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Mini Country Report/Bosnia and Herzegovina

under Specific Contract for the Integration of INNO Policy TrendChart with ERAWATCH (2011-2012)

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Thematic Report 2011 under Specific Contract for the Integration of INNO Policy TrendChart with ERAWATCH (2011-2012)

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Preface

The European TrendChart on innovation is the longest running policy benchmarking tool at European level. Since its launch in 1999 it has produced annual reports on national innovation policy and governance, created a comprehensive database of national innovation policy measures and organised a series of policy benchmarking workshops. The databases of INNO Policy TrendChart and ERAWATCH have been merged and a joint inventory of research and innovation policy measures has been created by the European Commission with the aim of facilitating access to research and innovation policies information within Europe and beyond.

With a view to updating the innovation policy monitoring, the European Commission DG Enterprise and Industry commissioned a contract with the objective to provide an enhanced overview of innovation and research policy measures in Europe and to integrate the INNO Policy TrendChart with the complementary ERAWATCH platform. This contract is managed by the ERAWATCH Network asbl. (http://www.erawatch-network.com) coordinated by Technopolis Group (http://www.technopolis-group.com).

During each of the two years of this specific contract three reports will be produced to complement data collection and to update the research and innovation policy measures: a trend report on innovation policy in the EU, an overview report on innovation funding in the EU and an analytical thematic report (the selected theme for 2011 is demand-side innovation policies). To this end, the objective of the present mini country report is to furnish those three reports with country specific information.

Executive Summary

The post-war economic growth of Bosnia and Herzegovina (BIH) was based on domestic demand, stimulated by foreign investment, raw materials and relatively cheap labour. With the onset of the worldwide financial crisis in 2008-2009, foreign investment reduced considerably thus augmenting the problem of the country's low economic competitiveness. The issue of the future sources of economic growth is one of the most important matters for the country to address.

Future economic growth requires an increased efficiency or productivity, as well as a larger share of domestic know-how in export products and services. The period between 1997 and 2007 witnessed an important level of industrial restructuring in terms of reconstruction and modernisation of the pre-war industrial base, based on wood-processing, metal-working, textile and motor-car industries[1].

This process needs to continue, although this is not yet possible as there is no national innovation system in place. Improvements in quality, adaptation of foreign technologies to national conditions, as well as continued product and process innovations will not be possible without innovative companies, an educated labour force and a more complex research and development (R&D) system. BIH will be unable to achieve long-term growth on the basis of cheap and unskilled labour; rather it has to increase the share of professional labour, quality and national innovativeness, as well as a quality adaptation to and use of foreign technologies and software. This shift will not be possible only at enterprise level without reforming the higher education and vocational education and training systems or without support to companies to increase innovation activities. The BIH R&D system has almost fully disappeared, which is a consequence of the past war. It needs to be re-built, not only at universities and institutes, but also in the business enterprise sector in the first place.

The R&D function in the environment of a very low income per capita in BIH of $7,782 (the IMF data for 2010) is not only the creation of one's own know-how, but also a far more efficient absorption and diffusion of new technologies. This means that R&D and the innovation system of BIH cannot be a sheer imitation of the system of developed countries; rather, they have to be oriented much more to mastering, adapting to and applying successfully the old know-how and technologies. It is necessary to strengthen national research and development capabilities, as well as the role of universities and institutes in technology transfer. Catching-up with developed countries is not the issue of imitation, but the issue of adaptation and innovation, which requires increased investments in R&D as well the creation of preconditions for innovations in the business enterprise sector. In this context, not only does science in BIH need to contribute to scientific development but also to increased educational attainment, successful use of new instruments or tools and technologies, and to enterprise start-up and expansion.

This shift or the building of a national science, technology and innovation system integrated into the EU cannot take place overnight. It requires a social consensus and full stakeholder agreement, as well as much better knowledge of national restrictions and abilities and also a better knowledge of BiH's position in the international environment.

[1]Bartlomiej Kaminski and Francis Ng (2010), Bosnia and Herzegovina's Surprising Export Performance. Back
to the Past in a New Veil but Will It Last?, *World Bank Policy Research Working Paper* 5187, Washington

1. Innovation policy trends

1.1 Trends and key challenges for innovation policy

Bosnia and Herzegovina (BiH) is in the process of establishing its own science system and science policy. Legal and institutional framework for stimulating innovations is yet to be established.

BiH has recently developed its legal and institutional framework by adopting the laws on Higher Education (2007) and Framework law on Scientific Research Activities and the Coordination of Internal and International Scientific Co-operation in BiH Science (2009). In parallel, the Strategy for the Development of Science in BiH – *2010-2015* on the state level was adopted in 2009 that represent a significant step forward. Entity (Republic of Srpska and Federation of BiH) strategies on technological and scientific development are in the phase of public consultation (July 2011) and will most probably by adopted by the end of 2011.

