

**Project title: MaPEeR SME: Making Progress and Economic enhancement a Reality for SME**

# **Comprehensive analysis of programmes and initiatives in Bosnia and Herzegovina that assist the Collaboration between science and SME**

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## EXECUTIVE SUMMARY

This report provides an overview of programmes of the support to Research and Development (R&D) activities of SMEs, being conducted individually by SMEs or in collaboration with R&D Institutions and Organizations.

Bosnia and Herzegovina (BiH) is located in the southeast Europe, decentralized and consisting of two governing entities and one district - Federation of Bosnia and Herzegovina and Republic of Srpska, and District Brcko. BiH has specific decentralized system with high independence of governing entities. This results in the existence of quite autonomous entity legislatures, where each of the two entities has its own governing and administration system. From the economy aspect, this means creation and existence of different economic environments in BiH entities. With 0,1% of the amount of GDP, R&D potential in Bosnia and Herzegovina is simply not comparable with the same indicator in other European countries. Methodological differences and lack of statistical data and indicators on R&D framework, results in total absence of Bosnia and Herzegovina's data in the European statistical system. Thus was the main reason why the used methodology for the analysis of the research structure of Bosnia and Herzegovina is more leaned on personal contacts (phone calls or phase-to-phase interviews) with representatives of National/Entity (Regional) Ministries, Chambers of Commerce, Industrial Clusters, and Local/Regional Development Agencies, active in this scope. Relevant data were also included from filled in SME questionnaires and from the national round table (elaborated under WP3 of the study).

Adopted strategic documents for National/Entity (Regional) level, as well as the available statistical reports have also been analysed. As it is impossible to determine the actual costs for R&D in Bosnia and Herzegovina, especially in the local communities (different studies and strategies) and SMEs, Universities as well as the researches financed by the foreign donors, document used for analysis was Experimental Pilot Survey on the subject of Innovation activity of enterprises for 2006 - 2008. This Survey is based on sample in accordance with the recommendations of Organization for Economic Co-operation and Development (OECD) and EUROSTAT methodology.

Major portion of available financial resources for R&D in Bosnia and Herzegovina are coming from the Entity and local community budgets. There are no reliable data on the investment of enterprises for these purposes, but they are for sure marginal. This especially implies on the industries where companies are privatised and new owners are not expressing any interest for investments in R&D. In the cases of direct foreign investments, it is clear that foreign owners do not want to strengthen R&D component of their companies, because they choose to keep that for their main branches.

In total, five (5) programs in accordance with the MAPEER SME criteria have been mapped:

- Program 1. Incentives for innovations and new technologies for SMEs in Republic of Srpska
- Program 2. Transfer for the support to development of entrepreneurship and crafts in Federation of BiH
- Program 3. Support to projects of significance for Federation of BiH
- Program 4. Co-financing of science and research projects in Republic of Srpska
- Program 5. Excellence in Innovation

Other programmes mapped had the characteristic of SME support programmes (activities based on standardisation of management processes, CE mark, purchase of equipment and etc.), but no R&D component. Generally speaking, R&D programs which supports the cooperation between SMEs and R&D Institutions such as Universities and Institutes are still rare in Bosnia and Herzegovina. Although the national and entity strategic documents underline the importance and plan the implementation of such programs, only five instead of six programmes have been identified and analysed in accordance with the MAPEER SME methodology.

Tailoring of programmes exclusively for R&D issues of SMEs and R&D Institutions is crucial for achieving better results. Furthermore, the amount of financial support offered for contribution to projects of SMEs and R&D Institutions should be higher, since the existing ones are quite modest to attract SMEs.

The analysis of mapped programmes distribution of available R&D funds, structural changes must be done. Prejudices of business sector towards research organizations must be removed in order to give them equal chance and incentives. For all distributed resources, strong control and monitoring of spending should be secured, together with science-research and external evaluation in accordance with the European methodologies and principles.

The main characteristic of actual position of work in scope of research, science and technology development is evidential lack of system planning as an important component of economic reconstruction, which significantly slows down efforts invested in strengthening of export capabilities of the country and economy in general. Absence of R&D programs and projects also has a negative influence of internal fluctuation of skilled and qualified labour from the production based capacities to public institutions (administration) and international organizations.

Furthermore, ignorance of R&D role in economy reconstruction, results in decrease of interest for technical and technology studies. In combination with the “brain-drain” of young experts to foreign countries, this could cause long term deficit in these professions, resulting in permanent consequences on the development of Bosnia and Herzegovina.

# 1 Introduction

The present document is deliverable 2.3 (National report on SME RTD Programmes and Initiatives) under WP2 - Comprehensive, in-depth, horizontal and cross-sectoral compendium on programmes and initiatives that assist the collaboration between science and SMEs.

The National Report on SME RTD Programmes and Initiatives aims at providing the national context within which the individual programmes are investigated in Bosnia and Herzegovina. In this respect it includes national key-data and information as regards the following

- a) the national research and innovation policy, system and performance including an overview of the programme profiles. This section also includes, among others, the national strengths and weaknesses when it comes to research and innovation and SMEs
- b) Main industrial sectors and data on their R&D performance
- c) Main structure of SMEs landscape including SME profiles, size, sectors, research and innovation barriers, etc. taking into account the results of the surveys and interviews carried out under WP3.

The National Report concludes by addressing:

- a) the approach of regional and national policies/programmes towards SMEs and research and innovation,
- b) SME innovation process and relevant needs, barriers and interests,
- c) key strengths and weaknesses of country and its SMEs as regards research and innovation,
- d) barriers, key success and failure factors of SME supporting research programmes in general within the specific national context,
- e) key-drivers and opportunities for the development of such programmes and initiatives.

This information is structured under the three main sections as follows:

I National research and innovation policy, system and performance with the information on the institutional environment, Research Infrastructure and R&D performance, Main Industrial sectors and their R&D Performance, National strengths and weaknesses for R&D and innovation.

II National SME Landscape & Structure

III Main results of SME programme profiles with the overview of programme profiles, their main characteristics, analysis of performances and conclusions.

