to doing business. While in some areas the business climate in Kosovo has improved and filled the trade gap with neighboring countries, as reported in the recent Doing Business report¹¹, some challenges remain, such as¹²: severe infrastructure gaps, deficiencies in the rule of law, shortages of appropriately skilled labor, limited access to finance, and onerous regulatory procedures for business entry and operations.¹³

19. The country's production capacity was substantially reduced during the 1990s. Currently, about 80 percent of business is in the service sector, which accounts for two-thirds of total GDP, whereas only 2 percent of all businesses are registered in the primary sector (agriculture/extraction) and 16 percent are in the secondary sector (manufacturing). Minerals and metals include a variety of construction materials that once formed the pillar of the national industry. Production has declined because of aging equipment and insufficient investment. A limited and unreliable electricity supply that suffers from technical and financial problems is a major impediment to economic development. The agriculture sector is characterized by low productivity. The informal sector remains an important challenge. Kosovo's enterprise sector remains dominated by small and micro-enterprises and is highly concentrated in trade and services (less than 10 percent of firms are in the manufacturing sector).¹⁴ About 99.7 percent of the enterprises employ fewer than 50 people, contributing to about 60 percent of the overall turnover in the economy.

20. Hence Kosovo faces significant challenges to leverage its growth potential. Some of these challenges are basic infrastructure – e.g., an outdated industry equipment and unreliable electricity supply – and, more generally, the need for strengthened business framework conditions. Kosovo's candidacy for EU membership was given an assessment,¹⁵ following the European Commission's Feasibility Study in October 2012, which found no legal obstacles that would prevent the EU from opening negotiations for a Stabilization and Association Agreement.¹⁶

R&D and Innovation Trends

21. Research and technology development are at the embryonic stage in Kosovo. According to recent statistics, general public expenditures on R&D in Kosovo amounted to only around 0.1 percent of GDP in 2011,¹⁷ In terms of statistical indicators, which could provide a better portrait of the state of progress in research and innovation activities, developments and methodologies have just started to be implemented. For these tasks, institutional capabilities need to be established or strengthened.

22. As with other countries in the region, an important part of the deficiency in research capabilities relates to the imposed exclusion of the academic and research community in the pre-war phase, when academic personnel were pushed to isolation from the international scientific networks.¹⁸ Critical damage

¹¹ Kosovo has improved its ranking in the 2013 report -from 126th to 98th out of 185 economies world-wide World Bank (2013).

¹² European Commission (2011b).

¹³ Starting a business is a particularly lengthy and costly procedure, requiring 52 days and 23 percent of income per capita, and is more complicated than the average for the southern European region World Bank (2012a).

¹⁴ Elci (2013).

¹⁵ Kosovo* declared independence in February 2008, but this step has not been universally supported. By early 2013, 98 of a total 193 UN member states (51 percent) have recognized Kosovo*'s independence, including 22 EU member states.

¹⁶ World Bank (2012).

¹⁷ OECD (2013).

¹⁸ National Research Council (2010).

to material and infrastructure were suffered during the war, and the difficulties in fostering economic recovery since then have limited the possibilities for renewal of these sectors.

R&D Spending

23. The Law on Scientific Research Activity states, “up to 0.7 percent shall be allocated from the budget of Kosovo for the purpose of fulfilling the necessary conditions for scientific research and for providing the means to undertake scientific research.” This quota is far above what has been achieved (0.1 percent). The data on R&D spending are not readily available, making it hard to develop estimates about current levels of spending on research. The Ministry of Education has roughly 4.6 million euros allocated to higher education, including science and technology. The total budget of the Ministry included international donations of 40.98 million euros, also covering the budget for the University of Prizren. The government subsidies to the University of Prishtina increased from 11 million to 15.4 million euros during the period 2008-2010, mainly to increase academic salaries.¹⁹

Human Resources and Brain Drain

24. Ever since the creation of the country, the focus of the education ministry has been on primary education, given the necessity to target fundamental schooling.²⁰ In 2011, only 8 percent of the population had a university degree, which is significantly lower than other Western Balkan countries (23 percent in Croatia and 17 percent in Macedonia) and below the average of EU-27 countries (34 percent).²¹ Government spending on higher education is low, reaching 11 percent of total spending on education, equivalent to 1.3 percent of total government spending in 2010. With respect to the fields of study, most students are enrolled in social sciences, to the detriment of natural sciences or engineering.

25. The lack of qualified human resources is an important constraint to innovation. In an OECD survey of 153 companies in Kosovo, the lack of qualified human resources was considered an obstacle to innovation by 25 percent of companies, while it was a relevant obstacle for 50 percent of information and communications technology (ICT) companies. There is no official number of researchers. According to the survey conducted by the World Bank, the University of Prishtina has the highest concentration of researchers, with 1,500. In terms of research, the main areas conducted at universities are: medical engineering, chemical and physical sciences, earth and environment-related sciences, and engineering, as well as agriculture sciences.²²

¹⁹ OECD (2013).

²⁰ Out of the 498,000 students enrolled in the public education system in 2008/2009, 73 percent were in the preprimary and basic (grades 0-9) level, 20 percent in secondary education, and a low 7 percent in tertiary education.

²¹ OECD (2013).

²² Elci (2013).

Table 1: Number of FTE researchers in R&D entities in Kosovo

Name of the entity	2012	2011	2010	2009	2008
University of Prishtina (UP)	1550	1550	1550	1550	1550
Center for Energy & Natural Resources	2	2	2	2	2
Hydrometeorological Institute of Kosovo	3	4	3	2	3
Institute for Spatial Planning	6	6	6	6	6
Institute "INKOS"JS	77	75	76	82	87
National Institute of Public Health	11	11	9	9	7
Kosovo Institute of Agriculture -Peja	6	6	6	5	5

Source: Elci (2013).

Table 2: Number of FTE technicians in R&D entities in Kosovo

Name of the entity	2012	2011	2010	2009	2008
University of Prishtina (UP)	100	100	100	100	100
Center for Energy & Natural Resources	3	3	2	2	1
Hydrometeorological Institute of Kosovo	11	11	11	11	11
Institute for Spatial Planning	6	6	6	6	6
Institute "INKOS"JS	44	45	48	44	42
National Institute of Public Health	20	19	17	15	15
Kosovo Institute of Agriculture -Peja	11	11	11	12	12

Source: Elci (2013).

26. Brain drain has been a critical handicap in the Western Balkan countries since the early 1990s. In Kosovo, a large number of qualified workers continue to leave the country due to the conflict, leaving a large gap in human capital. Driving forces for the continued migration are found in the economic impact on living conditions, political instability, poor funding, and wages. With a substantial percentage of the populations from the region living abroad, harnessing the potential embedded in the human and social capital of the highly-skilled diaspora and reversing brain drain remains a challenge.

27. However, the lack of official statistics about the diaspora hinders sufficient monitoring of migration and the corresponding design of policies. The following unofficial estimates have been reported. According to a survey by the Riinvest Institute, about 17 percent of Kosovars live abroad, and about 30 percent of Kosovar households have one or more their members living abroad. Within the total migration rate of 17 percent, about half (46 percent) of the emigrants have a secondary education, and about 10 percent have obtained higher education. More than 22 percent of emigrates have obtained part of their education in other countries.²³

28. More recent studies indicate that migration by university graduates may be slowing down. According to the recent university survey conducted by the OECD, only half of the institutions considered brain drain a major institutional problem. Nine of the 14 have developed “brain gain” programs and encourage collaborative research with the diaspora. Kosovo has proposed the establishment of a brain gain fund to increase mobility of researchers into the country. This could potentially fill the gap in trained researchers, with a positive impact on R&D.

²³ Mustafa et al. (2007).

Research Institutions and Infrastructure

29. According to the OECD survey “Investment Compact for South East Europe,”²⁴ the main constraint on research activities is a lack of funds to carry out research, as stated by 13 out of 14 institutions. Other major constraints are a lack of linkages with business and a lack of personnel with adequate skills, according to 8 out of 14 institutions. The ability to find and retain researchers is also a key issue faced by research institutions. All institutions reported a shortage of scientific researchers and 12 out of 14 institutions specified that the main reason was a lack of funds to hire more researchers²⁵.

30. As for the size of the institutions, the University of Prishtina (UP) is the largest R&D performer in the country. According to a recent institutional survey conducted by the World Bank, four organizations reported a total of 27 equipment/laboratory facilities, 7 of which were assessed to be poor or fair condition.²⁶ Regarding laboratory facilities, three out of five institutions think that international safety standards are not met, physical conditions are not regularly assessed, an investment plan does not exist, and the stock of laboratory facilities are not monitored. On the other hand, there is a rather positive opinion on the environmental conditions for R&D activities. The institutions do not have well-defined criteria for the promotion of researchers, however. The most important criterion is the number of publications. The country has an important challenge with respect to infrastructure in R&D at research institutions.

31. According to the four institutions consulted, the most important barriers to R&D infrastructure organizations in terms of conducting quality research were the following:

- The lack of finance for research as well as the lack of appropriate equipment, accurate data, communication among institutions, and expertise in certain fields for the Institute for Spatial Planning;
- The lack of databases for Kosovo for air and surface water quality, and climatological conditions for the Hydro Meteorological Institute of Kosovo;
- The lack of funds, projects, collaborations, technical resources, and equipment for R&D for the Kosovo Institute of Agriculture – Peja; and,
- The lack of modern infrastructure, networking, and cooperation with the industry, as well as the need for human capacity development, internationalization of R&D, and an increased budget for R&D activities for the University of Prishtina.