"Framework law on Higher Education in Bosnia and Herzegovina"

In July 2007, the Parliamentary Assembly of BiH adopted the Framework Law on Higher Education in BiH. The law promotes the implementation of Bologna Process action lines, especially with respect to restructuring of curricula, quality assurance and recognition of qualifications. A strong contribution is also made to the harmonisation of higher education governance and management and the establishment of the responsibilities of the competent authorities. Additionally, the law provides a basis for the establishment of new bodies dealing with recognition of qualifications and quality assurance, having the task to reinforce implementation of the policy and principles of the Bologna Process, as a condition for becoming part of the European Higher Education Area (EHEA).

"Framework law on Scientific Research Activities and the Coordination of Internal and International Scientific Co-operation in BiH"

In May 2009, the Parliamentary Assembly of BiH adopted the Framework Law on 'Scientific Research Activities and the Coordination of Internal and International Scientific Co-operation in BiH', Official Gazette BiH, no. 43/09 (referred to in this report as Framework Law on Science). This law has created a more transparent legal basis for multi-level governance in the country, with a specified role for the Ministry of Civil Affairs (MoCA) at state level. The also provides for the creation of a new coordination body, called the Science Council. The President and members of the Council were elected in April 2010. It is expected that this body will contribute to the implementation of priority areas in science. Importance of the need to significantly improve the current S&T information system, including statistical data collection, according to international standards (eg EUROSTAT, OECD and UNESCO) is underlined.

"The Strategy for the Development of Science in BiH – 2010-2015"

Following a consultation process, the Council of Ministers has adopted the "Strategy for the Development of Science in BiH-2010-2015" on 22 December 2009. The strategy, prepared by the MoCA, specifies actions in line with the implementation of the Framework Law on Science (like the renewal of the RTDI statistical and information system) and the role of public authorities at each level (state, entity, canton and district). It also identifies RTDI priorities in the coming five years. Nine priority areas are explicitly detailed as urgent, short-term activity lines, namely:

- Strengthening the Science Department in the MoCA
- Stronger co-operation with the EU with the aim of using the Instrument for Pre-Accession (IPA) funds for strengthening scientific research activities

- Participation in the activities of the 7th Framework Programme (FP7) of the EU as well as in other international programmes
- Allocating MoCA funds for co-financing of international projects;
- Establishing a mechanism of collecting statistical data and monitoring scientific activities;
- More intensive co-operation on exchange of information between the ministries responsible for science and education;
- Establishment of the Science Council;
- Tax incentives for companies that invest in research activities; and
- Possibility of access to scientific information (scientific journals, data bases, etc.) via the Internet and various electronic systems.

The post-war economic growth of Bosnia and Herzegovina (BIH) was based on domestic demand, stimulated by foreign investment, raw materials and relatively cheap labour. With the onset of the worldwide financial crisis in 2008-2009, foreign investment reduced considerably thus augmenting the problem of the country's low economic competitiveness. The issue of the future sources of economic growth is one of the most important matters for the country to address. Future economic growth requires an increased efficiency or productivity, as well as a larger share of domestic know-how in export products and services. The period between 1997 and 2007 witnessed an important level of industrial restructuring in terms of reconstruction and modernisation of the pre-war industrial base, based on wood-processing, metal-working, textile and motor-car industries[2].

There has been almost no activity on the preparation of state/entity strategy documents related to innovation, and this has effectively left BiH in strategic and policy limbo. A unifying policy document should be created to provide a common strategic framework that clearly specifies state goals. The policy will help build foundations for a stable, yet flexible innovation system aligned with national priorities and based on realistic needs. In addition, the unifying innovation policy document should bring together all relevant funding instruments and steer them toward common goals, as well as revisit the operative roles of executive actors. The innovation policy should be developed using a cooperative approach, actively including sectoral stakeholders in the public and private sector, with an emphasis on effective public consultations.

Strengthening the public research base is not possible without qualified human resources. According to the BiH Statistical Agency, highly skilled workers, PhDs in engineering and mathematics, represent only 7% of the total workforce. Moreover, at present, the number of graduates in science and engineering in BiH is declining year by year. Life-long learning is also a new concept, and the majority of private companies do not invest in own human resources through additional training and development. A key challenge, therefore, lies in ensuring the training of a new generation of scientists in BiH universities or abroad and retraining of existing scientists in new experimental techniques.

[2]Bartlomiej Kaminski and Francis Ng (2010), Bosnia and Herzegovina's Surprising Export Performance. Back to the Past in a New Veil but Will It Last?, *World Bank Policy Research Working Paper* 5187, Washington

The levels of overall funding are still relatively modest, especially compared to the EU average. Also, the role of the private sector is minor. Increasing the overall level of funding and better integrating the private sector in the R&D sector have been stressed as the two key priorities in the Strategy for the Development of Science in BiH – 2010-2015. Increased funding calls for political commitment of the governments, while the recognition of the importance of R&D for the development towards knowledge-based society is growing. Low participation of the business sector in R&D activity is evident. Policies to better integrate the R&D sector with industry should be developed, but one of the challenges is to first restore/improve the growth capacity of the industry, which, in turn, will increase its need for R&D and innovation.