## 2 National research and innovation policy, system and performance

### 2.1 Institutional Environment

Constitutional structure of Bosnia and Herzegovina is also reflected on the research and science framework with significant determination for its development. Jurisdiction for creation of laws regarding the research and science is divided in accordance with the constitutional structure of Bosnia and Herzegovina, between the number of subjects positioned on different levels of governing authority. Actual constitutions do not treat scope of research and science activities, because they, on a very general way, transfer responsibilities from the state to entity governing level of authority. Article III of Bosnia and Herzegovina Constitution regulates jurisdiction and relations between Institutions and Entities. Jurisdiction of state in terms of research and science work is not clearly regulated. Therefore, and except in terms of international obligations, entities are in jurisdiction of science and research. Furthermore, in the entity Federation of BiH, some clauses determine jurisdiction of canton authorities over the science and research framework. In cantons which have not brought regulatory decisions for science and research, Law on science and research activities is applied (“Official Gazette of SR BiH, no. 38/90”). In Republic of Srpska science and research sector and its activities are regulated with innovated Law on science and research activities (“Official Gazette of RS, no. 112/07”) as the activity of general interest for Republic of Srpska.

**Table 1: Main actors in the national R&D system**

<i>Responsible authority</i>	<i>Role (designing, implementing R&amp;D policy)</i>	<i>Website (if available)</i>	<i>Remarks</i>
Ministry of foreign trade and economic relations of Bosnia and Herzegovina - MOFTER	designing R&D policy	www.mvteo.gov.ba	
Ministry of civil affairs of Bosnia and Herzegovina	designing R&D policy	www.mcp.gov.ba	
Ministry of science and technology of Republic of Srpska	designing R&D policy	www.vladars.net	
Ministry of industry, energy and mining of Republic of Srpska	designing R&D policy	www.vladars.net	
Ministry for education and science of Federation of BiH	designing R&D policy	www.fmon.gov.ba	
Ministry for development, entrepreneurship and small crafts of Federation of BiH	designing R&D policy	www.fmrpo.gov.ba	
Ministry of energy, mining and industry of FBiH	designing R&D policy	www.fmeri.gov.ba	

*Source: Small and Medium sized Enterprise Development Strategy in Bosnia and Herzegovina 2009 - 2011.*

As illustrated in the table above, main institutional actors responsible for creation of legislative and policy framework for SMEs and R&D related activities are:

**1. Ministry of foreign trade and economic relations of Bosnia and Herzegovina - MOFTER** which prepares and create macroeconomic relations of strategic documents for economic system of the country, business environment, development and promotion of entrepreneurship.

**2. Ministry of civil affairs of Bosnia and Herzegovina** is the highest institutional body responsible for science in Bosnia and Herzegovina. Department for science in this ministry conducts tasks and activities regarding coordination of plans brought on entity levels of governance and defining of the national strategy in terms of international cooperation in the scope of science and research.

**3. Ministry of science and technology of Republic of Srpska** is the highest level of entity authority responsible for operative work on the science and research activities in general. It is responsible for implementation of the strategy of technology development, incentives and support to fundamental development applied research, human resources development, informing on the subject of economic and technology development, consigning and acquiring of material rights and production technology, development and enhancement of technology, creation of programs and agreements on science-technical cooperation in accordance with the Constitution of Bosnia and Herzegovina.

**4. Ministry of industry, energy and mining of Republic of Srpska** is the highest level of entity authority responsible for the SME sector. This authority defines measures of economic and development policy to support different economic activities, monitors effectiveness of measures on the industrial production on targeted sectors and companies (SMEs), adopts technical regulations and adjust it with EU legislative, etc. This ministry has a major role and responsibility in implementation of the Strategy of the development of SME in Republic of Srpska 2006-2010.

**5. Ministry for education and science of Federation of BiH** is entity authority operatively responsible for education and science. It defines standards and norms for all levels of education, development, coordination and support to science and research activities and organizations, innovations, human resources, etc.

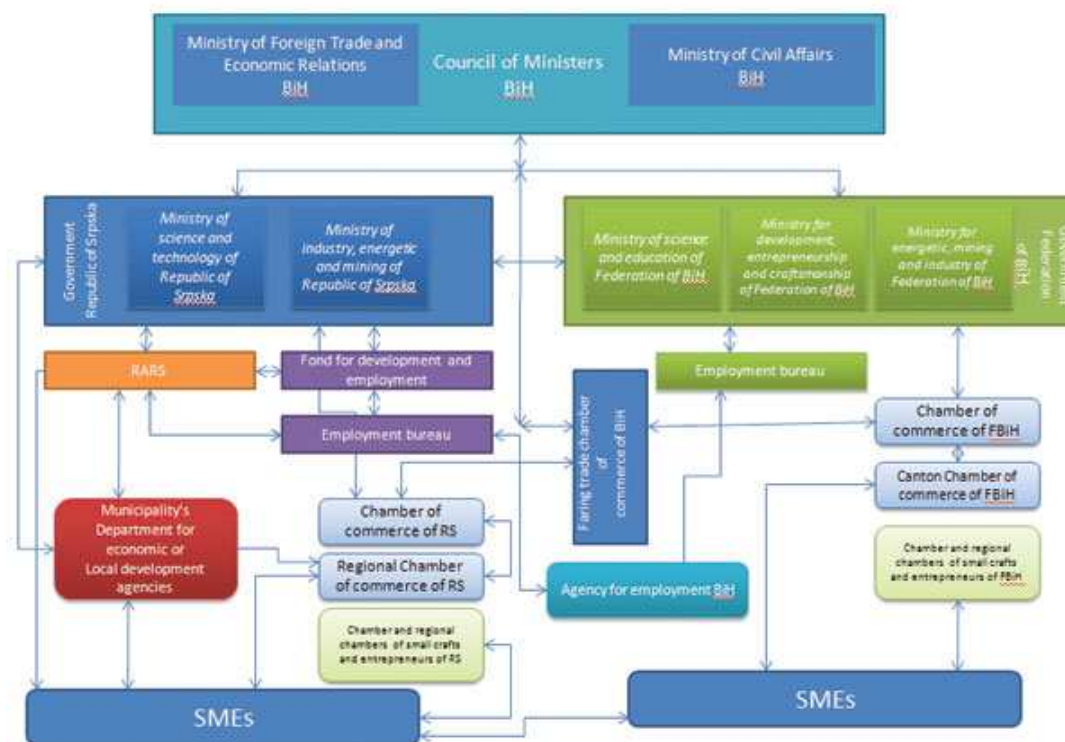
**6. Ministry for development, entrepreneurship and small crafts of Federation of BiH** is responsible for creation and implementation of strategies for development of SMEs in FBiH, support to entrepreneurship development and crafts, technology transfer and development, trainings and education, etc.