32. Research organizations tend to believe that developing and maintaining networks with other researchers and groups in the country and in the Western Balkans, participating in the EU Framework Programs, researcher mobility, and membership in professional organizations at international level are the most important activities in the area of knowledge transfer and research commercialization.

²⁴ OECD (2013).

²⁵ OECD (2013).

²⁶ Elci (2013).

The Business Sector and Industry-Science Linkages

33. Private organizations play a limited role in research. Industrial demand for R&D in Kosovo is low. The absorptive knowledge and technology capacities are severely limited in size, scope, and quality, mainly due to the absence of any critical mass of research and technological development. Moreover, the potential absorptive capacities in the economy and academia in Kosovo are not well utilized, nor are they able to cope with technological progress.

34. The predominance of micro-enterprises in the economy, mostly oriented to agriculture and services, explains in part the lack of private sector investment in R&D. According to the SME Support Agency of Kosovo (SMESA), there are more than 100,000 enterprises in Kosovo, half of which are estimated as active firms. Of these, 95 percent are considered to be SMEs²⁷. The SMESA estimates that existing firms are mainly active in trade and services, while less than 10 percent are in the manufacturing sector, mainly food processing.²⁸ Access to finance remains problematic, primarily due to the high risks in the economy. Measures to improve access to finance for SMEs are envisaged in the SME strategy adopted in July 2011.

35. S&T and innovation statistics are not collected in Kosovo. There are a number of studies being implemented by various organizations to collect and analyze data on innovation activities of the private sector. One of the most recent surveys conducted for this purpose is the private sector survey implemented by the OECD.²⁹ According to this survey of 153 companies, many firms considered themselves to be innovative, with high levels of collaborations in innovation. The concept of innovation is broadly understood and mostly referred to incremental innovation that responds to market adaptation or introduction. In fact, very few firms are actually engaged in R&D activities. About 80 percent of these firms do not actually conduct formal R&D activities, and 77 percent invested less than 1000 euros in R&D during 2009-2011. Sixty-two percent of the surveyed companies that perceive themselves to be innovative did not devote any financial resources to R&D during 2009–2011. This is particularly evident in the case of medium-sized companies, 67 percent of which did not devote any financial resources to R&D. The sector with the highest share of R&D performers is manufacturing, at 47 percent.

36. When analyzed by type of innovation activities, companies invest the most in acquisition of machinery, equipment, and software, with 60 percent of companies investing over €10,000 per year. Identification of innovation opportunities is mainly acquired from the Internet (90 percent), consumers (50 percent), suppliers (44 percent), and in international trade fairs (46 percent). The main drivers of innovation are market changes: clients' changes and preferences (77 percent), competition from other companies (63 percent), and the need to adapt to innovation from supplier (60 percent). The lack of financial resources for innovation activities is perceived as the greatest barrier to innovation. This obstacle takes various forms, including the lack of funds within the company or a group (50 percent) and the lack of external financial resources (54 percent). The high cost of innovation, which is perceived as a crucial obstacle (58 percent), can also be linked to the lack of the resources that are required to cover these costs.

²⁷ Out of 103,755 enterprises: 102,070 (or 98.37 percent) are micro enterprises; 1,406 (1.35 percent) are small; 221 (0.22 percent) are medium; and 58 (0.06 percent) are classified as large.

²⁸ The Agency has a database for registering the enterprises, but the database does not keep details like their sectors and number of employees.

²⁹ OECD (2013).

37. According to the OECD survey on research institutions, collaborations between research institutions and the private sector are few, and are commonly limited to training and consultancy services, as well as the use of technical facilities. The reasons for a lack of co-operation with the private sector were primarily the absence of interest from private companies and an absence of government support to co-operate with private companies. The incentives for innovation and technology transfer are also missing. There is a lack of awareness about innovation, leading to a marginalization of R&D and its results in higher education institutions. Universities primarily engage in teaching, and their research capacity is limited. Moreover, public universities require prior approval of the Ministry to exploit any significant intellectual property right for its benefit. Technology transfer from research institutions to the private sector is not developed in this country.

38. According to the background study conducted by the World Bank, out of four institutions consulted, only the University of Prishtina currently has a unit responsible for knowledge transfer and research commercialization, with only two people working there.³⁰ According to this survey, the following activities are given importance as technology transfer channels: consultancy services, sharing laboratory facilities with other entities, implementing education/training activities, and conducting contract research. These activities are of high importance to the organizations as routes to research collaboration and knowledge transfer. Applying for patents, creating spin-offs, and licensing patents held are not seen as having sufficient importance to affect the economy. The survey also reported that none of the organizations has a policy regarding intellectual property (IP) ownership. In addition, there are no specific incentives provided to researchers to promote protection and commercialization of IP. However, some universities have started to provide industry-liaison assistance.³¹

39. According to the institutional survey, research institutions in Kosovo believe that the lack of finance to start new firms is the most important barrier cited by the organizations for knowledge transfer/research commercialization. Missing IP policy on commercialization at the institutions, institutional constraints for researchers to participate in spin-offs and technology transfer activities, and the lack of expertise and skills for technology transfer management were also stated as important obstacles to industry-science collaboration. The respondents are of the opinion that these factors are also severe obstacles to the commercialization of technology at their organizations.

S&T Outputs and Innovation Performance

40. Kosovo has the lowest production of research publications and the lowest citation index in the WBCs and Eastern Europe.³² However, the total of publications (reported at SCOPUS) has increased from 11 in 2007 to 93 in 2010. The normalized citation index, an indicator of the quality of research, is the lowest among the WBC countries (between 0.10 and 0.42 during the period), far behind EU-27 (1.30). Kosovo has only one institution with more than 100 documents during this time, the University of

³⁰ Elci (2013).

³¹ The University of Prishtina provides support regarding “Negotiating and conducting legal work for licensing contracts,” “Searching partners, networking with industry and other technology transfer agencies,” “Negotiating and conducting legal work for research contracts,” and “Access to seed funds.” The Institute for Spatial Planning states that they provide services on “Managing material transfer or confidentiality agreements” and the Hydro Meteorological Institute of Kosovo* provides assistance in “Negotiating and conducting legal work for research contracts.” The institutes state that access to seed funds is the most needed activity.

³² SCIMAGO Research Group (2013).

Pristina-Kosovo, with an international collaboration rate above 50 percent and a normalized impact of 0.63.

41. Kosovo has a high rate of international collaboration in publications (72.51 percent), the second in the region. With respect to this indicator, the country is far above the EU-27 and WBC averages. Most international collaborations are with other WBCs, in particular with Serbia, Macedonia, Albania, Croatia, and Bosnia and Herzegovina. In Europe, Slovenia, Germany, and France are the most relevant partners, while collaborations outside Europe are only with the United States. There are no inter-sector collaborations in publications in Kosovo.

42. In 2010, the Industrial Property Office (IPO) received 85 patent applications and decided on 147 patents. Pending applications tend to accumulate due to the inadequate infrastructure and low level of human resources in this institution³³. According to IPO, there are currently more than 22,000 trademark, design, and patent applications.³⁴ The number of patent applications was stated as around 500, the majority of which were transferred from the Former Yugoslavia and approximately 99 percent of which are foreign patent applications, mainly from EU countries. According to the data provided by the IPO, there are 15 local individual inventors with patent applications.³⁵

ICT Infrastructure and Diffusion

43. ICT infrastructure in Kosovo is in a better state when compared to the outdated nature of other research infrastructure in the country. However, it still of poorer quality than that in developed countries, is often useless for serious research projects, and hampers the integration of institutes in Kosovo to participate in international research projects. There is also a significant gap between the demand and supply of ICT graduates, which is crucial for developing the sector.³⁶

44. However, Kosovo is attempting to develop an adequate technology infrastructure and level of investment to ensure the infrastructure and human capacity to access the global network. A draft e-Learning Strategy (2010) has been developed that addresses the level of investments needed to build capacities that will contribute to the life-long education and training of Kosovo's citizens.

2. THE RESEARCH AND INNOVATION SYSTEM – GOVERNANCE AND ACTORS

45. The following section explores the nature of Kosovo's R&D and innovation system—stakeholders, governance, development of a national view or strategy, funding, and dynamics—with the aim of identifying possible weaknesses and resultant reform possibilities.

³³ OECD (2013), Elci (2013).

³⁴ Elci (2013).

³⁵ Due to the lack of an effective system for collecting and analyzing intellectual property data, the IPO could not provide reliable statistical information.

³⁶ European Union, Innovation Scoreboard (2011).

46. Information gathered through national reports, interviews with key actors, and a policy questionnaire, as well as recent studies, indicates that the fundamentals needed for a modern national innovation system are at the embryonic stage. The construction of a national strategy and the elements required for this process – cross-sector dialogue, inter-agency policy coordination, an education and technology roadmap – have just started to be developed. Institutional competences and funding for research and innovation policy development still need to be strengthened

Need for a Systemic View

47. Given the cross-sector nature of knowledge and innovation, governance for research and innovation policy incorporates a broad set of mechanisms and actors, instruments, and institutions in the field of R&D, education, technology and specialized services, and entrepreneurship. This calls for policy coordination across different ministries and agencies.

48. The innovation system comprises many stakeholders within the public and private sectors (universities, research institutes, ministries, and private entrepreneurs) spending on R&D and interacting as parts of a value chain that should move ideas to market.