1.2 Innovation governance

The governance of the BiH research system reflects the constitutional structure of the country as shown in Figure 1.

The Ministry of Civil Affairs of BiH (MoCA) coordinates science policy at the state level as well as international cooperation through its Department for Science and Culture. MoCA has the Science Council at its disposal to advise on the preparation of the annual programmes for scientific research, propose initiatives for the domestic and international projects, comment on the annual programmes of scientific and research activities and undertake internal and external evaluations of scientific and research activities. Apart from MoCA, the coordination of SME policies at state level is the responsibilities of the Ministry of Foreign Trade and Economic Relations of BiH (MoFTER). The MoFTER formulated a new SME development strategy for the period 2009-2011. The strategy includes the creation of a SME agency at national level aiming to coordinate the strategic framework; to establish a Development and Entrepreneurship Fund as well as a SME Council. At the time of drafting this report (Sep. 2011) the adoption of these actions has not taken place.

The two entities, Republika Srpska (RS) and Federation of BiH (FBiH) with its 10 Cantons, coordinate their own specific policies through the entity/cantonal governments.

The Ministry of Science and Technology of RS, through the Department of Science and Department of Technology, governs the R&D system in RS. It is the main funding channel for research and innovation activities in the entity. The Ministry of Industry, Energy and Mining of Republic of Srpska is responsible for development of SMEs and handicraft production and particularly encouraging export-oriented entrepreneurs and new technologies.

The Government of RS, on the proposal of the Ministry of Science and Technology of RS, forms a Science Council which similarly advises like the MoCA Science Council.

In the Federation of BiH, the cantonal Ministries of Education, Science, Culture and Sport govern the financing of research activities. Policy is administered through the respective Departments of Higher Education and Science. The Ministry forms Science Council, which advises on the same issues as at entity and state level. Also, the Federal Ministry of Development, Entrepreneurship and Craft is responsible for the development of the SME sector. This recognises the importance of the SME sector and the necessity for effective coordination in the Federation of BiH (FBiH).

Public research is mostly undertaken in the Universities and research institutes. There are eight public universities (six in FBiH and two in RS) with four, being loose associations of autonomous faculties. According to the Law on Higher Education from 2006 and updated University Statutes adopted in 2007, all public Universities in RS are integrated Universities where faculties lost their status of legal personality as well financial autonomy. There are nine private universities, three in FBiH and six in RS. In total, there are 140 faculties and 10 academies. The largest University in terms of staff numbers is the University of Sarajevo, followed by the University of Banja Luka, the University of East Sarajevo, the University of Tuzla, the University of Mostar, "Dzemal Bijedic" University of Mostar, the University of Zenica and the University of Bihac. As far as research institutes are concerned there are 21 in RS (15 public and 6 private) and 30 in FBiH (20 public and 10 private). There are two Academies of Arts and Science: Academy of Arts and Science of BiH (active on the territory of the FBiH) and the Academy of Arts and Science of RS.

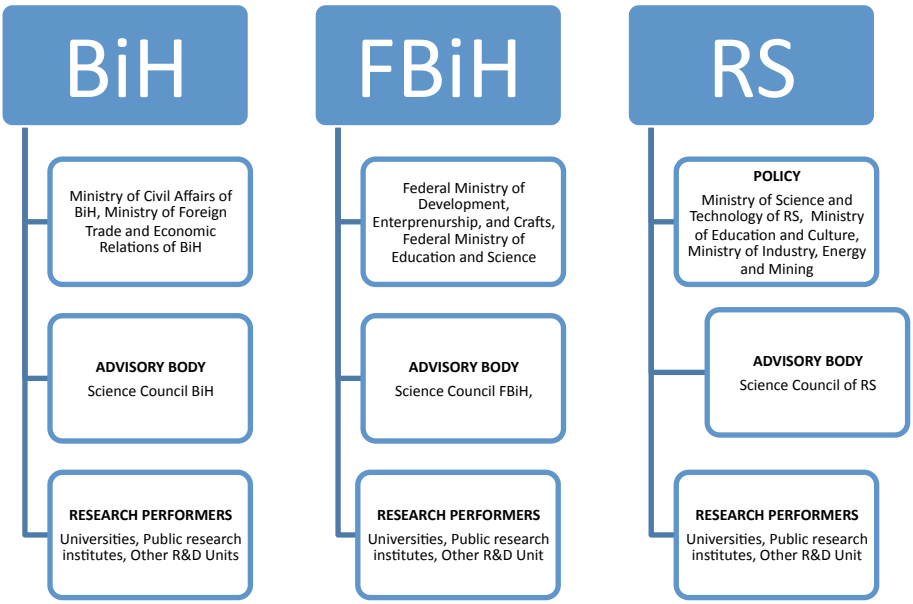
As already stated above, State and entity ministries play the role of both policymakers and funding bodies as they also manage support measures. Separation of these functions is not envisaged within the responsible ministries neither on the Sate or entity level. There is no e.g., State/Entity Agency for Science and Technology that will be entrusted with national research policy, established by law. Also, there is no State/Entity Fund for R&D with the objective of supporting scientific projects, following their evaluation, and contributing to the provision of equipment in laboratories.