**7. Ministry of energy, mining and industry of FBiH** is main actor in creation of legislative regarding industrial activities and development in FBiH.

**Main documents and policies concerning R&D activities in SMEs are:**

- "Strategy of Science Development in Bosnia and Herzegovina 2010 – 2015"
- "Strategy of SME Development in Bosnia and Herzegovina 2009 – 2011"
- "Strategy of SME Development in Republic of Srpska 2006 – 2010"
- "Development of SME Entrepreneurship in Federation of BiH"





Picture 1. Organogram of the various authorities in BiH

Source: Small and Medium sized Enterprise Development Strategy in Bosnia and Herzegovina 2009 - 2011.

## 2.2 Research Infrastructure and R&D performance

This section of the report gives main information about the research and development infrastructure in Bosnia and Herzegovina and its performance in the period of last five years (where applicable and available). It is an overview of R&D performance and other available statistical data in direct or indirect correlation with the scope of MAPEER SME.

Table 2: Main R&D performance data of major actors in Bosnia and Herzegovina

Indicators	Value of indicator	Year of reference	Data source
1) R&D expenses as a percentage of GDP BERD (business expenditure in R&D) GOVERD (government expenditure in R&D), HERD (higher education expenditure in R&D)	less then 0,1% of GDP in RS less then 0,1% GDP in FBiH	2008	Strategy of Science development in BiH 2010- 2015
2) Non-R&D innovation expenditures of SMEs <i>Focus on SMEs only (if possible)</i>	Not available		
2) Sources of R&D funds (total in general per country): <i>R&amp;D budget in total per country, plus shares</i>	- 3 233 387 EUR in RS - 4 601 626	2008	Strategy of Science development

<i>(%) between national budget (state), international (EU), regional, etc – explain</i>	EUR in FBiH		in BiH 2010-2015
3) Research outputs: a) Number of patents applied for at the European Patent Office (EPO) per million inhabitants b) Number of new community trademarks per million inhabitants c) science and social science publications (e.g. number of journal articles)	a) 4 500 b) 249,31 c) 103.5	2009	Institute for intellectual property of Bosnia and Herzegovina  www.ipr.gov.ba  Institute for Scientific Information - ISI
4) Exports: a) medium and high-tech manufacturing exports as percentage of total exports b) Knowledge-intensive services exports as percentage of total services exports	Not available		
5) Human capital: a) Research work-force availability: Employment in - medium-high & high-tech manufacturing (% of workforce) - knowledge-intensive services (% of workforce) b) education levels and specialization: Graduates in higher education from public institutions: - S&E (science and engineering) and SSH (social sciences and humanities) graduates per 1000 population aged 20-29 (first stage of tertiary education). - S&E (science and engineering) and SSH (social sciences and humanities) doctorate graduates per 1000 population aged 25-34 (second stage of tertiary education) - Population with tertiary education per 100 population aged 25-64	a) Statistical data <b>not available</b> b) statistics on estimated number of inhabitants according to the age criteria <b>not available</b>		

Science and research work and technology development in Bosnia and Herzegovina is being financed from the different levels of authorities. On the National level, resources for these activities are secured only by the Ministry for Civil Affairs through open public calls for all science and research institutions and individual scientists. So far, the size of these resources has been quite modest in compare to their demand. Nevertheless, they initiated positive atmosphere in the science and research society of Bosnia and Herzegovina.

Statistics regarding SME sector and actual funding amounts for R&D in both entities and District of Brcko are not being kept. This also concerns occasional funding on the local

level of authority, Universities and R&D activities financed by international donors. GDP of Bosnia and Herzegovina have grown by 6% annually (in average), in the period of last 5 years. This rate is higher compared to the regional average and almost three (3) times higher than the average of EU-27. But even with the so high figures of growth, in the year 2008, Bosnia and Herzegovina was on the level of 76% of GDP achieved in 1990, and only 12,8% of the average GDP per capita of EU-27 (ranked on position last but one in the whole Europe).

A more organized approach to science development in Republic of Srpska begins with establishing of Ministry for science and technology (in 2003). Budgetary financing for science and research activities in Republic of Srpska are being gradually increased. Nevertheless, some 3,3 million EUR sorted out for science and technology in 2008, is not making more than 0,5% of total budget, i.e. less than 0,1 % of the Gross Domestic Product (GDP). Science and research activities in the entity Federation of BiH is in an even more unfavourable position, because of the inexistence of a separate Ministry for science (science department is organized within the Ministry of education). Speaking on the level of Federation of BiH, financial contributions for science and research activities and technology development are less than 0,1 % of the Gross Domestic Product.

Bosnia and Herzegovina has 8 public universities (six of them in Federation BiH and two of them in Republic of Srpska). Additionally, a number of private universities are also active resulting in the fact that Bosnia and Herzegovina has 140 faculties, 10 academies, 16 colleges, 4 religious faculties and 4 international studies. On the other hand, there is a high increase of college institutions and faculties devoted to the field of economy and management, often with very poor expertise and professional background. This causes drain of already thin human resources from RTD institutions and decrease of interest of youth for research and development activities and further specialization in this field.