49. When properly functioning, R&D transforms into innovation and leads to products and services that strengthen the country's business investment, technological sophistication, comparative advantage, and economic performance. Performance of national innovation systems depends on both the capabilities of the actors – science sector, private sector, policy institutions, financial institutions and market intermediaries, society – and well-articulated and strong linkages among them. Different stakeholders act at different stages in the innovation process.

50. In the context of developing countries, a well-functioning innovation system facilitates incremental technological improvements by firms. This can occur through employment of highly qualified science and technology personnel, collaboration with researchers, training, extension services (R&D and engineering services, quality certification and standards), or the ability to access and utilize global technology developments.

51. Improving the knowledge capacity (R&D) and innovation is not a simple or quick task, and it requires the active participation of all stakeholders. The multiplicity of players, difficulty in aligning incentives and establishing modern legal frameworks and government policies, and encouraging private sector actions is challenging. Overcoming ingrained or legacy cultural differences, if not distrust, between entrepreneurs and researchers, reducing red tape requirements, or stimulating the private sector to take a more proactive interest in R&D to gain global market share all require concerted and well-conceived initiatives.

Need for Good Governance

52. In the path toward research excellence, it is essential to have research systems that are competitive and transparent, with quality-driven recruitment practices and efficient administrative procedures serving the purposes of institutional missions. Better governance of universities and public laboratories can be achieved through new mechanisms, such as greater use of project funding, contracts and grants awarded through competition, and selective increases in funding for research fields that are

linked to social and economic need.³⁷ Reform of the management and funding of higher education and science institutions, through incentives that focus on excellence and relevance, can help strengthen the contribution of public investment to scientific progress and innovation.

- Merit-driven research funding means competitive granting, subject to a peer-review system and international criteria in which projects are selected on the basis of the quality of proposals and expected results.
- Good governance in research funding implies meritocracy and transparency in grant funding; accountability, evaluation, and monitoring practices; transparency; and, performance evaluation to measure contributions to knowledge, local economic and social needs, and growth. Evaluation criteria must recognize that excellence in research and training has become, at least in some disciplines, tied more to industry applications and contributions than to addressing social problems.³⁸

53. In research institutions, appropriate governance mechanisms mean performance-driven career development, clear and transparent recruitment policies, and clear rules regarding ownership and commercialization of intellectual outcomes – revenue participation by researchers – resulting from research. This also implies that results of publicly funded research are protected and published in a way that encourages their use.³⁹ In order to improve governance for research excellence, and consistent with the goal of a better integration with ERA, examples of governance principles to make research careers more attractive can be found in the European Charter for Researchers and the Code of Conduct for the Recruitment of researchers.

54. Good governance of universities requires enhanced autonomy to organize their activities in the areas of education and training; research and innovation; open transparent and merit-driven recruitment methods; institutional accountability; quality assurance systems; and, the ability to access alternative sources of funding and engage in interactions with industry (e.g., collaboration, curricula development, and doctoral training).

55. Some of these policy areas are covered by the Bologna Declaration within the framework of the European Higher Education Area, which was signed in 2007 by 46 governments. Countries agreed on 10 action lines aimed at making higher education in Europe more compatible and comparable, and more competitive and attractive for students and researchers in Europe and worldwide.⁴⁰

56. Governance is crucial to the success of any public policy. Good governance for research and innovation policy means having an integrated and coherent policy-making process in place with stable institutions, and deploying policy agencies that perform according to policy objectives and well-defined implementation procedures. Elements of good governance include policy formulation mechanisms

³⁷ OECD, (2011a) and OECD (2011b).

³⁸ OECD (2011b).

³⁹ Merit-based recruitment implies not only scientific productivity but also a wider range of evaluation criteria, such as teaching, supervision, teamwork, knowledge transfer, management, and public awareness activities. (See Innovation Union and the Code of Conduct for Recruitment of Researchers, EC.)

⁴⁰ This entails comparability in degrees. Countries are setting up national qualifications frameworks that are compatible with the overarching framework, and adopting quality assurance mechanisms in accordance with the Standards and Guidelines for Quality Assurance in the European Higher Education Area (ESG). Another element is fair recognition of foreign degrees and other higher education qualifications in accordance with the Council of Europe/UNESCO Recognition Convention.

(consultation and priority identification), target setting and programming (medium and long run), monitoring and accountability, and information dissemination mechanisms.⁴¹

57. A fundamental component of good governance is the legal framework for research and innovation activities in which stakeholder responsibilities are clearly defined, especially for funding and performing agencies. Government obligations in the provision of resources to deploy such missions and objectives must also be delineated.

Legal Framework

58. The Law No. 2004/42 on Scientific Research Activity provides a legal framework for R&D in Kosovo in general, and for the Scientific Research Program in particular. This law acknowledges the importance of scientific research as a public and national interest. This law requires up to 0.7 percent of the government budget to be allocated for scientific research in order to perform and develop scientific research. Actual expenditures are far below this target (0.1 percent in 2011). Other laws of high relevance for research and innovation are: The Law on Academy of Science and Arts of Kosovo, adopted in 2004, and the Law on Higher Education in Kosovo, adopted in 2011.

59. The Law on Scientific Research Activity foresees the creation of the National Research Program (NRP), which is required to conceive the policy roadmap for research. The creation of the NRP is responsibility of the National Research Council (NRC), which was in turn established based on Article 53 of the Law. Implementation of the NRP is the shared responsibility of the NRC and the Ministry of Education, Science and Technology (MEST). MEST announce the competitions, making the final decision on financing, and contracting. The Law per se does not anticipate the establishment of a specialized agency to implement the R&D program.⁴²

60. For the policy roadmap, the NRP is required to provide and identify research priorities, establish provisions for infrastructural investments, enhance participation in international scientific research projects, and delineate a systematic education program for researchers.⁴³ The NRP should be approved for a period of 5 years by the Kosovo Assembly, which also has to provide the program's funds.

61. According to this law, research activity can be undertaken by public universities, research institutes, and the Kosovo Academy of Science and Arts. Other legal entities can perform research activity under specific and legal criteria, such as having a long-term research program, facility and equipment, and having at least five permanently employed researchers, two of whom have a PhD and a recognized status. Based on these requirements, private organizations, including private universities, are entitled to obtain funding and carry out research work.

62. The Law does not specifically define the establishment of a specialized agency to implement the R&D program. The Law on Scientific Research Activity also designates institutions that can be listed as public scientific-research entities, which are the Kosovo Academy of Science and Arts; the Albanological

⁴¹The European Commission's White Paper on Governance (2001) sets out five principles that underpin good governance. They are: openness, participation, accountability, effectiveness, and coherence. These are required for the sound management of public resources and essential in creating environment conducive to business, as well as a productive partnership between public and private sectors.

⁴²National Research Council (2010).

⁴³National Research Council (2010).

Institute and the History Institute; and the universities. Major laws that regulate research are listed in the Annex.

Actors

Policymaking and Implementing Agencies

63. The two main policymaking agencies of Kosovo's research system are MEST and the Ministry of Trade and Industry (MTI). Both are also responsible for different implementation bodies that focus on specific issues.

64. A key role in shaping Kosovo's R&D policy is held by the NRC. For innovation policy, the Ministry of Economic Development plays a growing role. The network of policy bodies also includes different government institutions and agencies in charge of policy design, implementation, and advisory activities.

65. MEST is responsible for the development of the scientific research and higher education system and the promotion of innovation and technological development. It is in charge of designing public policy in support of research and education systems, and funding its development and policy programs. Within the MEST, the Department for Science and Technology (DST) is responsible for the creation of infrastructure, the institutional and financing of the development of science and research, and the promotion of technological development. The DST is divided into the Division of Science and the Division of Technology.

66. MEST has very limited budget to effectively deploy a comprehensive research and innovation policy program. In fact, the Ministry's experience in funding and implementing research policy programs is very recent. Funding of research just started in 2011 with the NRP. That year, MEST allocated 200,000 euros (see further details in Section 4 Policy Instruments). Given the budgetary constraints, policy implementation mechanisms such as monitoring and performance evaluation remain under-developed.

Research Performing Institutions

67. In both the Law on Scientific Research Activity and the development strategy for higher education by MEST, public universities receive special attention and are given responsibility to conduct research. In general, they employ the majority of the researchers and scientists. Nonetheless, the higher education system in Kosovo is characterized by a marginalization of scientific research. This conclusion applies to the entire sector, including the University of Prishtina, which is the largest research-oriented institution in Kosovo.⁴⁴

68. As explained above, private organizations play a very limited role in research, but they are entitled to carry on the research work and obtain funding for it. The NRC has been put in charge of providing an opinion regarding the fulfillment of the standards for organizing and developing scientific research in private scientific organizations, and MEST has the responsibility to give the license (after a

⁴⁴National Research Council (2010).

positive opinion) and to register private scientific organizations in the Register of Scientific-Research Institutes.

69. Among institutions with potential research relevance in Kosovo are:
- a. Public universities
 - The University of Prishtina
 - b. Non-university research organizations
 - The Kosovo Academy of Science and Arts – the most important non-university scientific research organization in Kosovo, promoting scientific thinking and artistic creativity.
 - The Institute of Albanology in Prishtina – next to the Academy, it has the best reputation as a non-university scientific research organization in Kosovo.
 - The Institute of History – concentrates on mobility scheme-based research activities (e.g., visits to libraries and archives in Albania and FYR of Macedonia).
 - Kosovo Standardization Agency and Department of Metrology – a technology-based organization that fosters economic growth, especially through foreign trade. The Agency works under the Ministry of Trade and Industry, however, and is still understaffed and not yet fully operational.
 - c. Other Institutes with Research Components (research not as a core activity)
 - Institute of Public Health (IPH);
 - Institute of Livestock Raising and Veterinary, Prishtina;
 - Institute of Crops Processing and Sapling, Peja;
 - Institute of Chemistry, Prishtina; and,
 - Institute of Agro-economics, Fushe.
70. According to the Law on Scientific Research Activity, the only institutions that are explicitly listed as public scientific-research entities are: the Kosovo Academy of Science and Arts; the Albanological Institute and the History Institute; and the universities.