Research policy in BiH is mainly generic in character while support programmes for specific thematic areas are not very common in policy practice. The main policy instruments for financing science follows a horizontal approach in which all research areas are to be developed and treated equally. The responsible ministries at the entity level fund the programmes that support all fields of science regardless of thematic area and type of research. It is designed to assure the balanced development of the six main fields of science (natural sciences, engineering and technology, medical and health sciences, agricultural sciences, social sciences, and humanities).

The evaluation culture in BiH science and research system is weak. All kinds of evaluation usually serve the administrative purposes of the responsible ministries. The tradition of evaluation is mainly evident in the evaluation of research projects financed through the support measures "Scientific and research projects" at the entity level. These programmes are the basic instruments of the responsible entity ministries for financing research activities through competition-based research grants. The evaluation of projects includes ex-post evaluation. Ex-post evaluations are mainly target the achievement of project results. Large research programmes based on scientific themes do not exist in BiH and there therefore exists no system for their evaluation.

There is a lack of systematic and comprehensive evaluation of the research supporting programmes administered by the relevant entity ministries. So far, the ministries publish the information on the number of submitted and selected projects as well as the budget spent in the given call. More comprehensive evaluation is absent that, as a consequence has no significant impact on science policy.

Figure 1 Overview of the governance structure of the BiH research system



1.3 Recent changes in the innovation policy mix

It is hard to distinguish a policy mix for research in BiH. Most of the documents guiding research, innovation and other policies affecting research have been adopted only in the past two years, usually with no coordination between them. The bulk of these strategic papers have not yet been translated into specific policy actions, which hampers efforts to distinguish a policy mix in practice. The main reason for the slow implementation of most research-related strategies is the lack of sufficient and thematically coherent financing to underpin them.

Although there are no strategic measures and polices for innovation and technology targeted investments, some efforts have recently been made. In 2008 the Government of the Federation of BiH adopted the strategy for Information on Development and Limitations in Establishment and Work of Science Parks in the Federation of BiH. A technology park was established in Mostar in 2008. The Science Park Tuzla and Technology Park Mostar are operating in Federation of BiH (FBiH) as limited liability companies, while the Technology Park in Zenica is in the last phase of establishment. The Government has emphasised the importance of science and technology parks as instruments for the integration of different socio-economic and political actors. It also adopted a conclusion that the Ministry of Development, Entrepreneurship and Crafts and the Ministry of Education and Science in FBiH continue their efforts to establish science and technology parks. The law on science and research activity of the Republic of Srpska (RS) defines the procedure for establishing science and technology parks and defines their goals. In RS an innovation centre was established in Banja Luka in 2010.

So far, only international institutions have created several financial instruments fostering innovation and development in the country.

“The Business Innovation Programme” (BIP) is a non-profit foundation established in Norway in 1993. It objective is to contribute to the establishment of jobs and facilitate the development of expertise in the field of economic development as an effective means of building or rebuilding countries. The project Student Enterprises and Young Entrepreneurship aims at establishing student enterprises and entrepreneurship training in Bosnia and Herzegovina.

Competitive Regional Economic Development (CREDO): The main objective of the programme is to enhance the development of SMEs and the growth of Bosnia and Herzegovina private sector, as well as to reduce the high unemployment rate as a leading cause of poverty. BH Office of SIDA (Swedish International Development Cooperation Agency) developed a model of work with regional development agencies in 2003. The programme has been extended for period 2010-2014. The main objective of this new project is to increase competitiveness and growth of SMEs in the selected sectors.

Enhancing Small and Medium Enterprise (SME) Access to Finance Project of the World Bank: In 2009 the World Bank pledged a $70m line of credit for SMEs. The essence of this project is to improve access to finance for Small and Medium Enterprises (SMEs) in the context of the global financial crisis. The project will support the country's banking system to respond to the needs of SMEs as important generators of economic growth and employment.

Open Regional Fund for Foreign Trade Promotion in South- East Europe (ORF): The Open Regional Fund (ORF) is financed by German Federal Ministry for Economic Cooperation and Development (BMZ) and implemented by Deutsche Gesellschaft fur Internationale Zusammenarbeit (GIZ). The project was established in January 2007 for a period of five years. The aim of the project is to strengthen competitiveness through multi-country cooperation among companies and institutions in the region and marketing of South East Europe as an economic area on the international stage. Eligible countries are Albania, Bosnia and Herzegovina, Croatia, Macedonia, Montenegro, Serbia and Kosovo.

