

13. Analysis of Existing Institutions Responsible for Technological Development of FBiH

13.1 Infrastructure in the Federation of BiH

In the Federation BiH there is a structure of different systems which should ensure a continuous and efficient development of all social activities and all economic sectors. To what extent is such infrastructure able to effectively perform the entrusted role is best seen through the analysis of the current state of development of the Federation of BiH.

On the theoretical and practical basis exists the following:

- Economic infrastructure (transport system, telecommunications, energy, utility and production activities);
- Non-economic infrastructure (the system of education, health, culture, social services and public administration).

Components of industrial business infrastructure are:

- Legal infrastructure includes all institutions that enhance and promote business development and entrepreneurship (Parliament of the Federation BiH, Government of the Federation BiH, FMRPIO, Federal Ministry of Finance, cantons, city municipalities, courts, Chambers of Commerce of FBiH, Federal Chamber of Trades and Crafts, cantonal chambers of trades and crafts, Employment Agency etc.);
- Physical infrastructure includes various utilities, communications, and transport and energy systems. Physical infrastructure enables utility and energy support to industry and entrepreneurship and rapid flow of materials and raw materials from point of manufacture to point of consumption, rapid exchange of information, quick and efficient communication with customers and suppliers.
 - Transport infrastructure (road, railway, waterway, airway, pipeline and other infrastructure systems);
 - Energy infrastructure (systems that ensure the supply of electricity, gas, petroleum products, water and other energy resources);
 - Communication infrastructure (mail, telecommunications, Internet and similar elements of communication infrastructure);

- Utility infrastructure (water, gas, power line, sewage, sanitation, urban transportation, hotels, restaurants and other city services);
- Financial infrastructure includes all public and private financial institutions such as: Development Bank of the Federation, saving banks, savings and credit cooperatives, retirement funds, investment funds, stock exchanges, money and capital market, Financial Agency, Securities Commission, federal ministries etc.;
- Educational and advisory infrastructure includes educational and advisory systems for the purpose of acquiring knowledge and skills, and quicker development of entrepreneurship and industry. Private and public universities and faculties, institutes, colleges, tax advisory agencies, scientific incubators, technology parks, accounting services, law firms, magazines and publications);
- Institutional infrastructure refers to the structure of various enhancement and development institutions and mechanisms of state support to business and industry. In addition to the system of financial support, development of market, traffic, financial, administrative, self-management, legal and other institutions and mechanisms, the state should provide institutional infrastructure that includes:
 - business zones,
 - business centers,
 - business incubators.

13.2 Institutional Infrastructure in the Federation of BiH

It has already been suggested that progress of the Federation BiH will very much depend on the level of achievement that the Federation is increasingly becoming a knowledge-based society. Only then it will be possible to fulfill conditions for the competitive advantage of economy of the Federation BiH. Thus, it is essential that university education and research activity and innovation become generally accepted priority with the ultimate goal of reaching the standards that are valid for these sectors in the EU.

Revitalization of scientific and technological potential in the country, and therefore in the Federation BiH as well, requires inevitably the definition and generally accepted adoption of a certain "road map" whose basic characteristics will be three general medium-term objectives:

- professionalization of a new generation of scientists at the BiH universities and abroad (range of postgraduate doctoral studies, specialization in more developed neighboring and EU countries);
- establishment and development of a network of scientific and research infrastructure in the Federation BiH (more decisive and significantly increased investment in laboratory equipment instead of construction objects; computerization of the research network; enrichment and expansion of library

literature and software fund. All of these elements must be formed and developed in accordance with applicable international standards);

- reinvestment in the research network in the industry of the Federation BiH.

The network of entities in the scientific research network with the emphasis on accelerated development would consist of:

- faculties with a clearly expressed, and in every way supported, feature of the scientific-research activity;
- scientific-research institutes within the universities in the Federation BiH;
- research and development centers in companies, which are directly connected to the basic function and role of companies in the development strategy of the Federation BiH;
- integrated scientific and research potentials in certain industry sectors, defined as priority.

In addition to all that, the specific subjects of institutional infrastructure must be more strongly and dynamically promoted. These subjects are:

- systems of standardization, accreditation (BATA), testing and certification;
- register of researchers, institutions (especially the specific equipment in them), projects and infrastructure investments;
- library information system, recognizable and better used;
- BiH Research Academic Network (BIHARNET)*.

13.3 Database

Through the activities of the Government of FBiH, the RS Government and the Council of Ministers BiH, it is necessary to define the status of personnel, equipment and development programs of all public institutions in areas of scientific research and development and research activities, as well as the activities of business organizations that practice and develop their businesses. Reference lists of all these organizations, under these terms must be public and available through electronic information system to all users in order to facilitate networking towards realization of development goals.

Scientific and professional conferences, organized by field topics, must have the support of executive authorities at all levels in BiH, because they are basis for categorizing human resources and institutions, and because they are foundation of cooperation with researchers and institutions from the EU. For the purpose of linking in the EU development programs (FP7 and other) it is necessary that the same databases are available in English also in other EU countries.

* BiH is the only state in Europe, which has a registered academic network that does not work

The academic community in BiH in the field of mechanical engineering should strengthen mutual communication and cooperation through its technology centers and with homogeneous institutions in the Balkan countries in order to create a critical mass of human resources and equipment for the implementation of development programs of common interest, but also to for the purpose of application for the EU accession funds.

Budget items in the Government of FBiH for development programs should support projects that have the participation of EU funds, national and regional characteristics.

Databases from all research and development projects, master theses, doctoral dissertations, and from professional and scientific conferences and reference journals must be accessible to the public through academic information system and archives of the National Library in Sarajevo. An annual selection of the best scientific papers in BiH should be presented to the scientific community in the EU (CT magazines, EU conventions etc.) in the organization of the Technical Department of ANUBiH.

Such an organized database of our authors and access to academic information system in the EU open up the possibility of joining our institutions and individuals in development projects of the EU, and of implementing those projects in the BiH economy.

For the purpose of developing a single system for the integration of scientific knowledge, new technologies and new export-oriented production, the following assumptions would have to be realized as soon as possible:

- Government of the Federation BiH (or one of the ministries with the corresponding segment) must act responsibly towards strategy and efficiency for effective action policy in the field of science and technology;
- Establish a specialized Agency to achieve action policy in the field of science and technology on the basis of adopted Strategy of overall development, and especially industrial development in the Federation BiH;
- The Agency should have a special working body that would coordinate and facilitate the agreed measures, their operationalization and financial support;
- Previous activities would be the basis for creation of the Federal Fund for Research and Development with clearly defined tasks and insured (through the budget and donations) financial support which would be obtained through a public tender for each year or a clearly defined development period.

In order to fulfill these assumptions it is inevitable that universities in the Federation BiH take a stronger role (with a clearly defined role of individual faculties as an important segment of the innovative capacity in the knowledge based society).

The first step in building a unified system must be to establish a research and academic network in the Federation BiH and to initiate similar steps at the state level. Such network would provide to faculties and scientific and research institutions the conditions for the continuous exchange of scientific and educational information in the country, the EU and beyond. Furthermore, it would provide an unimpeded and stimulating access to information about the numerous and various opportunities to participate in projects which would ensure a wider range of assets and promotion of the development of science and education in the Federation BiH and the state as a whole.