Advisory Bodies

71. Kosovo does not seem to have cross-sector consultation bodies in charge of coordinating public dialogue. Nor is there a specific entity for steering research and innovation policy.⁴⁵ An initial effort has been made recently. In coordination with MEST, a working group was created in 2012 involving the Ministry of Trade and Industry, Ministry of Economic Development, universities, and business representatives. Additionally, a large consulting group was created in order to be involved during workshops and public discussion for the preparation of a national strategy. The consulting group represents a variety of different stakeholders of the R&D and innovation system.

72. MEST is advised by the Center for Innovation and Technology Transfer, which is under the Department of Science and Technology, while the Ministry of Trade and Industry is advised by the SME Support Agency. The recent creation of the National Economic Development Council as a consultative

⁴⁵ OECD (2013).

body with the business sector indicates that such a body could play a key role in the development of innovation policy.⁴⁶

Intellectual Property Rights and Standardization Systems

73. The legal framework for IPR protection (patent law, trademark law, and industrial design law) is in place in Kosovo, as explained by the IPO. There has been some progress on IP rights. The IPO recently passed the Laws and the Strategy on Property Rights 2010–2014, with amendments on 2011. The IPO employs 14 staff, which is not sufficient for effective operation of the organization. They conduct the pre-assessment of patent applications. The main problems identified are the low quality of applications and dearth of patent attorneys.⁴⁷ At the same time, awareness and incentives for patenting are very low. Currently, there are no activities implemented by the IPO on raising awareness of IPR. The IPO has thus far concentrated on IPR enforcement with the support of the EU. The organization expected to receive additional support from the EU in 2013 for conducting awareness raising activities in the country.

74. The Agency for Standardization of Kosovo (SK) proposes a strategy for standardization in Kosovo, prepares and publishes standards, collects and disseminates information on standards and standardization, and assesses and funds grant applications. The Directorate of Accreditation is responsible for accreditation of laboratories and product certification. The number of certificates released has been on the rise the last few years. In addition, the Kosovo Customs Office has had an Intellectual Property Rights Unit since January 2011.

Higher Education Institutions (HEIs)

75. Kosovo has undertaken important efforts in the direction of the Bologna Process, although it is not yet a signatory member. Reforms in higher education are developed according to Bologna, together with the adoption of the European Credit Transfer System (ECTS) and the Diploma Supplement. More than 75 percent of institutions and programs are using the ECTS for both transfer and accumulation purposes. Quality assurance is an important topic in the Strategy for Higher Education in Kosovo 2005-2015. In line with the strategy, each university and college has formally established a Quality Assurance Office. The National Qualification Framework has been created as well. Accordingly, learning outcomes are defined in government steering documents and implemented through laws and regulations. The allocation of ECTS is based on learning outcomes and student workload.

76. The Kosovo Accreditation Agency, established by MEST in accordance with the Law on Higher Education - LHE (2003/14), guarantees the quality of educational and scientific research work in HEIs in

⁴⁶ The NEDC is an advisory body for the government in the area of economic development issues OECD (2013). It ensures private-public dialogue between the government and business sector. It includes representatives of eight ministries: Ministry of Economic Development, Ministry of Finance, Ministry of Infrastructure, Ministry of Agriculture, Ministry of Trade and Industry, Ministry of Education, Science and Technology, Ministry of Health, and the Ministry of Spatial Planning. The NEDC also includes representatives of three major cross-sector business associations: the Chamber of Commerce, the Alliance of Businesses and the American Chamber of Commerce. The NEDC held its first meeting in April 2012 and is currently focused on defining the priorities for Kosovo*'s economic development (ibid).

⁴⁷ Elci (2013).

Kosovo. The Agency evaluates and accredits institutions through formal and transparent procedures that ensure internationally comparable standards.

77. In 2010, the budget of HEIs amounted to around 18 million euros. For 2011, the Ministry of Education has roughly 7 million euros allocated to higher education, including student centers, research institutes, and 5 million euros to the University of Prizren.

78. The greatest challenge for higher education is to establish the link with the economy. On the structural level, central institutions and upgrading mechanisms (education programs; infrastructure) are still missing or not yet fully operational. According to the Law on Higher Education, a public university is free to take any measure to promote and exploit its research activities commercially for its benefit. However, for the exploitation of any significant IPRs in any literary, artistic, or scientific works, scientific discoveries, designs, inventions, materials, goods or services provided wholly or partially, or directly or indirectly out of public funds, the provider must seek the prior approval of the Ministry.

79. The decision below provides information about the current situation at three institutions. Interviews were conducted in spring 2013.

80. The **University of Prishtina (UP)** is the leading research performer in the country. It was established by the Law on the Foundation of the University of Prishtina, which was passed by the Assembly of the Socialist Province of Kosovo in 1969. There are 17 schools with a total of 48,732 undergraduate and graduate students, including 152 PhD students and 10,047 Master's students. In 2001, the university started to reform all academic levels in accordance with the Bologna Declaration, aiming to integrate into the European Higher Education System. The University of Prishtina was granted financial autonomy in 2010 and had its own capital budget of 15 million euros in 2011, and 27.19 million euros in 2012.

81. The findings from the interviews with the Vice Rector for Research and the Head of the Support Unit for Research Activities at the UP are as follows:

- The UP is strong in biomedical sciences, chemistry, and agricultural sciences.
- There are a number of barriers for research commercialization and knowledge transfer, some of which are cultural.
- The underdeveloped private sector is a major issue for the commercialization of research results.
- The key criterion for promotion of researchers is the number of publications. With the new "Strategy on Scientific/Artistic Research and Development Activities," the UP includes R&D-related indicators in the contracts of academic staff.
- The university lacks sufficient space and equipment for R&D activities. However, there is also the problem of ineffective and inefficient use of current infrastructure. The UP plans assess and prepare an inventory of the available infrastructure, then develop a policy for its effective use. The interviewees state that no public funding is available for the procurement of new equipment. The government funding is provided primarily to finance research projects for which equipment procurement is not supported.
- The UP is also in the process of collecting data on R&D capacities at the university level. The findings will be used to better coordinate research efforts at the university.
- An important issue is the low capacities in preparing quality R&D projects, particularly for international funding organizations.

- The UP aims to increase the number of PhD students and has initiated programs for this purpose with the support of the EU Tempus Program. Five PhD programs have already been accredited by international experts.

82. The university primarily uses the EU funds allocated under the Tempus Program to develop programs and capacities. The projects implemented under this program between 2008 and 2011 include: Partnership in Quality Assurance Standards Implementation; Creating Capacities for PhD Reform at the University of Pristina/Kosovo; International Joint Master's Degree in Plant Medicine; Development of Regional Interdisciplinary Mechatronic Studies; Harmonizing Sport Science Curricula in the Balkans in the EU Perspective, etc.

83. In November 2012, the UP issued the first Strategy on Scientific/Artistic Research and Development Activities, covering the period 2011 to 2015. The Strategy was developed within the framework of the EU Tempus Program. With this new strategy, the UP aims to attach higher importance to research and to communicate this new direction to its academic staff. The strategy seeks to ensure coordination of research activities in the UP in line with efforts to advance scientific/artistic and development activities at the national level. Priorities identified and articulated in the National Research Program 2010–2015 for research and scientific/artistic activities served as the starting point for the strategic paper. The strategy identifies four objectives for research at the UP:

- Objective 1: Development of human capacity for scientific/artistic research activities at the University of Prishtina.
- Objective 2: Infrastructure improvement and enhancement for scientific/artistic research work and for providing services.
- Objective 3: Internationalization of scientific/artistic research activities by supporting excellence in research.
- Objective 4: Cooperation between the public and private sectors for implementation of research projects serving social and economic development.

84. The key challenges facing the UP in each of these areas are highlighted in the strategy document as follows:

Human resources:

- Lack of motivation and incentives for engaging in scientific research activities;
- Lack of experience and capacity within various academic units of the University of Prishtina to generate funds through projects; and,
- Sporadic and sidelined research activities, based mainly on individual initiatives.

Infrastructure:

- Lack of sufficient physical space, inadequate infrastructure, and outdated equipment;
- Insufficient cooperation between academic units for better joint utilization of available space and equipment, and limited commercial use of infrastructure for purposes of scientific research and contracted services;
- Lack of or under-utilization of a part of available modern infrastructure due to lack of adequate training of the staff for the use of this technology for scientific research and services; and,

- Inadequate coordination for access and utilization of capacity outside of the University of Prishtina (other scientific research institutes).

International cooperation:

- Lack of systematic data on international cooperation projects;
- Insufficient capacity for drafting and implementation of international research projects; and
- Administrative and other difficulties for co-financing of international cooperation at the University of Prishtina.

Links to the economy and society:

- Lack of research and development projects in cooperation with the business sector and lack of opportunities to do practical research;
- Limited offer of services for the economy;
- Limited influence of scientific and research work results in policy making, development, and trends in society; and,
- Insufficient inclusion of stakeholders from the economic sector and society in drafting of curricula for graduate studies.