Turn-around Management and Business Advisory Services Programme BiH (TAM/BAS): The new European Bank for Reconstruction and Development (EBRD) Strategy (2010 – 2013) ensures that the Turn-around Management and Business Advisory Services (TAM/BAS) programmes continue to provide advisory services to SMEs in BiH. TAM/BAS aims to reduce the "brain drain" on human resources by implementing programmes that target young entrepreneurship and innovation development. The programmes are often technology related.

TAM Programme

TAM is piloting low-cost incubator projects. As a practical approach for creating new jobs, through business formation and expansion, business incubators have become recognised worldwide as a viable tool for economic development. In particular, TAM has been incubating ICT enterprises by carrying out small TAM projects with individual entrepreneurs. This initiative aims to help local entrepreneurs in the ICT field to create commercially viable and competitive businesses. This will also contribute to the creation of jobs, and the development of a dynamic ICT industry.

BAS Programme

The BAS Programme, administered by the European Bank for Reconstruction and Development (EBRD), has been established in order to assist the development of small and medium sized enterprises.

Objectives of the BAS Programme are:

- To assist SME BiH enterprises by financially supporting business advice and activities to benefit from the best local consultants;

- To develop and strengthen the skills and quality of local consultants and cooperating with those institutions which promote the development of SMEs in BiH (industry associations, chambers of commerce, entrepreneurs representative groups, etc.). Areas of the BAS Programme support are: market research; business partner and investor search; selecting and appraising equipment to be purchased; improving organisational and business management structure; preparing business plans; developing and improving financial accounting and control systems; developing and upgrading management information systems; preparation and certification for quality management systems.

As far as local support measures are concerned, Ministry of Civil Affairs (MoCA) has been supporting innovators since 2007 under the "Support for Innovation and Technical Culture in BIH" programme. Funds are allocated through public competition. In 2010, a total of €0.76m was allocated. RS also allocates budget funds for technological development, which includes innovators, meetings and projects for the development of new technologies and the information society. The total budget for 2010 was €0.41m broken-down as follows: public call to innovators (€0.06m or 6.3% of the total budget), development of new technologies (€0.30m or 86.3% of the total budget) and development of the information society (€0.05m or 7.4% of the total budget). The Federation Ministry of Education and Science have also been supporting innovators, innovativeness and technical culture, and the introduction and development of new technologies. Support is implemented through a public call. In the course of 2010, €0.37m was allocated for these purposes.

1.4 Internationalisation of innovation policies

The Cooperation Agreement between BiH and Slovenia on promotion of cooperation activities in the areas of science and technology is an example of successful bilateral activities. The programme launches every two years competitive grants for co-financing of joint research projects. Project criteria are: importance of research results for economic and social development of BiH, scientific value and/or research applicability, potential opportunities for participation in EU research projects, use of the research results for commercial purposes. On average, every year, 20-30 projects apply to these Calls. Joint Committee for Scientific and Technological Cooperation between BiH and Slovenia evaluates the projects and proposes the best ones for financing.

1.5 Evidence on effectiveness of innovation policy

There are no publicly available evaluations or reviews of policies regarding the science and technology, including innovation.

A unifying policy document should be created to provide a common strategic framework that clearly specifies State goals. The policy will help build foundations for a stable, yet flexible innovation system aligned with national priorities and based on realistic needs. In addition, the unifying innovation policy document will bring together all relevant funding instruments and steer them toward common goals, as well as revisit the operative roles of funding bodies. The innovation policy should be developed using a cooperative approach, actively including sectoral stakeholders in the public and private sector, with an emphasis on effective public consultations.

Case 1 Support to innovations and technical culture in BiH

A measure is in support of innovation culture. The lack of financial sources in the national budget drives the researchers to look for any funding opportunity within or outside the country. Funds are allocated through public competition and the target group are associations, firms, research units, and academic organisations. The culture of evaluation and accountability has not yet been developed in BiH research policy. An Action Plan for research evaluation has to be formulated by the relevant ministries in the country and that is why it is difficult to justify if such financial support can be classified as good practice.

2. Innovation policy budgets – an overview

2.1 Trends in funding of innovation measures

Prior to the disintegration of former Yugoslavia in 1990s, the BiH research system was thriving. Investments in science and research were as high as 1.5% of GDP and industry played a significant role with important industrial companies who had created and developed large research laboratories with several hundred researchers.

Investment in research is now very limited. Statistics on research and development activities are lacking. No data exist on business, foreign and private non-profit funding. The entities and cantons fund their particular policies through their own budgets.

In the absence of overall statistics for research and development (R&D) activities in BiH, it is difficult to come up with an exact evaluation of public investment in such activities. According to the strategy Development for Science in BiH 2010-2015 (STI Strategy), BiH invests around 0.07% of its GDP on R&D however, it is estimated that, in fact, total investment is as high as 0.1 to 0.14% which, however, is still far below the EU 27 average of 1.84%.

