

15. Institutional development of Federation of Bosnia and Herzegovina is focused on development of industrial production

Bosnia and Herzegovina, Federation of Bosnia and Herzegovina possesses wide network of institutions, agencies, chambers, associations working as industrial entrepreneurial infrastructure similar to one in EU and neighboring countries. The key element that Bosnia and Herzegovina and Federation of Bosnia and Herzegovina do not have is declarative and essential absence of commitment in terms of development of economy based on knowledge. The fact that Bosnia and Herzegovina does not have an Institute or Agency for technology unlike other developed countries can serve as an evidence for above mentioned. This kind of Institute should be the most important part of technological and innovational state system with the mission of support for taking over existing technologies, which are still interesting for industry, directing and support of transfer and finding new technologies. Furthermore, Institute follows and predicts world technological movements, gives support in supporting participation of domestic research resources in European and World projects of research and development, which would be interesting for Bosnia and Herzegovina, follows and evaluates technological progress of Bosnia and Herzegovina and research-developing potential and it is the leading institution that suggests strategic technologic development of the country. The mission of this Institute should be a support to knowledge-based development, to innovation and creativity, integrating in all European trends of support to economy by building the network of corporation of industry and academic institutes, conjoining scientific research capacities within the country and in global framework.

Ten business incubators existed in Bosnia and Herzegovina in 2008 as a serious and demanding element of support in development of small and medium businesses that joined Bosnia and Herzegovina network of incubators last year [40]. Creation of incubation network is a result of multiple problems in work of incubators from those of organizational and financial nature to lack of adequate knowledge. However, among these 10 incubators only one has the goal of establishment sustainable oriented center of *new technologies*. The first essential technological park under the name Technological Park Mostar was based by the end of 2008 with the goal of support of development of

new technologies. Currently, there is no special legal framework that would define the term and status of incubators in Federation of Bosnia and Herzegovina.

Incubators are the matter of local community in sense of initiative security of infrastructure... However, the evaluation of success of incubators, program of improvement of incubator management with a goal of following successful solution within Bosnia and Herzegovina and EU, establishment of work standard, spreading the best practice, comparative work analyses, organization of common trainings, should be coordinated from the government level. That activity of government could be understood as a horizontal state help. Considering that common attitude of existing business incubators is that business-advisory component is not well developed in incubators rises a question who will give the contribution in overcoming problems. It is unreal to expect that every local community which, are interested in incubators has capacity to solve this problem. For instance, according to analyses of existing incubators [40] creation of one working place, including only the price produced by incubators was 6250 BAM, however some incubators were more successful than others. Local community want to know if the incubator they are interested in achieves good or bad results in comparison of incubator in Bosnia and Herzegovina as well as the incubators in near and far neighborhood. Only external factor can establish the independent system of unique evaluation of incubator work in all networks. Evaluations of their work and achieved results have to show the real picture to the founders of incubators. This kind of help can be organized on regional level but the carrier of these activities should answer to government.

It is necessary to have a concept of promotion of business incubators on state level, to include other subjects in process of business incubators on all levels of government, economy chambers, educational institutes, association of contractors, association of innovators, local developing agencies, regional developing agencies, international projects etc. finally, the key role has to be played by government in promotion of incubators that promote *development of new technologies* and their commercialization with special support to export-oriented projects. Government also has to give effort to develop new and to reorient old incubators that have capacity to help business that is based on new technologies and new knowledge.

There are five regional developing agencies (ARDA, NERDA REZ, REDAH, SERDA) in Bosnia and Herzegovina that have different founders, quality and support which there are given by government. All elements of financial support, evaluation of work quality, justification of invested means and other elements that were mentioned have to be manner of government state level. This is also valid for question of support and stimulation of cluster developing.

There is no clear program or document in Federation of Bosnia and Herzegovina whose implementation will be the subject of usual evaluation in scientific and

technological policy which is focused on connecting scientific-research sector with industry, whose goal is support of development of economy based on new knowledge. It is necessary to insure funds for projects that contain technological innovative and are focused on future commercialization. It is also necessary to avoid former routine that was introduced by assignation of help to scientific research projects by public call. New routine would establish two types of projects. First type of project has to be on concurrency level for dedicated calls from government with familiar potential users. Second type of project has to be opened for constant calls which could always be applied and final decision about permissions of projects, which has to include technologic, innovative and focus on future commercialization which have to be approved by special body. It is very important that the work of the body approves projects, evaluates specifically on bases of percentages of successful projects, projects that were commercialized with goal of work responsibility. Mechanisms for suppression of corruption are key element for this concept take effect. It is crucial to accept a concept of *market oriented research and development* and this approach has to be promoted. This approach is important for elimination of former conception of working science just for science. It is unexplainable that government was ready to give money irretrievably to companies to support industry, but did not invest money in research and development.