85. The strategy has an implementation plan for the period October 2011–September 2015. Funds needed for the implementation of the strategy represent between 1–3.5 percent of the annual budget of the UP (around 17 million euros), not accounting for the income generated from academic and commercial activities. The strategy emphasizes that a large portion of these expenses have already been provided, but not in a planned and systematic manner.⁴⁸

86. The **University of Business and Technology (UBT)** is one of the higher education institutes in Kosovo that puts great emphasis on research, innovation, and entrepreneurship in Kosovo. The main strengths of the UBT are in the fields of ICT –software development, and mechatronics and electronics– and architecture. The management team and academics of the UBT closely collaborate with the public and private sectors in the country and also strive to be active in the international arena through various channels such as the Tempus, Erasmus, and FP7 programs of the EU, as well as international conferences organized by the university. The UBT plans to establish a center for technology, innovation, and technology transfer in the new campus that it is currently developing. An incubator is planned to launch in 2013 under the umbrella of the center. In addition, the management team of the UBT is in the process of developing policies for patenting and academic start-ups.

87. The **American University in Kosovo (AUK)**, a private university recently started to put emphasis on R&D and innovation. The university operates the Center for Energy and Natural Resource Development which carries out research activities primarily in the field of renewable energy. The center functions in partnership with the Rochester Institute of Technology, various ministries of the Kosovo Government, and international organizations focusing on the development of Kosovo’s energy and natural resources. The main activities are listed as human resources development, consulting, research, and the dissemination of information and data on energy and natural resources of the country. The AUK

⁴⁸ University of Prishtina (2011).

management has expressed their intention to increase R&D activities. For this purpose, they created a Research Steering Committee in 2012. The university plans to encourage patenting among academic staff, increase international collaborations on research, and start up an incubator facility. However, the lack of funding is a major impediment for the extension of research activities and R&D services of the university, as explained by the university management.

Research Institutes –Public and Private-

88. Pursuant to the Law on Scientific Research, the Government of Kosovo requested the NRC to carry out an evaluation of public research institutions. In June 2011, the NRC adopted the document “*Guidelines for Evaluation of Research Institutions in Kosovo*” based on best practices for benchmarking R&D and technology institutions from accession countries.⁴⁹ The NRC decided to develop a methodology that is suitable for a range of different institutions and considered that research institutions in Kosovo cannot be benchmarked against the parameters generally accepted in Europe. With this view, it was determined that the evaluation process should raise awareness on the actual situation and present recommendations to improve the position of the respective institutions. Specific objectives of the evaluation were: i) establish an inventory of scientific contributions of each institution, and analyze the factors that have contributed to its successes and failures; ii) help improve the performance of research institutions; iii) inform decision makers on fund allocation; and, iv) assist targeted institutions in building a culture of continuous self-evaluation. Benchmarks were defined based on the Law and best practices from European countries.⁵⁰

The background study for this report and interviews conducted resulted in the following brief of activities and obstacles encountered for research among research institutions:

- Established in 1925, the Institute of Public Health is one of the leading public research organizations in Kosovo, and is affiliated with the UP Faculty of Medicine. Their laboratories are accredited to the EU standards and certified by the World Health Organization (WHO), as explained by the director of the institute. The institute operates six departments: epidemiology, human ecology, social medicine, microbiology, health information systems, and Kosovo School of Public Health.⁵¹ The major problem is expressed as a lack of motivation of researchers, which is related to the salaries and, the lack of finance for conducting research. The number of publications is the main criterion for researcher promotion, and there are as yet no attempts to stimulate patenting.
- The Hydro Meteorological Institute is responsible for monitoring natural resources, surface and underground water, and the quality of air and soil, according to the law of Hydro Meteorological

⁴⁹ NRC based its work on the experience of the RECORD Thematic Network project supported by the European Commission STRATA policy initiative.

⁵⁰ Based on the law and best practices from European countries, the following benchmark groups were established: General benchmarks (vision, mission, values, etc.); Critical mass (researchers, infrastructure, investments, etc.); Progressive management (strategy, management, ICT infrastructure, etc.); Human resource management (staff development, development plans, etc.); Innovative and creative teams (projects, innovations, international and domestic publications, supervising PhD candidates, etc.); Mobility of researchers (mobility of domestic researchers, hosting foreign researchers, etc.); Links to users (consultancies, commercial services, etc.); and Financial issues.

⁵¹ The institute has strong linkages with various partners in a number of countries (such as France, Italy, Sweden, Hong Kong, etc.) and implements projects with the support of international organizations. They have upgraded their infrastructure through World Bank funds amounting to about USD 3 million.

Activity in Kosovo and Law for Environment Protection. Established in 1925, it is affiliated with the Ministry of Environment and Spatial Planning. The institute is small, employing only three researchers, and its premises are in poor condition, although the director considers the laboratory infrastructure to be in very good condition. The institute emphasizes the need for funding and human resources for conducting quality research and knowledge transfer.

- The Institute of Food and Veterinary does not conduct any research activities. However, it has modern laboratories with equipment and facilities in very good condition. The institute primarily carries out testing in various areas such as animal disease. The laboratories are at the stage of accreditation. There is potential for R&D if the necessary guidance and incentives are provided.
- INKOS is a private R&D institute established in 1974 as a part of the Kosovo Energy Corporation (KEK). In the process of KEK disbanding in 2006, INKOS was transformed into a joint corporation. It is authorized to measure pollution and conducts R&D activities in a number of areas, including environment and energy. INKOS employs 77 researchers and owns 6 units with laboratories and equipment, as well as competent and experienced researchers. However, unclear legal status prevents INKOS management from making the long-term plans necessary for the institute's future, to invest in advanced research equipment, and to engage in knowledge transfer activities. The clarification of the legal status and reorganization of the institute is essential in order to increase the effectiveness and efficiency of INKOS.⁵²

3. TOWARDS A NATIONAL STRATEGY

89. The government is aiming to improve conditions for research and innovation by setting higher human capital and research priorities in its strategy documents. The two main documents that target science, technology and innovation development in Kosovo are the National Research Program⁵³ and the Strategy for the Development of Higher Education for the period 2005-2015.⁵⁴

90. The national strategy on R&D is outlined in the National Research Program 2010-2015. It addresses the key elements relevant to strengthen research capabilities in Kosovo. As such, it includes provisions to develop human capacity, research infrastructure, international collaboration, business-science linkages, and budget allocations.

91. In the new Kosovo Education Strategic Plan 2011-2016, the promotion of science and technology for a modern society with special attention to ICT is among the goals of the education sector. This, however, needs to be reflected in budget allocation and spending in order to increase investments and incentives for research in the country.

92. The National Research Program, adopted in 2010, aims to provide a conceptual framework for upgrading scientific capacities in Kosovo. The specific objectives are:

- i) Development of human capacity for research activities;
- ii) Development of research infrastructure;

⁵² Sahiti (2012).

⁵³ National Research Council (2010).

⁵⁴ MEST (2004).

- iii) Internationalization of scientific research activity;
- iv) Strengthening the links between science, society, and the economy for enhancing economic and social development; and
- v) Excellence in research and scientific activity.

93. Each of these objectives is associated with specific policy measures to be implemented (see below). There are 18 policy measures identified, with the aim of encouraging the scientific research activities in both public and private sectors. The National Research Program has also defined a set of priority sectors to focus national efforts in science and technology on areas with the highest potential for economic development. The priorities have been called “The Five plus One National Research and Development Priorities in Kosovo” and include the following:

- Priority 1: Natural Resources, Energy and Environment;
- Priority 2: Agricultural Production and Food Safety;
- Priority 3: Medical Research;
- Priority 4: Social and Economic Studies;
- Priority 5: Linguistic, Cultural and Historic Studies; and,
- Cross-cutting Priority: Research in Information and Communication Technologies.

94. The rationale for identifying and setting priorities in science and technology in Kosovo is to channel the scarce funding to those areas that seem to be the best suited for the further social development and economic growth of the Republic of Kosovo.⁵⁵

95. In cooperation with the OECD, in 2012 the Government worked on a project for creating the policy and the first national strategy for innovation for Kosovo. A draft for a National Innovation Strategy was in the finalization stage as of Spring 2013.

96. In 2012, the World Bank conducted a Policy Questionnaire with the seven WBCs in order to identify recent policy developments in the different areas of R&D and innovation, as well as pending policy challenges. In terms of policy planning and target programming, policy developments are still weak. Direct links between strategy targets and public budget decisions should be developed. According to the Policy Questionnaire, in addition to resource limitations, the four most binding constraints on the implementation of a new policy strategy or national program for research and innovation, as considered by MEST, are a lack of recognition of innovation as an integral part of the overall development; financial limitations; and, lack of capacity building (especially human resources), along with an under-developed innovation culture by businesses and individuals. The questionnaire also determined that a better inter-ministerial coordination and increased involvement of non-governmental stakeholders require improvement, especially at the level of policy governance and implementation. The following policy areas are considered appropriate to consider for the country strategy for R&D and innovation: agriculture, tourism, ICT, natural resources, startups, SME technology-based developments, business incubators and technology centers, and the service sector (telecommunications, health, and education).

97. Relevant to the development of research and innovation is the recent creation of the National Strategy for Entrepreneurship Education and Training.⁵⁶ This education and training effort would help enhance the knowledge and skills of all age groups and help stimulate the growth of both business activity

⁵⁵ National Research Council (2010).