The majority of the existing Research and Development infrastructure is located at public universities, where most of these kinds of activities are being conducted in Bosnia and Herzegovina. Science, research and development Institutes in public and private ownership, in most of the cases, do not have any material and technical capacities, including human resources, required for conduction of activities they are registered for. In other words, they are not engaged on the development of new products and new technologies, but more on the expert and theoretical work. This situation is quite logical having in mind the fact only approximately 40 % of import is being covered by export. Almost all science and research development institutes, significantly contributing to the technological development of BiH, are gone. Most of them are demolished in war, and what is left of them have poor intensity of activities, mainly in routine tasks and projects. The main problem of more or less all left institutes is human capacities, which are not good base ground for serious Science and Research work.

More intensive cooperation between institutes and industry is not possible because the majority of research laboratories is insufficiently equipped. Poor financing of Research and Development sector is not in favour of setting up of the system of support to SMEs as it is practiced through incentives for investments in research and development projects for new products, technologies and capacities in more developed countries. Generally speaking, research for industrial purposes is at the very low level. Potentially usable science and research capacities are located at Universities but because of the lack of financing they are not performing their main role - research. Universities have mainly lost their science and research characteristic and turned into colleges for providing academic education with the absence of research activities performed by professors. Science and Research activities are in legislative and organizational sense in responsibility of entities (Federation BiH, Republic of Srpska) and regulated with separate entity laws.

According to the Register of science and research institutions (which is being kept in the Ministry of science and technology of Republic of Srpska), there are 21 Institute fulfilling conditions for science and research activities in accordance with the Law on Science and Research activities of Republic of Srpska. In Federation of BiH, according to data received from public universities, there are 20 Institutes active within faculties or universities and 10 institutes founded by independent legal entities.

**Table 3. Masters of Science, Specialists and doctors of Science by filed of study in Republic of Srpska for 2008**

Field of study	Number of Dr.	Number of Mr.
Natural Sciences	2	3
Technical and Technological Sciences	10	12
Biotechnical Sciences	5	2
Social Sciences	36	117

*Source: Statistical yearbook of Republic of Srpska for 2009.*

**Table 4. Masters of Science, Specialists and doctors of Science by filed of study in Federation of BiH for 2008**

Field of study	Number of Dr.	Number of Mr.
Natural Sciences	2	38
Engineering, Industry and Construction	19	71

*Source: Statistical yearbook of Federation of BiH for 2009.*

At the end of 2003 Bosnia and Herzegovina has signed an agreement on cooperation with EPO, concerning patent procedures. From the total of 17.601 applications of European patents with paid tax for expansion, 309 European patents are expanded to Bosnia and Herzegovina through the delivery of interpreted patent applications to the Institute. A major share of received patents applications can be found in fields of pharmacy and cosmetics, chemical industry, biotechnology and medicine engineering.

Bosnia and Herzegovina is on the last position in the field of science and technology development and in competition with other countries of Southeast Europe. Data on the number of quotations given by BiH researchers in the relevant literature could not be analyzed, because of inexistence of relevant register of science and research experts and workers in BiH, which could be used as the base for exploration in databases.

**Table 5. The number of published science and expert articles**

2005	2006	2007	2008	The number of published articles on 10 <sup>6</sup> of inhabitants	
				2007	2008
142	163	362	396	94,20	103,05

*Source: Number of articles of authors, published in expert magazines indexed in databases of the Institutes for Scientific Information - ISI.*

## 2.3 Main Industrial sectors and their R&D Performance

The following industry sectors are being considered as strategic within the Development Strategy of Bosnia and Herzegovina for 2008-2013. - wood processing, food, textile, leather and footwear, metal, tourism, energetic, information and communication technologies. A Development Strategy of Bosnia and Herzegovina for 2010-2015 is being created at the moment.

There are a number of weaknesses of Bosnia nad Herzegovina concerning the legal and institutional framework. Among these issues special attention should be devoted to insufficient and inexistent statistical data on SMEs. Statistical system in Bosnia and Herzegovina is divided between the three (3) Institutions with separate responsibilities: Agency for statistics of Bosnia and Herzegovina, Institute for statistics of Federation BiH and Institute for statistics of Republic of Srpska, all internally regulated with separate legal regulations. **None of the mentioned statistical institutions performs continuous and systematic gathering of data, significant for determination of present condition and monitoring of science and technological development processes and SMEs.**

To illustrate the present statistic system, it should be mentioned, that the only available information concerning R&D activities of SMEs, was found in the experimental pilot research conducted by the Institute for statistics of RS – “Innovation activities statistics in RS for the period 2006 - 2008”. Implemented on the recommendation of Organization for Economic Cooperation and Development (OECD) and EUROSTAT, this research presents the first organized statistical activity concerning R&D activities (only partly, because the innovation activities were in the main scope of research) of SMEs in Bosnia and Herzegovina. Used methodology for this pilot research offered following data relevant for the scope of MAPEER SME Project:

- Innovation-active small enterprises are spending 0,34% of their annual income for internal R&D (0,31%) and external services of R&D (0,03%),
- Innovation-active medium enterprises are spending 0,72% of their annual income for internal R&D (0,63%) and external services of R&D (0,09%).

Information presented in this document has been used for completing section 3. of this Report.

Re-establishing of the efficient research and technology development system in Bosnia and Herzegovina implies an adoption of the strategy, which is going to be fully supported by all actors, especially policy makers from of all the levels of authority, during creation as well as the implementation. “Triangle” for the successful future of one country must be formed between Education, Science and Economy, with positive participation of governing authorities (policy makers) as a catalyst.

According to the adopted Strategy of science development in Bosnia and Herzegovina, a set up of relevant indicators and other instruments of statistical research devoted to science and technology development is crucial for estimations of the present condition and progress. In order to gain systematic monitoring, evidence and enhancement of science and technology in BiH, a Science and Research Information system should be established. This system should contain science and research databases, evidences and statistic indicators in accordance with European standards. Science and Research information systems of RS, FBiH and District of Brcko should develop the concept of unified system.