It is important to form, on level of Federation of Bosnia and Herzegovina, Agency for realization of working policy in area of science and technology based on acquired strategy of total development and especially of industry in Federation of Bosnia and Herzegovina. In frame of Agency it is necessary to have a working body that would coordinate and stimulate arranged measures their work and financial support.

According to EU, research and development "lie in heart of EU strategy" with a goal to become the most concurrent and dynamic economy based on knowledge. One of the goals of Lisbon strategy was that EU gives at least 3% BDP for research and development. It is expected from government to sort out one third of this sum, while the rest should be sorted out by business centre. It is certain that all members of EU and state candidates for joining EU will be asked to make a program how to reach this goal. This is why Bosnia and Herzegovina, Federation of Bosnia and Herzegovina should immediately build a strategy of investments in research and development and it is important for success to create a concept for market oriented research and development.

The next essential step that government should do is following and evaluation of work of all new and existing institutions or agencies. Their effect should be evaluated with standards of EU. Bosnia and Herzegovina, Federation of Bosnia and Herzegovina has set up ministries, agencies, chambers, clusters, business incubators etc, in all segment of governmental and non-governmental sector in the last 10 years This is the way how developed countries in EU function in support of industry. Quality of work of these

subjects, programs of reaching standard efficiency dynamics of develop countries from that area. It is necessary to be aware that foundation of institution or agencies for support in economic development does not mean anything itself. It is allusive to expect efficiency of these institutions in comparison with same ones in develop countries. However, it is important that the program which goal is reaching work standard of this institutions in accordance with norms of develop countries exists.

The only thing that Bosnia and Herzegovina and Federation of Bosnia and Herzegovina did not recognized nor followed the routine of EU countries is support to research and development in terms of creating new knowledge with goal of countries prosperity. There was no imprint of connection establishment between research institutions wit industry. That is why it is important for developing strategy of Federation of Bosnia and Herzegovina to clearly determine the percentage of state economy status work on selling resource and cheep working force, with reference to how much percentage will be wanted in participation of state development based on new knowledge in terms of that industrial policy declaratively and vitally supports innovation, development of new technologies as well as support to market oriented research and development.

15.1 Guidelines for policy of science and research with the goal of increment of industry concurrency and economy in Federation of Bosnia and Herzegovina

Expert mission for Bosnia and Herzegovina with the goal of estimation of scientific potential of the country and preparations for recommendations for its future development and integration in European research union, is approved by Politic administration of Bosnia and Herzegovina.

Research system of Federation of Bosnia and Herzegovina (if it exists) has no opportunity to work along the lines of international standards because financing of research-developing activity is very low and is 0.05 BDP. These are the results of analyzes of the current situation:

- larger part of research infrastructure is old
- most laboratories miss operational funds
- libraries can not pay subscription for scientific magazines
- connection to international system of communications takes to long
- younger generation on universities has no means for training in area of scientific research

- most researches in industry are stopped /reasons for that: disability, lack of stimulation/ tax of current problems/

Financing of research-developing activities has to have three parts: Federation of Bosnia and Herzegovina, districts and private sector of industry and services. Federation of Bosnia and Herzegovina has to invest 2% of its DBP in research and development. In goals of supporting industry - economy to increase concurrency and export, it is necessary to create state institutions for implementation of policy, which assures increment of concurrency and export. Low on science and science-research activity has to be brought and implemented on the state level.

Centers of scientific-research and research-developing activity with the goal of increment of economic concurrency are:

- higher education institutions (universities, faculties and their institutes),
- scientific-research institutes,
- virtual scientific-research institutes,
- centers and departments in economy subjects,
- other legal bodies registered for scientific-research activity.

States with weak institutions have slower economic growth, lower investments, and higher stage of underground economy. Knowledge based society is impossible without constant appearance of new companies (based on knowledge) which follow their new ideas and offer new business opportunities.