There are three main funders in BiH which allocates financial resources via competition-based research grants: at the State level, the Ministry of Civil Affairs of BiH, the Ministry of Science and Technology of RS and the Ministry of Education and Science of FBiH at the entity level.

The total budget of public funding for research in Bosnia and Herzegovina by the state, entities and cantonal governments was likely to amount to almost €5.9m in 2010. This figure is composed of the following main items:

At the State level, MoCA through its Department for Science and Culture had a budget of €76,000[3] in 2010 for grants that support innovation and technical culture in BIH.

In RS, the financial allocation in 2010 was in total €2m (actual expenditure) channelled through the "programme for scientific and research activities" while budget for innovation and technology was €0.41m[4]. The financial instruments in support of innovation and technology are:

- competitive grants for innovators (€0.02m or 6.3% of total budget);
- projects for development of new technologies (€0.60m or 86.3% of total budget);
- project for development of information society (€0.05m or 7.4% of total budget).

The total budget for research of the Federal Ministry of Education and Science in 2010 was €1.6m channelled through the "programme for scientific and research activities". The financial instruments in support of innovation and technology in 2010 was €0.37m.

There are no other public authorities that finance research out of their own funds.

[3] Javni konkurs za dodjelu grant sredstava iz programa «Podrška tehničkoj kulturi i inovatorstvu u Bosni i Hercegovini» za 2010. godinu, www.mcp.gov.ba

[4] Издвајања за научно–истраживачки рад, Министарство науке и технологије Републике Српске, ПРИЛОГ СТРАТЕГИЈИ НАУЧНОГ И ТЕХНОЛОШКОГ РАЗВОЈА РЕПУБЛИКЕ СРПСКЕ 2011 - 2016. ГОДИНЕ (НАЦРТ), јули 2011. године

The lack of financial resources in the national budget drives the researchers to look for funding sources outside the country. On one hand the advancing political framework for international S&T co-operation and on the other the growing demand for funding push the research community to turn more and more toward opportunities provided by the EU's FP7 and EUREKA/COST. The membership or associated status will not result in automatic benefits, the opportunity must be capitalised on.

BiH is not eligible for the EU Structural Funds that play an important role for co-funding R&D in Europe.

Regarding the participation under the EU FP 7 programme and assessment of possibilities offered by the programme, by June 2011 institutions from BiH participated in 217 project applications, which were submitted following the calls for applications within FP7. Out of this number, 27 projects in which institutions from BiH participate were approved in the period from the launching of FP7 programme to June 2011. Research institutions from BiH participate in 16 actions of the programme COST (Cooperation in Science and Technology) and two EUREKA programme projects. Preparation of another two applications is underway.

Figure 2 Broad share of available budgets by main categories of research and innovation measures

Broad category of research and innovation policy measure	Approximate total annual budget for 2010 (in euro)	Commentary
1. Governance & horizontal research and innovation policies	• €5.9m (programme for scientific and research activities" in RS and FBiH) **Subcategories:** • Competitive grants for conducting basic research, applied research and experimental development • Competitive grants for supporting young and gifted scholars in their science and research activity (awarding scholarships for postgraduate and PhD studies, technical preparation of master and PhD thesis) • Competitive grants for publishing scientific and research publications and journals • Competitive grants for participation in international scientific conferences and development of scientific cooperation • Competitive grants for acquisition of research equipment • Direct grants for support of scientific and professional associations • Competitive grants for the organisation of scientific events • Competitive grants for innovators • Projects for development of new technologies • Project for development of information society	• The "programme for scientific and research activities" in RS and FBiH" is launched and administered by the responsible ministry of science at the entity/cantonal level. The €5.9m represents the total amount of actual public expenditure for R&D in BiH (State, entities, cantons) • Actual public expenditure • Private/structural funds are not available • With the onset of the economic crisis, the R&D budget in 2010 has declined by 30% in comparison to 2008 investment

Broad category of research and innovation policy measure	Approximate total annual budget for 2010 (in euro)	Commentary
2. Research and Technologies	• €0.78m • Subcategories: • Competitive grants for innovators • Projects for development of new technologies • Project for development of information society • Competitive grants for acquisition of research equipment • Direct grants for support of scientific and professional associations • Competitive grants for publishing scientific and research publications and journals • Competitive grants for participation in international scientific conferences and development of scientific cooperation	• Part of "programme for scientific and research activities" in RS and FBiH) • Actual public expenditure • Private/structural funds are not available
3. Human Resources (education and skills)	• €2.2m (part of "programme for scientific and research activities" in RS and FBiH) • Competitive grants for conducting basic research, applied research and experimental development • Competitive grants for supporting young and gifted scholars in their science and research activity (awarding scholarships for postgraduate and PhD studies, technical preparation of master and PhD thesis) • Competitive grants for participation in international scientific conferences and development of scientific cooperation	• Part of "programme for scientific and research activities" in RS and FBiH) • Actual public expenditure • Private/structural funds are not available
4. Promote and sustain the creation and growth of innovative enterprises	• €0.73m (part of "programme for scientific and research activities" in RS and FBiH) • **Subcategories:** • Competitive grants for acquisition of research equipment • Direct grants for support of scientific and professional associations • Competitive grants for publishing scientific and research publications and journals • Competitive grants for participation in international scientific conferences and development of scientific cooperation	• Part of "programme for scientific and research activities" in RS and FBiH) • Actual public expenditure • Private/structural funds are not available
5. Markets and innovation culture	• €0.1m (Support for promotion of innovation culture MoCA, Federal Ministry of Education and Science, Ministry of Science and Technology of RS)	• Part of "programme for scientific and research activities" in RS and FBiH) • Actual public expenditure • Private/structural funds are not available