## 2.4 National strengths and weaknesses for R&D and innovation

**Table 6: National strengths and weaknesses as regards R&D and innovation**

<b>Strengths</b>	<b>Weaknesses</b>	<b>Other important elements specific to your country</b>
Tradition in performing R&D activities/ a number of known and respected scientist and researches.	No links between R&D Institutions and SMEs.	Devastating effect of the war conflict in the 90-ies on R&D performances.
Appropriate legal framework for performing R&D (partially - in Republic of Srpska).	Insufficient level of financing for projects and activities of R&D Institutions and SMEs by the Authorities.	Political instability of the country after the war conflict, affecting the adoption of suitable legislative.
Existence of Universities and Institutes as main R&D institutions.	Poor, old or not existing technical capacities and laboratories of R&D Institutions for conduction of R&D programs and projects.	
Developed and modern telecommunication network.	Poor dissemination and promotion activities on the existing programs and support provided for R&D projects of SMEs and other interested stakeholders.	
	SMEs not motivated to make additional efforts on research and experimental development.	
	Statistical system in the country is not providing sufficient and reliable information on MSP sector.	
	Long period of poor influences of Science and Research on society in general.	
	Poor regional and international R&D networking, no presence on international events and low international competitiveness of R&D sector.	
	Inexistence of quality system for	

	evaluation of research work, and modest application of results in actual economy.	
	Inexistence of strategic plan concerning Science development and reference priorities.	
	Weak knowledge of SMEs on the subject of global competitiveness.	
	Poor economic and social status of individuals active in R&D.	
	Inadequate academic and science ad research network in BiH.	

*Source: See Annex I of the Report - List of references*

### 3 National SME Landscape & Structure

A national SME profile is created based on the information from the following, mainly strategic documents:

- 1) “Strategy of SME development in Bosnia and Herzegovina 2009 – 2011” (national level),
- 2) “Strategy of SME development in Republic of Srpska 2006 - 2010” (entity level),
- 3) “Development of small and medium entrepreneurship in Federation of Bosnia and Herzegovina” (entity level),
- 4) “Innovation activities statistics in RS for the period 2006 - 2008” – experimental pilot research conducted by the Institute for statistics of RS.

Due to already mentioned problems with statistic system of BiH, some of the figures are the result of analysis and estimations of project research team. R&D indicators are based on “Innovation activities statistics in RS for the period 2006 - 2008” – experimental pilot research conducted on the sample of SMEs in entity Republic of Srpska.

**Table 7: National SME profile**

Indicator	Specification
SME Size	161.295
SME Weight	99.56 % in Republic of Srpska; 96.40 % in Federation of Bosnia and Herzegovina;
SME involvement per sector	1. Wholesale and Retail sector 47.213 SMEs (40,04%), 2. Catering industry (hotels and restaurants) 15.928 SMEs (13,51%) 3. Manufacturing 15.368 SMEs (13,03%) 4. Transport, storage and communication 10.916 SMEs (9,26%) 5. Real estate, rental and similar services 8.813 SMEs (7,47%) 6. Construction 5922 SMEs (5,02%)
SME involvement per sector	1. Wholesale and Retail sector 97,67%, 2. Catering industry (hotels and restaurants) 99,54% 3. Manufacturing 96,13% 4. Transport, storage and communication 98,31% 5. Real estate, rental and similar services 92,23% 6. Construction 96.88%
Firm renewal	Not available
SME location	In Republic of Srpska, highest concentration of SMEs is in the Banja Luka area (43,27%). In Federation BiH, highest concentration is in Sarajevo area.
SME innovation process (mainly RTD-based/innovative or non-RTD-based/innovative)	a) SMEs introducing product innovations as a percentage of all SMEs - <b>28,60 %</b> b) SMEs introducing process innovations as a percentage of all SMEs - <b>37,38 %</b> c) SMEs introducing marketing innovations as a percentage of all SMEs - <b>30,18 %</b> d) SMEs introducing organisational innovations as a percentage of all SMEs - <b>28,38 %</b>
SME distribution by Size	1 - 9 employees = 151.107 (or 93,6 % of all SMEs) 10 - 49 employees = 8.712 (or 5,5 % of all SMEs)



	50 - 249 employees = 1.476 (or 0.9 % of all SMEs)
SMEs - Total employment	BiH (National level) 48,83 % of total employment FBiH (Entity/Regional level) 33,41 % of total employment RS (Entity/Regional level) 73,43 % of total employment
SMEs contribution to GDP	Not available
SMEs R&D expenditure	The figure on R&D expenditure in total is not available. Innovative small enterprises are financing R&D activities in the amount of 4,01 % of their annual income. Innovative medium enterprises are financing R&D activities in the amount of 4,35 % of their annual income.
SMEs R&D expenditure	Please provide distribution of SME R&D expenditure by type of research (basic applied, experimental development), by sector, by size and by region (if available) - NOT AVAILABLE R&D expenditure structure (percentages of annual income) in <b>small</b> innovative enterprises is: 1. Internal R&D - 0,31 % 2. External R&D - 0,03 % 3. Acquisition of machinery, equipment and software - 3,41 % 4. Acquisition of other external knowledge - 0,01 % 5. Education and training for innovation activities - 0,09 % 6. All forms of design - 0,02 % 7. Marketing expenditure - 0,14 %  R&D expenditure structure (percentages of annual income) in <b>medium</b> innovative enterprises is: 1. Internal R&D - 0,63 % 2. External R&D - 0,09 % 3. Acquisition of machinery, equipment and software - 3,17 % 4. Acquisition of other external knowledge - 0,01 % 5. Education and training for innovation activities - 0,09 % 6. All forms of design - 0,03 % 7. Marketing expenditure - 0,34 %

*Source: National and Entity strategic documents and estimations of the authors*

For an overview of SMEs in the Republic of Srpska, we used the analysis which was done by Republic's Agency for Development of Small and Medium Enterprises in cooperation with the Sector for Small and Medium Enterprises, Production craft and the Information, Ministry of Industry, Energy and Mining of the Republic of Srpska. The analysis shows that SMEs in the Republic of Srpska become increasingly important segment of the economy and that:

- SMEs have a dominant share in the economic structure of Srpska and make 99.56% of the total number of enterprises.

- The total number of SME in 2008. was 13 433; 8.41% higher compared to 2007.