⁵⁶ MEST (2012).

and an entrepreneurial culture. New modules for entrepreneurship education and training will be developed and provisions will be made for the inclusion of entrepreneurship education and training at all levels of education. For higher education, it is stipulated that entrepreneurship education shall be included in the primary and secondary curriculum.⁵⁷

4. DEVELOPMENTS IN THE WBC REGION AND VENUES FOR POTENTIAL REGIONAL COLLABORATION

98. According to the World Bank Policy Questionnaire, the government pays close attention to the development of R&D and innovation strategies in other WBCs, notably in Croatia. The Kosovo government follows the developments in other WBCs through regional programs such as WBC-Inco.Net, and cooperation in development efforts. Workshops and conferences are used to share experiences, especially with those through have made major steps toward European integration.

99. The following areas are considered as policy issues to be addressed at the regional level, rather than on the national level alone: R&D policy and infrastructure, capacity building, building the R&D network for the Western Balkans, attracting Foreign Direct Investment (FDI) to the region, harmonization of quality control, accreditation, and certification.

5. POLICY INSTRUMENTS AND OTHER SUPPORT MECHANISMS

100. According to the policy questionnaire, funding instruments for R&D just began with the NRP. At the moment, instruments are not well developed or structured, but in recent years, the government has increased the budget available for R&D. The European Commission, the World Bank, and other international organizations support the government efforts in different R&D projects. The business sector has increasing interest in R&D but has limited funding capabilities. Research institutions mostly rely on their own budget for R&D.

101. Efforts to improve funding for R&D allocate support according to scientific performance, usually recognition of publication activity. Likewise, financial support through grant schemes for innovative business ideas and projects take into account the quality of the project and relevance. Various instruments, such as special grants, also aim at fostering a culture of good governance at research institutions. The idea is to support institutions in redesigning their organizational structure for better R&D performance.

Research and Research Institutions –Public Sector

102. At the end of September 2010, MEST presented the first round of calls for research funding supporting the implementation of the NRP. Yearly budget appropriations for the implementation of the NRP and underlying activities for 2010-2015 (with budget liabilities beyond 2015) are reported in Tables

⁵⁷ EVAL-INNO (2013).

3 and 4 in the Annex, under the assumption that all activities implemented between 2010 and 2015 will terminate as of 2016. All budget indications provided are based on the nominal value of 2010 and have been valorized on a yearly rate of 5 percent.

103. Among the main instruments to be employed in the operational delivery of the National Research Program are:

- Doctoral programs, individual PhD/ post-doc researcher's grants;
- Short-term mobility grants;
- Establishment of a brain-gain fund;
- Competitive funding of national research infrastructure networks and national central laboratories in priority research areas;
- Funding of stand-alone projects and equipment procurement projects based on scientific development plans and competitive tendering procedures;
- Procurement or development and implementation of a Research and Technology Development information system that also serves the requirements of national S&T statistics;
- Establishment of a fund to support scientific publications and science communications;
- Provision of competitive grants for joint projects with a foreign partner;
- Competitive project preparation grants to be applied in international consortia for European funding under COST (European Co-operation in Science and Technology) and especially under FP7;
- Implementation of a competitive program for applied R&D;
- Establishment of an innovation program oriented towards the technological, organizational, and social innovation needs of the private sector;
- Competitive funding of five national Centers of Excellence in priority research areas;
- Establishment of a competitive fund for basic research;
- Implementation of individual annual awards for the most outstanding Kosovar researcher and newcomer researcher; and
- Development of a comprehensive quality assurance and evaluation process focusing on scientific research activities.

104. To be eligible for funding, the applications have to comply with the NRP's priority fields, which include natural resources, energy and environment, agricultural production and food safety, medical research, and communication technologies.

105. The NRP for 2010-2015 started with a budget about a million euros in 2010. The plan was to increase this every year to reach 4 million and a half euros (see Tables 3 and 4 in the Annex). The first call for PhDs grants and funding of doctoral programs was in 2011, with a budget appropriation of 280,000 and 525,000 euros, respectively. The most important item corresponds to research infrastructure, networks, and labs with 625,000 euros for 2010 and 2011. The Yearly Brain Gain Fund will increase funding over time, from 250,000 euros in 2010 to 387,832 euros in 2019. The support for access to electronic libraries started in 2011 and has a similar budget, starting with 210,000 euros in 2011 and reaching 310,266 euros in 2019. With respect to yearly budget appropriations for activities in 2010-2015 and continuation of basic activities beyond 2015 until 2019, the assumption is that the introduced instruments, which are of structural generic value, will be continued beyond 2015 without any new

initiatives. At that point, the necessary budget appropriations would stabilize between 4.5-6.5 million euros annually, as shown in Table 4 in the Annex.

106. An instrument to promote research excellence is the newly created “Special Research Grant.” The objective of the Special Research Grant is the development of a programmatic research agenda based on international standards at a single research institution/university location. The idea is to encourage good governance in planning and management of research agendas at research institutions by promoting long-lasting research agendas that should have added value compared to smaller research projects. This will take place through the establishment of programmatic research endeavors. The total funding available for 2010 was 625,000 euros, and the grant for a single project could not exceed 125,000 euros.

107. Regarding public support to improve the data and information platform for research, the current policy is based on particular projects at the research institutions. Although there is no one general and integrated approach, there are some developments by the Department of Science and Technology within MEST.

Human Resources in Science and Technology

108. According to the World Bank Policy Questionnaire, in terms of human resources development, MEST has undertaken important actions. The following priorities have been promoted through different mechanisms: raising interest in and awareness of science among youth; revising academic curricula to make science and technology more attractive to students, through actions such as expanding interdisciplinary training in science education; and, improving teaching in mathematics and science, including through the use of ICT in teaching content and delivery.

109. The following areas have not yet been considered in policy programs: reducing gender and ethnic minority gaps in science and technology education, and improving industry involvement in PhD training schemes, such as industrial PhD programs. There is also a lack of flexibility in the governance of research institutions to facilitate mobility of researchers with industry.

110. Some initiatives have been made in this direction:

- Organizing Open Days for promotion of the technology studies and training of young people; and,
- Developing interdisciplinary and technology-based study programs, like mechatronics management, computer science and engineering, software and systems engineering, etc.

111. Instruments or recent efforts to improve the mobility of scientific and high-skilled personnel within the WBCs have not been formally defined in the policy program agenda. There are several initiatives, but there is no systematic approach. Most of projects are pilot projects, projects financially supported by international donors, or initiatives that are partially implemented by different stakeholders. Immigration legislation (e.g., special visas for researchers) or grants for regional mobility or programs to promote collaboration between local scientists and scientists in the diaspora are not yet the object of recent policy reforms or initiatives in Kosovo.

Technology Transfer and Innovation Infrastructure

112. The Centre for Innovation Support and Technology Transfer (CITT) is part of the Department for Technology and Science within MEST. It aims to enhance the linkages between science, technology, and industry actors in order to accelerate the process of technology transfer, technology development, and innovation in Kosovo. CIIT provides support to entrepreneurs and assistance regarding the patentability and protection of other intellectual property rights.

113. According to the interviews and survey conducted for the project, out of four institutions surveyed, the only one with a unit responsible for knowledge transfer and research commercialization is the University of Prishtina. Two people work in this unit, which is known as the “Research and Development Unit.” Although not structured as a separate unit, the Institute of Spatial Planning employs eight people who are responsible for knowledge transfer and research commercialization. Four organizations (University of Prishtina, Hydro-meteorological Institute of Kosovo, Institute "INKOS"JS, and Kosovo Institute of Agriculture–Peja) state that they provide services to the private sector. These services are primarily collaborative R&D, testing, analysis, consultancy, and training, particularly to the public sector at the national level.

114. In recent years, the number of institutions supporting business creation and incubation, technology transfer, and innovation has grown substantially – some are regional and national initiatives, others are initiatives launched and sponsored by NGOs and foreign aid – widening the range of support available to entrepreneurs and the private sector throughout Kosovo. There is no study or assessment report available, however, regarding the performance and impact of any of these endeavors (see Box 1 for some examples).

Box 1: Technology Transfer and Business Support – Examples of Incubators

- The Business Incubator in Decan was created by the Ministry of Trade and Industry and is supervised by the SME Support Agency.
- The Business Center Zvecan was founded by local business managers and is financially supported and funded by the United Nations Development Program (UNDP). Its services encompass consultancy, advice, start-up loans, and training. The services are tailored to new graduates, entrepreneurs, and the unemployed aiming to launch a business.
- The Business Park in Drenas (BPD), initiated by the Ministry of Trade and Industry, helps support physical infrastructure for businesses. It also helps business development and growth through the creation of a business environment that attracts investment. BPD includes an area of 24 ha and is divided in 76 units. Production and services businesses are located in the Park.
- Business Support Centre Kosovo (BSCK) supports young potential entrepreneurs in starting up their own businesses. BSCK assists graduate students and young graduates of all schools of all Kosovo universities in establishing SMEs. It offers practical training courses and consultancy as well as accessible micro-credits for the most promising business ideas. SPARK has established this BSC in Pristina in close cooperation with relevant associates in the SEE region.
- Innovation Centre Kosovo (ICK). This center provides incubator services, mentoring, consulting, and training to entrepreneurs and managers in business planning, accounting, finance, product/service development, marketing/sales, human resources, and technology development and transfer. The Center also conducts matchmaking with local, regional, and international businesses.

- Genesis Technology Centre. The Centre offers practical training in electronics and manufacturing, applied technology research, and technology business incubation. It currently operates as a training institute but aims to widen its business activities with business incubation services.

Source: EVAL-INNO Website (2013) and OECD (2013).