2.2 Departmental and implementing agency budgets for innovation policies

Figure 3 Innovation budgets of the main government departments and agencies

Name of the organisation (with link)	Number of staff responsible for innovation measures (% of total)	Innovation budget managed	Estimated share of budget earmarked for specific policy measures
Ministry of Science and Technology of RS – Sector for Technology	3; 25%	€0.41m	20%
Federal Ministry of Education and Science – Dept. for Science and Technology	3; 20%	€0.37m	23%
Ministry of Civil Affairs of BiH – Dept. for Science and Culture	12; 100%	€0.07m	100%

2.3 Future challenges for funding of innovation policy

The post-war economic growth of Bosnia and Herzegovina (BIH) was based on domestic demand, stimulated by foreign investment, raw materials and relatively cheap labour. With the onset of the worldwide financial crisis in 2008-2009, foreign investment reduced considerably thus augmenting the problem of the country's low economic competitiveness. The issue of the future sources of economic growth is one of the most important matters for the country to address.

Future economic growth requires an increased efficiency or productivity, as well as a larger share of domestic know-how in export products and services. The period between 1997 and 2007 witnessed an important level of industrial restructuring in terms of reconstruction and modernisation of the pre-war industrial base, based on wood-processing, metal-working, textile and motor-car industries[5].

This process needs to continue, although this is not yet possible as there is no national innovation system in place. Improvements in quality, adaptation of foreign technologies to national conditions, as well as continued product and process innovations will not be possible without innovative companies, an educated labour force and a more complex research and development (R&D) system. BIH will be unable to achieve long-term growth on the basis of cheap and unskilled labour; rather it has to increase the share of professional labour, quality and national innovativeness, as well as a quality adaptation to and use of foreign technologies and software. This shift will not be possible only at enterprise level without reforming the higher education and vocational education and training systems or without support to companies to increase innovation activities. The BIH R&D system has almost fully disappeared, which is a consequence of the past war. It needs to be re-built, not only at universities and institutes, but also in the business enterprise sector in the first place.

The volume of R&D investment reflects the economy's efforts in creating and accumulating new knowledge, which is essential to modern knowledge-based economies. Current R&D levels in the public sector in BiH are too low to maintain a healthy science base. At present, in BiH GERD is estimated at 0.1 to 0.14 % of GDP. Funding of R&D activities is substantially lower than the EU average, 1.84%. The Strategy of Science in BiH proposes that BiH should raise its R&D investment to 1% of GDP by 2015. Increase in financial support from the state, entity and cantons and the ability to attract other funding is a challenge for the country policy makers.

[5]Bartlomiej Kaminski and Francis Ng (2010), Bosnia and Herzegovina's Surprising Export Performance. Back to the Past in a New Veil but Will It Last?, *World Bank Policy Research Working Paper* 5187, Washington

3. Thematic report: Demand-side innovation policies

There are no demand-side innovation policy measures in BiH.

Figure 4 Categorisation of demand-side policies

Demand side innovation policy tool	Short description
Public procurement	
Public procurement of innovation	Public procurement of innovative goods and services relies on inducing innovation by specifying levels of performance or functionality that are not achievable with 'off-the-shelf' solutions and hence require an innovation to meet the demand.[6]
Pre-commercial public procurement	Pre-commercial procurement is an approach for procuring R&D services, which enables public procurers to share the risks and benefits of designing, prototyping and testing new products and services with the suppliers[7].
Regulation	
Use of regulations	Use of regulation for innovation purposes is when governments collaborate broadly with industry and non-government organisations to formulate a new regulation that is formed to encourage a certain innovative behaviour.[8]
Standardisation	Standardisation is a voluntary cooperation among industry, consumers, public authorities and other interested parties for the development of technical specifications based on consensus. Standardisation can be an important enabler of innovation.[9]
Supporting private demand	
Tax incentives	Tax incentives can increase the demand for novelties and innovation by offering reductions on specific purchases.
Catalytic procurement	Catalytic procurement involves the combination of private demand measures with public procurement where the needs of private buyers are systemically ascertained. The government acts here as 'ice-breaker' in order to mobilise private demand. [10]
Awareness raising campaigns	Awareness raising actions supporting private demand have the role to bridge the information gap consumers of innovation have about the security and the quality of a novelty.[11]
Systemic policies	
Lead market initiatives	Lead market initiatives support the emergence of lead markets. A lead market is the market of a product or service in a given geographical area, where the diffusion process of an internationally successful innovation (technological or non-technological) first took off and is sustained and expanded through a wide range of different services[12].
Support to open innovation and user-centered innovation	Open innovation can be described as using both internal and external sources to develop new products and services13, while user-centered innovation refers to innovation driven by end- or intermediate users.[14]