- The dominant structure of SME participation of micro enterprises (77.40%), while small and medium-sized participate with 22.16%. The largest number of SMEs is still in the sector of retail and wholesale, repair of motor vehicles and objects for personal use (43.20%). The manufacturing sector is 17.40% of SMEs, while in the sectors of transport, construction and real estate related activities for 21.32% of small and medium enterprises.

- Employees of SMEs make up 53.28% of the total number of employees in the Republic of Srpska with a dominant share of employees in medium-sized enterprises (42.45%). Number of employees in the SMEs increased by 8,40% compared to 2007. There is

an uneven regional representation in the Republic of Srpska, and thus the largest number of SMEs are concentrated in the region of Banja Luka (43.27%), The smallest number of SMEs is concentrated in the region of Trebinje just 4.48% and can be explained by the fact that this region has the smallest population.

- The total number of newly registered SMEs in 2008 was 1227, of which the largest number of SMEs is in the sector of retail and wholesale, repair of motor vehicles and objects for personal use (36.02%).

The above described situation in RS is quite similar to Federation of Bosnia and Herzegovina:

- According to Ministry of Development, Entrepreneurship and Crafts in Federation B&H, 90% of companies are in private ownership and prevailing sectors are retail and catering industry,

- 93% of SMEs employ less than 10 employees,
- 6% of SMEs employ 11 to 49 employees,
- 1% of SMEs employ 50 to 250 employees.

The Ministry of Development, Entrepreneurship and Crafts in Federation B&H estimates that from the total number of employees 401259 in the Federation B&H industry employ 197.734 people or 49.27%. 77.07% or 152.403 are employed full time and 22.93% or 45.331 are employed part time. The Ministry of Development, Entrepreneurship and Crafts in Federation B&H estimates that about 77.000 are employed in SMEs (3.04 employee per company) and 61.215 employees in crafts (estimated number of employees per registered craft is 1.3), concerning that the total number employees in SMEs and craft is 138215. The number of employees in crafts is 61.215. Majority of companies are located in Sarajevo region.

**Table 8. Distribution of SMEs per sectors in BiH**

	Sector	Number of SME	% SME per sector
Production	Agriculture, hunting and forestry	3581	3,04
	Fishing	85	0,07
	Mining	286	0,24
	Manufacturing	15368	13,03
	Electricity, gas & water supply	454	0,39
	Construction	5922	5,02
Services	Trade, certain repair motors	47213	40,04
	Catering	15928	13,51
	Transport, storage, communication	10916	9,26
	Financil intermeditation	729	0,62
	Real estate, renting, services	8813	7,47
Non productive	Public administration; defence; compuls. social security	4538	3,85
	Education	91	0,08
	Health and social welfare	393	0,33
	Other social & personal service	2424	2,06
	Extra-territorial organizations and bodies	3	0,00
	Other	1162	0,99
	TOTAL	117906	100,00

Source: *Small and Medium sized Enterprise Development Strategy in Bosnia and Herzegovina 2009 - 2011.*

## 4 Main results of SME programme profiles

With the criteria set by MAPEER SME project, in the period from February to April 2010, Agency PREDA has conducted an identification and analysis of the National and Regional (Entity) R&D programs available directly or indirectly to SMEs from Bosnia and Herzegovina. The goal of research was to determine key policies and issues concerning application of R&D in SMEs, as well as achieved results of these programs for the period of 2006 - 2009 in Bosnia and Herzegovina. During the identification phase of research, special attention was given to the issue of cooperation between the R&D Institutions and SMEs, and opportunities offered on this matter by the National/Regional R&D programs. In Bosnia and Herzegovina, for the analyzed period, the main programs of support and financing of R&D were positioned on the Entity (Regional) Authority level, i.e. ministries of Governments of Republic of Srpska and Federation of BiH. It is also important to notice activities of international organizations present in Bosnia and Herzegovina, working in the scope of development and support to SMEs.

According to the analysis of Agency PREDA the identified programs (presented in section 4.1. of this report) were the only available programs which could have been used by SMEs (directly or indirectly) for the purposes of R&D projects in Bosnia and Herzegovina, for the period of 2006 - 2009. General remark for the majority of programs is their wide scope of supported activities leaving the number of issues and activities (considered as non-R&D) for SMEs to get financially supported. Furthermore, the “popularity” of certain types of activities (such as certification, ISO standards) and generally high costs for conducting R&D projects, squeezed out the R&D issue from the top of the list of SME priorities. Generally speaking, Bosnia and Herzegovina is missing a number support programs, exclusively created and active for R&D and cooperation of SMEs with Universities. Nevertheless, all analyzed programs offers support to R&D projects of SMEs, with the formal or informal presence of R&D Institutions (obligatory for some programs).

### 4.1 Overview of the programme profiles

After the process of identification of programs for support to R&D activities of SMEs in Bosnia and Herzegovina, a number of interviews (live interviews and/or through telephone and e-mail communication) with program managers were organized. Set up of criteria for selection of programs was in accordance with the directions defined in **Methodological Workbook for R&D&I programs and initiatives** as well as **the remarks from the Methodology meeting of project partners organized in Brussels in mid of February 2010.**