Private Sector R&D and Innovation Capabilities

115. As of late 2012, there were some initiatives to foster firm innovation and technology absorption (certification and standards), as well as international collaboration among businesses on innovation and technology. Yet no clear policy program or instruments with reliable funding exist to date.

116. SMESA is using international support to provide financial assistance through a voucher scheme. The Agency is also organizing training courses in entrepreneurship and business development. Although there is currently no government support for SMEs, there are some plans to design and implement guarantee schemes and grant programs in 2013 with the help of the EU.

117. SMESA has noted that smaller enterprises, which form the majority in Kosovo, do not have the financial capacity to invest in capital-intensive forms of research, which severely limits the innovation capacity of these firms. In fact, many SMEs find R&D and innovation activities to be completely new concepts. The most important need for SMEs is access to finance. For 2011-2012, the interest rates on bank loans were very high (14-16 percent) and there have not been other financing mechanisms available.

118. SMESA employs a staff of 15. There is a need to develop their skills and competencies, and to provide the Agency with systems and tools to support the development and growth of SMEs nationwide. Kosovo is leveraging international resources to fill this gap. Businesses receive financial support from many sources in the international community, such as European Bank for Reconstruction and Development (EBRD), World Bank (IBRD, IFC), European Commission, SIDA, GIS, ADA, DFID, USAID, etc. Some of this funding will likely be channeled towards creating innovative products.

119. The Kosovo Chamber of Commerce implements a number of projects with international donor organizations for the development of enterprises in the country.⁵⁸ Accordingly, the private sector, particularly in regard to SMEs, in Kosovo needs extensive support in many areas, from finance to technical assistance, in order to survive and grow. Based on an assessment by the Chamber, the Kosovar firms primarily require training in cost management, quality management, corporate management, and business planning. The Chamber provides support for these efforts through its Education and Training Department. The Department, created in 2012, works with the GIZ from Germany to develop skills at firms in Kosovo. They are planning to implement awareness raising, training, and consultancy activities in innovation in 2013. They also plan to establish an Entrepreneurship Academy in 2013 together with the GIZ.

120. The Kosovo Association of Information and Communication Technology (STIKK), one of the most active business associations in Kosovo, aims to assist the development of a sustainable and successful ICT sector in Kosovo. It has 114 members, 62 of which are private sector companies. STIKK employs eight staff. It carries out a number of activities such as training, networking, and international

³¹Established in 1962, the Kosovo* Chamber of Commerce is a leading business association and the legal representative of the interests of the business community in Kosovo*. It has 17,000 corporate members that are grouped into 40 associations (see Elci, 2013).

internships for university students in cooperation with international donor organizations. In 2012, the association established the Innovation Center Kosovo along with the Norwegian Government. The center employs nine staff and provides incubation, networking, training, and consultancy services to entrepreneurs. The Center's main focus is its incubator, which hosted eight companies as of December 2012. Two of these firms are university spin-offs. Four more companies will be selected to be hosted after a call for proposals. The Center management finds the demand for incubator services satisfactory. There are plans to launch a virtual incubator in 2013. The STIKK and the Center are planning to establish a business "angel fund" to finance ICT entrepreneurs in Kosovo. They also closely collaborate with the universities in Kosovo to update their curricula according to market needs, and to encourage students and academic staff to start companies.

6. INTEGRATION TO ERA AND INTERNATIONAL COLLABORATION

121. R&D institutions in Kosovo have been able to use the FP7 EU Framework since 2008. Two projects have been pursued under this framework, one on education and the other for capacity building. The TEMPUS Program has also provided significant support to modernization and reform of higher education system in Kosovo. Since 2002, TEMPUS has financed nearly 30 projects with a total budget of 18.4 million euros aimed at promoting cooperation with EU higher education institutions in the area of curricula development, university management, and structural reforms. This program proved to be efficient both for university human resource development and for strengthening capacities in public administration, civil society, and economic reform. In addition, Kosovo has established a number of partnerships with the international community.⁵⁹ These are listed in the Annex.

122. The only organization that claims participation in EU programs is the University of Prishtina, which took a major role in a project under the Sixth Framework Program. According to the University, the following factors motivated it to participate in the EU Program:

- Access to research funding;
- Assistance in creating new or improved facilities or infrastructure;
- Development of new or improved relationships or networks;
- Development of new or improved scientific or industrial processes; and,
- Access to answers to specific scientific or technical questions, problems, or issues.

123. The UP has indicated that the project had a great impact on the University in terms of improved ability or capacity to conduct R&D, improved relationships and networks, improved internal knowledge and capabilities, enhanced reputation and image, improved competitive position nationally, and improved competitive position internationally. The respondent organizations state that they primarily need help in understanding FP rules and procedures to be able to participate in the EU programs. Other needs they have include the following: advice/feedback on proposal development; financial support towards the costs of proposal development; help with identifying project partners; and, assistance with general information, including calls for proposals. The organizations have the needs and requirements listed in Table 1 in order to increase research and innovation collaboration at the national, regional, and international levels.

⁵⁹ Dall (2008).

Table 3: Requirements to Enhance Collaboration in R&D and Innovation

Needs at national level	Needs at WBC level	Needs at international level
Increased collaboration between R&D institutions and universities A clear national strategy for cooperation among organizations Investment in human and technical resources Effective use of existing infrastructure A new infrastructure to conduct quality research Increased quality and quantity of R&D personnel, Stimulation of interdisciplinary cooperation for R&D Increased collaboration with industry	Support from the EU for regional research collaboration Stimulation of cooperation activities with institutions in the region Collaborative use of R&D capacities at the regional level Common policy for R&D activities, that are of regional interest (environmental issues, etc.) Joint application to the EU and other funding sources for R&D activities	Support from the EU for active collaboration at the international level Stimulation of cooperation activities with institutions at international level Enhanced project development for R&D capacities Information sharing for R&D activities and networking Development of a strong international network

Source: Elci (2013).

Box 2: International Partnerships in Education and Research

- An agreement between the Ministry of Education and Science of the Republic of Albania and UNMIK/MEST (2006 and 2011).
- An agreement between the Ministry of Education and Science of the Republic of Albania and United Nations Mission in Kosovo (UNMIK)/MEST, emphasizing collaborative scientific activities (2006).
- An umbrella memorandum between UNMIK/MEST and the Federal Minister of Education, Science and Culture and the Federal Minister for Foreign Affairs of the Republic of Austria, in which several RTDI relevant provisions were included, containing support for the Kosovo Center for International Higher Education, Research and Technology Cooperation, the Council of Research and Technology, the Center for Innovation and Technology Transfer, and support for research projects (2006).
- Based upon the institutional partnership agreement with Austria, the MEST established a Center for Innovation and Technology Transfer (CITT) to support science-industry relations and a Center for International Higher Education, Research and Technology Cooperation (K-CIRT). The latter is supposed to support the participation of Kosovar researchers and students in international and European programs, such as CEEPUS or FP7.

7. CONCLUSIONS

124. Research and development in Kosovo is underdeveloped. The nation has outdated infrastructure and poor human capacity for research. This is compounded by a lack of adequate monitoring and evaluation.

125. Some of the major constraints facing the R&D system in Kosovo are :

- Insufficient human capital for technology transfer, research, and innovation, as reflected in the insufficient number of graduates in S&T and the very small number of researchers working in key priority areas for the economic development of Kosovo.
- Underdeveloped linkages with global networks of research and innovation, including the scientific diaspora. The education system has taken important actions towards globalization and international qualification of students, including offering MSc and PhDs, but participation in international technology platforms by research universities remains low. Although the history of the country is recent, research institutions and universities in Kosovo face the challenge of integrating with ERA through research collaboration and, at the same time, catching up in terms of human capital.
- A critical need to leverage research infrastructure. There is an inadequate and outdated infrastructure at research centers and universities, including ICT infrastructure and networks.
- For Kosovo to effectively progress in the path towards innovation and European integration, support for training young researchers, graduates, and post-graduates in S&T is fundamental.
- For the private sector to enhance innovation capabilities, assistance is needed at two levels:
 - i. Linking with education and research institutions to improve innovation competencies through technology transfer, technology absorption, and innovation; and,
 - ii. Incentivizing private sector investment in R&D through policy incentives, such as subsidies and matching grants and tax exemption for technology acquisition, along with mechanisms to integrate international production networks.

126. Although significant progress has been made in developing the legal and institutional framework to support research and innovation, and steps have been taken toward the creation of a national innovation strategy, institutional capacity and consultation mechanisms for policy design are yet to be strengthened. Capacity building and human resources are needed at the level of planning, implementation, and oversight capacity as well as other good governance mechanisms such as monitoring, evaluation, and data generation.

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ANNEX

Box 3: Laws Governing Research and Development (R&D) and Innovation in Kosovo

Law No. 2004/42 on Scientific Research Activity (September 27, 2004 with promulgation on February 23, 2005).

A new law was developed in 2012 and is in the process of approval by the Government and, after that, in the parliament. This law will also cover the components of technology transfer and innovation.

Law No. 2004/19 on Academy of Science and Arts of Kosovo (June 16, 2004 with promulgation on July 28, 2004).

Law No. 2002/3 on Higher Education in Kosovo (September 26, 2002 with promulgation on May 12, 2003).

Law No. 2011/04-L-037 on Higher Education in Kosovo (August 31, 2011).

Law on Medical Products and Medical Devices (No. 2003/26 from December 4, 2003, promulgated on July 7, 2004).