6 NESTA (2007) Demanding Innovation Lead Markets, public procurement and innovation by Luke Georghiou
7 http://ec.europa.eu/information_society/tl/research/priv_invest/pcp/index_en.htm
8 FORA, OECD: New nature of innovation, 2009, http://www.newnatureofinnovation.org/
9 Commmission Communication: Towards an increased contribution from standardisation to innovation in Europe COM(2008) 133 final 11.3.2008
10 Edler, Georghiou (2007) Public procurement and innovation – Resurrecting the demand side. Research Policy 36. 949-963
11 Edler (2007) Demand-based Innovation Policy. Manchester Business School Working Paper, Number 529.
12 COM 2005 "Industry Policy" http://ec.europa.eu/enterprise/enterprise_policy/industry/index_en.htm and Mid-term review of industrial policy
13 Chesbrough (2003) Open innovation. Harvard Business School Press
14 Von Hippel (2005) Democratizing innovation. The MIT Press, Cambridge

3.1 Trends in the use of demand-side innovation policies

Demand-side innovation policies are not in the focus of BiH Authorities.

Limited progress has been made in the area of public procurement. The Public Procurement Agency prepared a Strategy for development of the public procurement system in Bosnia and Herzegovina, covering the period 2010-2015 which was adopted in May 2010. No section of the Strategy was dedicated to the procurement in innovations. The overall legislative alignment needs to advance. Many provisions of the new EU Directives remain to be introduced.

The current fiscal policy instrument in BiH still do not recognise and support tax incentives for R&D. Zero per cent corporate tax applied on all profits that are re-invested into the development of the company is yet non-existent in the country. The Law on corporate tax in RS (Official Gazette of RS 91/06) and the Law on corporate tax in FBiH, (Official Gazette of FBiH 97/07 and 14/08) foresees only incentives to those companies who reinvest into the production part of their activities.

Most of the research institutions, as a part of the University structure, are public institutions and they are entitled to some tax exemptions like all other public and non-profit organisations, but nothing to specifically support R&D.

The only incentives that may support the R&D indirectly are exemption of custom duties and value added tax (VAT) refund. According to the Law on Custom Duties (Official Gazette BiH, no. 57/04), imports of equipment financed by the international donor organisation are exempted from customs duties. The relevant Ministry in RS, FBiH or Canton issue certificates for the import of donated equipment for higher education institutions. These certificates are used to claim the exemption from customs duty and the same applies for the value added tax refund. For value added tax, the tax refund has been in force since 2005 (Official Gazette BiH, no. 09/05). Equipment that has been procured in BiH or abroad for the higher education institutions is entitled for the tax refund.

3.2 Governance challenges

A major problem in regard to fiscal policies is that no clear incentives that support research in BiH have been created yet. This problem needs to be addressed and comprehensive solution should be proposed.

3.3 Recent demand-side innovation policy measures

There are no demand-side innovation policy measures in BiH.

Appendix A Research and innovation policy measures for (Bosnia and Herzegovina)

Name of the Support measure	1st Priority	Start date	End date	Status (CC to complete)	Estimated public budget in 2010 in euro	Comment
Support to innovations and technical culture in BiH	5.1 Measures in support of innovation culture	2007	No end planned	On-going	0.76m	• Part of "programme for scientific and research activities" in RS and FBiH
Financial instruments in support of innovation and technology in the Republic of Srpska (RS)	5.1 Measures in support of innovation culture	2008	No end planned	On-going	0.41m	• Part of "programme for scientific and research activities" in RS and FBiH
Supporting innovators, innovativeness and technical culture, and the introduction and development of new technologies	5.1 Measures in support of innovation culture	2009	No end planned	On-going	0.37m	• Part of "programme for scientific and research activities" in RS and FBiH
Competitive grants for conducting basic research, applied research and experimental development **Competitive grants for supporting young and gifted scholars in their science and research activity (awarding scholarships for postgraduate and PhD studies, technical preparation of master and PhD thesis)** **Competitive grants for participation in international scientific conferences and development of scientific cooperation**	3.3 Skills development and recruitment	2006	No end planned	On-going	2.2m	• Part of "programme for scientific and research activities" in RS and FBiH