**Criteria I - Support to R&D activities of SMEs**

**Criteria II - Cooperation of SMEs with R&D Institutions**

**Table 9. Short overview of selected programs**

1. Programme's name	Program of incentives for innovation and new technologies in SMEs	Transfer for the support to development of entrepreneurship and crafts Subprogram: Creation of innovative economy	Support to science and research projects in Federation BiH Subprogram: Support to science programs and projects of significance to the Federation BiH	Program of basic, applied and development research	Excellence in Innovation
2. Keywords	Innovation; Feasibility studies; Research commercialization; training; technology procedures.	Support to innovation processes; strengthening of relations between research-education institutions and SMEs; application of new technologies, support to participation and organization of expert meetings and events;	Research and testing of innovation and technology; Available for SMEs only in cooperation with RTD institutions; Experimental development;	Research excellence; research commercialisation; innovation; technology transfer; experimental development;	Entrepreneurship, information and communication technology, innovation and competitiveness
6. Programme budget	308,601.20 EUR for 2009.	766.900 EUR for 2007 869.200 EUR for 2008 766.900 EUR for 2009	570.000 € for 2010 370.000 € for 2009	622,75 K€ for 2007 1022,58 K€ for 2008 861.52 K€ for 2009	7.000.000,00 EUR (2008 - 2012)
7. Approximate share of overall programme budget going to SMEs	Year 2009. 31.89% (98,423.68 EUR)	96 % for 2007 47 % for 2008 100 % for 2009	Not Available for 2010 1,11 % for 2009 0 % for 2008	Not available	Not Available
8. Sources of programme funding + respective %	100% from the budget of Government of RS (entity in Bosnia and Herzegovina)	The program is funded by regional (entity) Government of FBiH in 100 %.	The program is funded by regional (entity) Government of FBiH in 100 %.	100% from the budget of Government of RS (entity in Bosnia and Herzegovina)	100 % - international project funded by USAID and Ministry of Foreign Affairs of Norway
9. Start date	(01/2006);	Year 2004 (Data available since 2007)	2008;	(01/2004);	(12/2007)
10. End date	Program is being continuously implemented on the annual bases but with different financing amounts.	Active and renewed on annual bases.	Active and renewed on annual bases.	Program is being implemented continuously since 2004 on the annual bases.	(12/2012)
11. Programme owner	Ministry of science and technology of RS, Technology department	Ministry of development, entrepreneurship and crafts of Federation BiH	Ministry of education and science of Federation BiH	Ministry of science and technology of Republic of Srpska - Science Department	USAID and Ministry of Foreign Affairs of Norway

During the process of collecting data on the performance of programs and similar information, some occurrences were identified, important for future programs implementation, such as:

- Both Ministries active in the scope of Science (Ministry Science and Technology of RS and Ministry of Education and Science of FBiH) are more concentrated on the work with RTD institutions (Universities, Institutes, R&D organizations) and

their projects. Activities of support to SME sector are considered as a job of other ministries, more focused on industry, entrepreneurship and crafts.

- Documents concerning realized projects within the programs are not fully available on the web pages of ministries. Statistics for each program are being kept, but the evidence on the involvement and role of SMEs in projects of collaboration with R&D institutions are not systematically available.
- Ministries focused on industry and SME sector consider R&D projects of SMEs and Universities as more than welcomed, but in the reality they rarely occur.

## 4.2 Main programme characteristics

**Program 1. Incentives for innovation and new technologies in SMEs** developed and implemented by the Ministry for Science and Technology of Republic of Srpska (RS) - Department for Technology. Program achieved very good results in compare to other available programs in Bosnia and Herzegovina. Certain aspect such as availability of program to SMEs and exclusive R&D component makes this model of R&D program as the one with the best concepts and practice. Availability of information on the achieved results was high, which includes info on the program participants, value of gained support, the name and subject of projects supported.

**Program 2. Transfer for the support to development of entrepreneurship and crafts in Federation of Bosnia and Herzegovina (FBiH) with the Subprogram - Creation of innovative economy**, developed and implemented by the Ministry for development, entrepreneurship and crafts of FBiH. Program is fully available to SMEs as applicants, offering wide range of support not just for R&D projects and activities. Although the concept of the program is stimulating collaboration of R&D Institutions and SMEs, it has shown poor results in terms of R&D. Majority of supported programs was in the scope of adoption of organizational innovations (Quality Management System – ISO). Absence of exclusive R&D component of the program, made this program not so successful (in terms of R&D).

**Program 3. Support to Science and Research projects in FBiH, with the Subprogram - Support to science programs and projects of significance to the FBiH**, developed and implemented by the Ministry for education and science of FBiH. Program is not open to SMEs as applicants, but encourages R&D Institutions to involve SMEs in the activities. However, for the period since the program is being implemented, R&D projects involving SMEs was very rare.

**Program 4. Basic, applied and development research in RS**, developed by the Ministry for Science and Technology of RS - Science Department. Program is not opened for SMEs as applicants but its rules are providing the option for their involvement (engagement) by the R&D Institutions. However, information on the actual involvement (engagement) of the SMEs is not available and according to the ministry representatives it was very rare.

**Program 5. Excellence in Innovation**, funded by USAID and Ministry for Foreign Affairs of Norway. Program has a specific goal and totally different concept in compare to the ones on the regional (entity) level. Being available to the SMEs and R&D Institutions (individually or as a consortium), and concentrated on specific (strategic) sector of economy, it brought

attention to the research team for the analysis. With the highest budget in Bosnia and Herzegovina for SMEs R&D activities, this program is the only example of program focused on closed group of sectors of economy (Wood and Furniture, Metal engineering, Agriculture, Tourism, Textile and Leather, Transport and Logistics).

### 4.3 Analysis of programme performance

Existing programs of support to R&D projects of SMEs are offering a wide range of possible activities to be conducted for the benefit (increasing of competitiveness) of SMEs (individually or in consortium with the R&D Institution/Organization). However, financial support of programs offered to R&D active SMEs amount is figures lower than 5.000 EUR, in majority of cases, which is found not-motivating by the SMEs. Main roots for active programs can be found in the major strategic economy and development documents of Bosnia and Herzegovina (mentioned in section 2.1. of this report). Strategic documents are most commonly results of different project activities aimed on identification of priority sectors, measures, policies, decisions, etc. These crucial documents are base ground for planning in the National/Regional (Entity) Governments and Ministries. Including the view and demands of SMEs in this framework is questionable. Most of their demands (if not all) cannot be linked with R&D tendencies. The case of programs from Bosnia and Herzegovina was not in the issue of SMEs using the support of Ministries for their R&D projects, but in the issue of why they are not using it and not having any R&D project proposal for their own benefit. Therefore, in order to create an interest of SMEs for R&D issues, it is necessary to design program exclusively for the support to R&D. Program which have used this premise, showed up as the ones with highest success rate. Program 1. **Incentives for innovation and new technologies in SMEs** can be marked as the one with mentioned characteristics.

Evaluation of some programs active in the period of 2006 – 2010 is still in progress. However, the evaluation results of implemented programs in terms of their impact on the increase/decrease of income, employment, creation/production of new product or prototype were not available to the MAPEER SME Research team.