Main precondition for developing modern-concurrent industries is innovative capability and innovative capacity. Federation of Bosnia and Herzegovina has to create technologic parks, incubation centers and centers for excellence with the goal of supporting development of tech - enterprises.

Technologic Park is a place where scientific researches of all levels meet organizational shapes and available capital for investing engagement. Technologic Park is a space where the best condition for getting the best results in scientific research assures implementation in production. That ensures transfer of knowledge and technologies in economy.

Vision of development of global concurrent economy based on knowledge has to have:

- planned development of human resources,
- planned development of economical diplomacy,
- establishment of innovation in every business process,
- use of knowledge for the purpose of increment of further production value,
- positioning (by knowledge) Federation of Bosnia and Herzegovina on higher level on innovational scale,

- intensive revitalization of equipment and knowledge (cadre) in process of scientific-research activity with accent on equipment for applied and developing research.

Economy (industry and enterprises) have to be observed as one especially when we talk about institutional infrastructure.

Small and medium enterprises connect their growth with industrial subjects and industrial subjects - carriers of development - archive their efficiency and concurrency thanks to larger number of enterprises. Important element for growth and development of small and medium enterprises is their interconnection through clusters.

Efficient, effective and concurrent small and medium enterprises from the same branch have to establish clusters in order to increase the level of capacity infill, presale of work and to widen the market for their products. That way, "small" enterprises would become "large" - industrial and would easily find their way to quality financial means as well as access funds of EU.

Currently, they have to work on their promotion in local communities, districts and economic regions. They have to establish clusters and have to improve the work of already formed clusters in following areas:

- motor vehicle industry ,
- metal industry,
- wood processing industry /furniture production/,
- chemical and pharmaceutical industry,
- leather processing,
- textile industry /clothes production/

To create activity around formation of clusters it is necessary to have: knowledge, initiation of small and medium enterprises, interest of local and regional community.

Efficient work of cluster, incubators, technologic parks, institutes and research organizations have to be contributed by: economic diplomacy, government and government institutions by implementing harmonized economic policy. The goal is that economy (industry and enterprises) stays concurrent and export oriented and Federation of Bosnia and Herzegovina stays comfortable ambient for work, investment and life.

Projection of institutional development of Federation of Bosnia and Herzegovina focused on increment of economy concurrency.

No.	CANTON	DOMINANT INDUSTRIES	UNIVERSITY CENTER	FACULTIES INSTITUTES	CERTIF. LAB OR.	TECHN. PARK	CENTRE OF EXCELLENCE
1.	UNSKO-SANSKA	Metal, electric and wood industry	BIHAĆ	Technical		Yes	-
2.	POSAVSKA		-			-	Yes
3.	TUZLANSKA	Chemical, Metal	TUZLA	Mechanical Engineering Institute Electro Technical		Yes	-
4.	ZENIČKO-DOBOJSKA	Metallurgy Metal	ZENICA	Mechanical Engineering Institute Faculty of metallurgy		Yes	-
5.	BOSANSKO-PODRINJSKA	Arms and Metal industry	-		Yes	-	Yes
6.	SREDNJEBOŠANSKA	Arms and Metal industry	-			-	Yes
7.	HERCEGOVAČKO-NERETVANSKA	Aluminum Metal	MOSTAR	Faculty of Engineering and Computing Mechanical Engineering Institute Faculty of economics		Yes	-
8.	ZAPADNOHERCEGOVAČKA	Aluminum Metal	-			-	Yes
9.	SARAJEVSKA	Metal and electro Wood Arms Chemical and pharmaceutical	SARAJEVO	Mechanical Engineering Institute Electro Economic Pharmaceutical		Yes	-
10.	HERCEG-BOSANSKA	Electro Wood	-			-	Yes

- Building and financing of developing activity: Federation of Bosnia and Herzegovina, districts, communities and legal sector of industry
- Technologic park and centers of efficiency are purely aimed on transfer of knowledge and technologies (a chance that research on universities and institutes be estimated on market)
- Low of science has to define minimal conditions/cadres and equipment/ in order to have the opportunity for market competition by high education institutions and research organizations*.

* Institutions should be established as follows: prepare, provide staff for the application of ideas, to build an environment that can accept the idea and close the construction of financing, "Vision without action is a daydream, action without vision is a nightmare"

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