Law on Copyrights and Related Rights (No. 2004/45 from June 29, 2006 promulgated on August 24, 2006).

Patent Law (No. 2004/49 from September 27, 2004 promulgated on December 21, 2004, amended by Law 02/L-100 on December 18, 2006, and promulgated again on February 6, 2007).

Law on Support to Small and Medium Enterprises (No. 2005/44 from March 23, 2005 promulgated on September 8, 2005).

Law on Technical Demands for Products and Valuation of Confirmation (No. 02/L-20 from June 24, 2005 promulgated on 21st July 2005).

Law on Accreditation (No. 02/L-43 from November 21, 2005 promulgated on April 21, 2006).

Law on Metrology (No. 02/L-61 from January 19, 2006 promulgated on April 22, 2006).

Law on Publishing Activities and Books (No. 02/L-51 from March 16, 2006 promulgated on April 21, 2006).

Law on Environmental Impact Assessment⁶⁰ (No. DL-006/2009 from February 26, 2009 and promulgated on March 19, 2009).

⁶⁰ A new draft law is currently under preparation.

Table 4: Enrollment by Level (2008/2009 Academic Year)

	Enrolment	% of Total
Primary	365, 473	73
Upper secondary	98, 890	20
University of Priština	33,834	7
Total	498, 197	100

Source: MFE; University of Pristina for university enrollment.

Table 5: Kosovo State Budget Extract (in thousand EUR)

2010 Budget							
Budgetary organizations and budget lines	Wages & Salaries	Goods & Services	Utilities	Subsidy & Transfers	Capital Outlays	Reserve	Total
Total central education budget (MEST+UP)	13 173	8 471	1 742	193	25 991	2 000	51 570
<i>MEST</i>	3 082	5 524	648	193	24 731	2 000	<i>36 177</i>
Higher education	1 041	354	386	-	-	2 000	3 782
Students Center	647	201	337	-	-	-	1 185
Institutes	321	119	40	-	-	-	481
Pedagogical institute in Kosovo	73	34	9	-	-	-	116
University of Prizren⁶¹	-	-	-	-	-	2 000	2 000
Other education	1 094	3 114	147	166	-	-	4 520
Special educational needs education	813	481	46	-	-	-	1 340
National University Library	281	132	101	-	-	-	514
Teacher training	-	2 116	-	-	-	-	2 116
Curriculum development	-	385	-	-	-	-	385
Bilateral agreements	-	-	-	166	-	-	166
Educational administration	946	2 056	115	27	24 731 ⁶²	-	27 875
Central Administration^{1/}	861	1 994	115	27	24 731	-	27 727
Office of the Minister	86	62	-	-	-	-	148
<i>University of Prishtina/Pristina</i>	<i>10 091</i>	<i>2 947</i>	<i>1 095</i>	-	<i>1 260</i>	-	<i>15 393</i>
Total municipal education budget							118 465
Education grants from the center to municipalities	94 393	12 801	-	-	3 271	-	110 465
Municipal Education spending from own revenues							8 000
TOTAL							170 035

Source: Kosovo Education Strategic Plan 2011-2016.

⁶¹ In addition to the 2 million euros received by the Government of Kosovo*, the allocation to the University of Prizren increased to EUR 5 million in 2011.

⁶² Capital investments in pre-university education are in the state budget included in “Capital outlays” under Central administration. Out of this, approximately €800,000 is provided by the World Bank on budget to finance one school. All other capital expenses here are provided by the Kosovo* government’s revenue.

Table 6: Budget Appropriations for Activities in 2010-2015 (with Budget Liabilities beyond 2015)

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Total Budget	995,000	2,417,000	3,495,975	4,268,880	5,393,954	6,301,792	4,757,340	3,212,879	2,979,535	2,714,824
Awards for best Kosovar researchers	40,000	42,000	44,100	46,305	48,620	51,051	0	0	0	0
PhD grants (1st call)	0	280,000	294,000	308,700	0	0	0	0	0	0
Yearly Short-term mobility grants	30,000	31,500	33,075	34,729	36,465	38,288	0	0	0	0
Research infrastructure networks and labs	625,000	625,000	0	0	0	0	0	0	0	0
Yearly Brain Gain Fund	250,000	262,500	275,625	289,406	303,877	319,070	0	0	0	0
Yearly Publication Funds	50,000	52,500	55,125	57,881	60,775	63,814	0	0	0	0
PhD grants (2nd call)	0	0	294,000	308,700	324,135	0	0	0	0	0
Yearly Access to electronic libraries	0	210,000	220,500	231,525	243,101	255,256	0	0	0	0
Yearly FP7 project preparation fund	0	52,500	55,125	57,881	60,775	63,814	0	0	0	0
RTD information system	0	105,000	52,500	55,125	57,881	60,775	0	0	0	0
Doctoral Programs (1st call)	0	525,000	551,250	578,813	607,753	638,141	670,048			
International RTD projects	0	157,500	165,375	173,644	182,326	191,442	0	0	0	0
Quality Assurance and Evaluation	0	73,500	77,175	81,034	85,085	89,340	0	0	0	0
Equipment procurement projects	0	0	1,102,500	0	0	0	0	0	0	0
PhD grants (3rd call)	0	0	0	308,700	324,135	340,342	0	0	0	0
Yearly Post Doc Research Grants	0	0	275,625	289,406	303,877	319,070	0	0	0	0
Centers of Excellence	0	0	0	1,447,031	1,519,383	1,595,352	1,675,120	1,758,876	1,846,819	1,939,160
PhD grants (4th call)	0	0	0	0	324,135	340,342	357,359	0	0	0
Quality Assurance and Evaluation	0	73,500	77,175	81,034	85,085	89,340	0	0	0	0
Equipment procurement projects	0	0	1,102,500	0	0	0	0	0	0	0
PhD grants (3rd call)	0	0	0	308,700	324,135	340,342	0	0	0	0
Yearly Post Doc Research Grants	0	0	275,625	289,406	303,877	319,070	0	0	0	0
Centers of Excellence	0	0	0	1,447,031	1,519,383	1,595,352	1,675,120	1,758,876	1,846,819	1,939,160
PhD grants (4th call)	0	0	0	0	324,135	340,342	357,359	0	0	0
Applied RTD Program (1st call)	0	0	0	0	303,877	319,070	0	0	0	0
Doctoral Programs (2nd call)	0	0	0	0	607,753	638,141	670,048	703,550	738,728	775,664
PhD grants (5th call)	0	0	0	0	0	340,342	357,359	375,227	0	0
Basic Research Program (1st call)	0	0	0	0	0	638,141	670,048	0	0	0
PhD grants (6th call)	0	0	0	0	0	0	357,359	375,227	393,988	0

Source: Kosovo's National Research Program 2010.

Table 7: Budget Appropriations for Activities in 2010-2015 and Continuation of Basic Activities beyond 2015 until 2019

	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019
Budget	995,000	2,417,000	3,495,975	4,268,880	5,393,954	6,301,792	6,281,858	4,813,624	4,660,317	4,479,645
Awards for best Kosovar researchers	40,000	42,000	44,100	46,305	48,620	51,051	53,604	56,284	59,098	62,053
PhD grants (1st call)	0	280,000	294,000	308,700	0	0	0	0	0	0
Yearly Short-term mobility grants	30,000	31,500	33,075	34,729	36,465	38,288	40,203	42,213	44,324	46,540
Research infrastructure networks and labs	625,000	625,000	0	0	0	0	0	0	0	0
Yearly Brain Gain Fund	250,000	262,500	275,625	289,406	303,877	319,070	335,024	351,775	369,364	387,832
Yearly Publication Funds	50,000	52,500	55,125	57,881	60,775	63,814	67,005	70,355	73,873	77,566
PhD grants (2nd call)	0		294,000	308,700	324,135	0	0	0	0	0
Yearly Access to electronic libraries	0	210,000	220,500	231,525	243,101	255,256	268,019	281,420	295,491	310,266
Yearly FP7 project preparation fund	0	52,500	55,125	57,881	60,775	63,814	67,005	70,355	73,873	77,566
RTD information system	0	105,000	52,500	55,125	57,881	60,775	63,814	67,005	70,355	73,873
Doctoral Programs (1st call)	0	525,000	551,250	578,813	607,753	638,141	670,048	0	0	0
International RTD projects	0	157,500	165,375	173,644	182,326	191,442	201,014	211,065	221,618	232,699
Quality Assurance and Evaluation	0	73,500	77,175	81,034	85,085	89,340	93,807	98,497	103,422	108,593
Equipment procurement projects	0	0	1,102,500	0	0	0	0	0	0	0
PhD grants (3rd call)	0	0	0	308,700	324,135	340,342	0	0	0	0
Yearly Post Doc Research Grants	0	0	275,625	289,406	303,877	319,070	335,024	351,775	369,364	387,832
Centers of Excellence	0	0	0	1,447,031	1,519,383	1,595,352	1,675,120	1,758,876	1,846,819	1,939,160
PhD grants (4th call)	0	0	0	0	324,135	340,342	357,359	0	0	0
Applied RTD Program (1st call)	0	0	0	0	303,877	319,070	0	0	0	0
Doctoral Programs (2nd call)	0	0	0	0	607,753	638,141	670,048	703,550	738,728	775,664
PhD grants (5th call)	0	0	0	0	0	340,342	357,359	375,227	0	0
Basic Research Program (1st call)	0	0	0	0	0	638,141	670,048	0	0	0
PhD grants (6th call)	0	0	0	0	0	0	357,359	375,227	393,988	0

Source: Kosovo's National Research Program 2010.