General remark on the dissemination and communication activities, is that there are not being conducted in high intensity or not at all. Information on the achievement of certain improvements as a result of activities supported by programs is not available, leaving the promotion component of the program on very low level.

## 5 Conclusions

Bosnia and Herzegovina has a tradition of an industrial based economy with a significant role of R&D activities conducted mainly for and by large enterprises. This tradition has been developed before the war conflict in the 90-ies, during the period of planning based economy active in the former Yugoslavia. Devastation caused by the war conflict and beginning of transition from planned to market oriented economy significantly affected country's system in general, but especially activities related to R&D. Once being the economy structured only from the large state-owned companies concentrated on manufacturing, Bosnia and Herzegovina faced the situation in which SMEs are starting to play an important role from the aspect of country's income, employment and development. The system of R&D, which was adjusted for the needs of large companies, now is facing a new reality - absence of their main target group and explosion of SMEs. In addition R&D institutions suffered from significant reduction of capacities for conducting R&D projects and services to companies, displayed through ruined premises, obsolete equipment, inexistence of special laboratories, knowledge and technology gap, administrative and legislative barriers.

National/Entity policies regarding R&D are based on a decentralised legal framework. Operative work regarding the implementation of R&D programs for SMEs is positioned on the Entity level of governance. Entity ministries are aware of the significance of R&D activities for economy, but having major obstacles in involvement of SMEs in this scope. Having in mind the fact large enterprises do not exist anymore as a prevailing factor of economy, National/Entity programs of support to R&D are in the phase of adjustment in accordance with the needs of SMEs. With the few exceptions, general notice for the Entity ministries responsible for science, technology and education is that they offer support to SMEs only indirectly, i.e. if SMEs are linked in consortium with R&D Institution (Universities and Institutes).

On the other hand, ministries responsible for industry, entrepreneurship and SMEs are interested to support R&D programs of SMEs and cooperation with R&D Institutions, but disappointed with the response. Reason for this situation could be found in the fact there programs are defined to support wide range of different activities, where SMEs choose to apply for getting support in more attractive ("popular") issues, usually oriented on the short term objectives. Tailoring of program exclusively for R&D issues of SMEs and R&D Institutions is crucial for achieving better results. Furthermore, the amount of financial support offered for contribution to projects of SMEs and R&D Institutions should be higher, since the existing ones are quite modest to attract SMEs.

Calls for submission of project proposals for programs of R&D are usually getting announced once a year, which is considered as non-flexible to the needs and activity dynamics of SMEs. Innovation active SMEs are not in position to ask for the support previous to the public announcement. This brings them in situation in which they have to wait for the call to start with their R&D project, instead of getting the support after the project is implemented or at least during the progress of implementation.

Dissemination activities and promotion in general is at the low level. Archives of programs are available on the web pages of program managing institutions partially or not at

all. Reports on the actual impacts of R&D projects supported by programs in terms of employment, generation of income, raising of productivity and competitiveness are not available or not being written at all. Promotion of supported projects is raising awareness of public in general on the issue of R&D significance and opportunities offered to SMEs.

The majority of SMEs in Bosnia and Herzegovina have started their activities after the war conflict in 90-ies. Starting as small companies from the opportunities identified on the ruins of the previous system, they are in lack of capacities for implementing R&D projects, as well as the recognition and preparation of such project proposals. This makes one of the major obstacles faced by the SMEs in the process of application to announced public calls. More concentrated on the short term goals, SMEs choose programs and activities which could bring them fast benefits, rather than R&D opportunities important for their long term competitiveness. Adopting standards of Quality Management System and other production and administrative certificates were, and still is, one of the most popular activities demanded by the SMEs to be supported by the programs of Entity ministries. Additionally, missing of the dialogue with Universities and Institutes, determines their objectives and intentions towards the activities other than R&D.



## 6 Annex I: LIST OF REFERENCES

- Council of Ministers of Bosnia and Herzegovina/  
Ministry of Civil Affairs of Bosnia and Herzegovina: “Strategy of Science Development 2010 - 2015”.

Available at:

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- Council of Ministers of Bosnia and Herzegovina/ Ministry of Foreign Trade and Economic Relations of Bosnia and Herzegovina: “Small and Medium-sized Enterprise Development Strategy in Bosnia and Herzegovina 2009 - 2011”.

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Ministry of development, entrepreneurship and crafts of Federation of Bosnia and Herzegovina: “Project: Development of Small and Medium Entrepreneurship in Federation of Bosnia and Herzegovina”.

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Republic’s Agency for Development of SMEs: “Strategy of SME Development in Republic of Srpska 2006 - 2010”.

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-Institute for Statistics of Republic of Srpska: “Innovation activities statistics in RS for the period 2006 - 2008”.

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<http://www.rzs.rs.ba/English.htm>

- STATISTICAL YEARBOOK OF REPUBLIKA SRPSKA

Available at:

<http://www.rzs.rs.ba/PublikGodisnjakENG.htm>

- Statistical Yearbook Federation of BiH 2009

Available at:

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## 7 Annex III: Filled in Template T2.3.3: Structural data of the country

Country 1:	Type of Data	Figures
<b>Bosnia and Herzegovina</b>	<b>Size</b>	51 129 sqkm
	<b>Population, demography</b>	3 842 566 (estimation of Agency for statistic BiH)
	<b>Percentage of higher education</b>	5 %
	<b>Main industrial sectors (figures of employment)</b>	Total number of employees: <b>691.835</b> Manufacturing 20,17% Trade 18,95 % Public administration 10,13% Education 8,18% Health and social welfare 6,63% Transport, Storage and Communication 6,48% Construction 6,13%
	<b>Percentage of SMEs</b>	99.56%
	<b>Number of universities</b>	8 Public Universities and 20 private Universities
	<b>Main research focus of universitites</b>	No particular focus
	<b>Other scientific institutions</b>	Academy of Sciences
	<b>Main research focus of other scientific institutions</b>	No particular focus
	<b>Special characteristics of country</b>	Post-conflict country, transitional economy from planned to market oriented.